

An Analysis of How TVET Colleges in South Africa Can Help Mitigate Future Global Pandemics : Insights from the Experiences of Students with Disabilities

Precious Muzite , Samuel Khoza

Technology and Vocational Education, School of Education, Tshwane University of Technology, Soshanguve North Campus, Aubrey Matlala Road, Soshanguve, South Africa (0152).

*Corresponding author's e-mail: preci2015@gmail.com

DOI: [10.35898/ghmj-931350](https://doi.org/10.35898/ghmj-931350)

ABSTRACT

Background: The potential of Technical and Vocational Education and Training (TVET) colleges in the Global South to mitigate the impacts of future global pandemics is critically examined, using a theoretical perspective that understands learning continuity as shaped by instructional design and institutional capacity, social recognition and support, and the competence-generating logic of vocational learning.

Aims: The project intended to determine implications for TVET preparedness in future emergencies and investigate how the COVID-19 pandemic impacted educational continuity for students with physical and cognitive disabilities in the TVET sector in Johannesburg, South Africa.

Methods: The data came from a qualitative study done in Johannesburg, South Africa, that examined the experiences of forty students during the COVID-19 pandemic, paying particular attention to the ways in which TVET learning practices and disability-related needs interacted.

Results: The results demonstrate that learning in TVET colleges often relies on in-person instruction, practical demonstrations, and apprenticeship-style training components that mainstream universities can frequently convert more easily to online formats so students in these institutions face unique challenges during pandemics. According to students' accounts, the pandemic exacerbated structural barriers that already existed for students with disabilities, interfering with educational continuity beyond temporary curricular modifications.

Conclusion: The report contends that TVET colleges are still crucial for addressing labour shortages during emergencies despite these difficulties. To enhance meaningful participation and the development of competence, it suggests preparatory techniques focused on enhancing accessible e-teaching skills and using artificial intelligence into TVET courses.

Keywords: *TVET; Students with disabilities; COVID-19; Pandemic preparedness; Educational continuity; South Africa.*

Received: 23 July 2026 **Reviewed:** 10 August 2026 **Revised:** 08 September 2026 **Accepted:** 08 October 2026.

1. Introduction

Globally, the COVID-19 pandemic caused significant disruptions to educational systems, with Technical and Vocational Education and Training (TVET) institutions in the Global South suffering the most. Pandemic-related closures and shifts to remote instruction exposed institutional inadequacies in maintaining educational continuity since TVET programs place a high emphasis on practical, hands-on learning. For students with disabilities who frequently encountered additional obstacles to accessing online learning, assistive technologies, and support services, these difficulties were particularly noticeable (UNESCO, 2020). As a result, the pandemic exposed flaws in TVET response and preparedness plans, as well as the extent to which institutional capability affects the participation of students with impairments in emergency situations (Hoftijzer et al., 2020). The availability of online learning, institutional resources, social support, and accessible instructional design, allow students with disabilities to participate meaningfully and advance their competence.

South Africa had to swiftly switch to online education early in the pandemic (Mhlanga & Moloi, 2020; Landa, Zhou & Marongwe, 2021). However, this change presented serious challenges for TVET colleges. Many TVET programs rely on practical training and workplace-based apprenticeships, in contrast to traditional institutions. South Africa must swiftly switch to online education early in the epidemic (Mhlanga & Moloi, 2020; Landa, Zhou & Marongwe, 2021). However, this change presented serious challenges for TVET colleges. Many TVET programs rely on practical training and workplace-based apprenticeships, in contrast to traditional institutions. As a result, the shift to blended learning presented significant difficulties for students, especially those with disabilities who frequently need suitable accommodations to engage in learning activities (McRuer, 2006). From the perspective of disability inclusion, the question is whether remote formats and communication patterns enable accessible representation, engagement, and the capacity to demonstrate learning in ways that are pertinent to individuals with disabilities, rather than merely whether students can access platforms.

This study investigates the effects of COVID-19-related interruptions on the learning paths and educational experiences of disabled students enrolled in TVET colleges in Johannesburg. The study attempts to identify the challenges these students encountered throughout the pandemic and the tactics that allowed them to continue participating in their education using qualitative data collected from focus groups and semi-structured interviews. The research seeks to provide evidence to guide more inclusive and responsive actions in the TVET sector by emphasising the experiences of a marginalised group. Furthermore, the study places these experiences in the context of larger regional and international TVET discussions, where it is generally accepted that flexibility and inclusion are essential to effective crisis management and educational continuity (Klaus-Dieter & Thi Huyen, 2016).

TVET inclusion is experienced through daily instructional design, support responsiveness, and access to embodied competence. Some of these details of inclusion that may not be captured by administrative reporting or infrastructure-focused accounts, using students' lived experiences and personal narratives, is an appropriate lens. Additionally, narratives elucidate the mechanisms by which continuity succeeds or fails by illuminating how institutional and pedagogical barriers operate for students with diverse disability profiles.

This study addresses an important knowledge gap by examining how students with disabilities experienced educational disruptions across the TVET learning pathway and how institutional accommodations supported, or failed to support, their continued participation. The findings provide empirical insights into barriers to accessing learning materials, assistive technologies, disability support services, peer interaction, and completing practical training requirements during periods of disruption. These results show that inclusive planning, accessible instructional design, and disability support are crucial to ensuring educational continuity during emergencies, for future crisis preparedness. The report emphasises the necessity of backup plans that enable students with disabilities to fully engage in vocational education if in-person instruction is disrupted. New conversations on greening TVET provide a helpful framework for enhancing institutional resilience. Green TVET initiatives can help create learning environments that are better prepared to handle future disruptions while increasing opportunities for historically marginalised groups, such as students with disabilities, by emphasising social inclusion, sustainability, and adaptability (Klaus-Dieter Mertineit & Thi Huyen, 2016). According to the results, resilience in TVET should be viewed not only in terms of environmental and economic sustainability but also in terms of the sector's capacity to provide accessible and equitable learning opportunities during times of crisis (UNESCO, 2020).

2. Methods

The lived experiences of students with physical and cognitive disabilities enrolling in five TVET colleges in Johannesburg, South Africa, during the COVID-19 pandemic were investigated in this study using a qualitative phenomenological research design, as shown in Figure 1. Because it aims to comprehend how people interpret and make sense of their experiences within a certain context, phenomenology was chosen (Creswell, 2013). As a result, the design was ideal for investigating how educational disruptions, participation barriers, and support systems affected students with disabilities throughout the epidemic. Data were collected through semi-structured interviews and focus group discussions, which enabled participants to describe their experiences in their own words and reflect on the challenges and opportunities they encountered. Convenience sampling was used to select 40 participants from five TVET colleges, and then snowball sampling was used to find more students who fit the inclusion requirements. With the participants' permission, all focus groups and interviews were audio recorded, which were then verbatim transcribed. The phenomenological goal of finding shared meanings and experiences among participants served as the basis for the theme analysis of the data. The transcripts were read several times, key statements were inductively coded, codes were categorized into themes related to instructional practices, social participation, educational access, disability support, and practical training, and these themes were continuously improved through comparisons between participants and institutions. This procedure enabled the development of an interpretive narrative of how students with disabilities experienced continuity and exclusion in TVET education throughout the pandemic. Below is a synopsis of the methodological procedure.

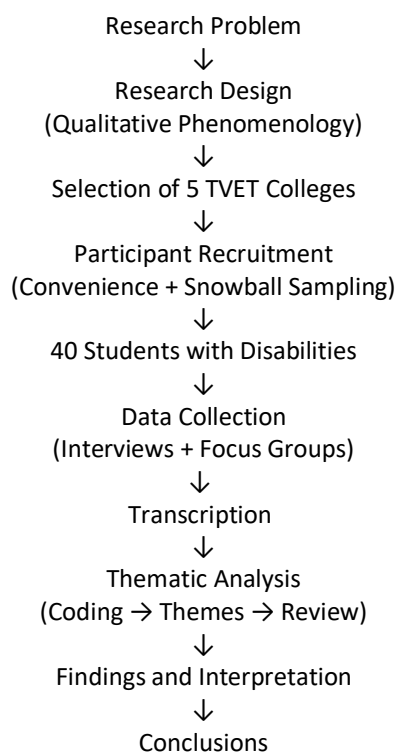


Figure 1. Research process and data analysis procedure

Research Design

An exploratory case study approach serves as the foundation for research design. To enable a thorough analysis of pandemic experiences and identify common characteristics, five TVET institutions in Gauteng were selected. Case studies are particularly useful for evaluating how COVID-19 affects TVET learning and disability inclusion because they enable the examination of complex phenomena in real-life contexts (Yin, 2018).

Case Selection

The five TVET colleges were chosen for their varied curricula, including computer technology, engineering, and health sciences. Every institution has unique advantages and disadvantages. For instance, although one college offered organised support systems for students with impairments, another encountered difficulty accessing online learning materials.

Participant Recruitment

Forty young people with a variety of disability profiles took part. Convenience sampling was used to recruit participants who met the inclusion criteria through contacts at the chosen colleges. Additionally, snowball sampling was employed, enabling early participants to recommend possible responders (Patton, 2015). In limited research settings, this strategy facilitates the recruitment of underrepresented populations.

Data Collection

Two focus groups and twenty-five semi-structured interviews were used to collect data. Data adequacy was determined by the availability of the learners and willingness to participate in focus groups and individual interviews. While guaranteeing that important study issues were covered, semi-structured interviews allowed participants to express their experiences in their own words (Kvale & Brinkmann, 2015). To encourage communication amongst employees at the five colleges, two focus groups were held. Focus groups allow participants to compare and consider common problems and institutional solutions, as well as to record collective experiences. Group-based approaches can yield rich qualitative data and reveal trends that would not be apparent in individual interviews, as Morgan (1997) shows.

Data Analysis

The qualitative data from focus groups and interviews were analysed using thematic analysis. The study followed a methodical yet adaptable procedure that included familiarisation, coding, topic generation, theme evaluation, and reporting in accordance with Braun and Clarke's (2006) recommendations. Coding concentrated on obstacles and resources, such as unavailable resources, inexperienced teachers, a lack of hands-on training, and a sense of being invisible. Then, rather than just identifying surface-level problems, candidate themes were established to reflect underlying systems. Through cross-case comparison, themes were examined for internal consistency and uniqueness. Lastly, interpretative synthesis was carried out with a TVET-focused understanding of the logic of practical training and a disability-inclusion perspective.

Trustworthiness, Ethics, and Rigour

Ethical permission was given by the Tshwane University of Technology Institutional Review Board. Confidentiality was maintained, informed consent was acquired, and participants were made aware of their right to withdraw (Liamputtong, 2007). Given the potential for participants to be identified in program and institutional support settings, the reporting minimized unnecessary information and employed pseudonyms (such as Thandi, Siphon, Aisha, and Lerato) to lower the risk of identification. One significant disadvantage is transferability. Although the study offers interpretive insight into mechanisms of inclusion and exclusion, the findings cannot be considered indicative of prevalence in other TVET contexts. Instead, the study's analytical depth and contextual explanation are what make it valuable.

3. Literature review

The COVID-19 epidemic had a major effect on Technical and Vocational Education and Training (TVET) schools, especially with regard to the inclusion of students with disabilities, according to a Scopus study of South African papers published during the preceding five years. The literature claims that emergency remote teaching revealed fundamental disparities in accessibility, digital engagement, and practical skill education in both South African and international contexts.

Research from around the world indicates that the shift to online learning presented significant challenges for students with impairments. According to UNESCO (2020), many colleges have failed to establish accessible learning environments, frequently ignoring screen reader compatibility, captioning, and alternate evaluation techniques. Similarly, the International Labour Organization (2021) noted that the difficulty of transferring workplace-based training and practical skills to virtual platforms caused disruptions for vocational learners.

Additionally, research from Europe and Asia-Pacific showed that schools with inclusive digital practices and well-established accessible policies were better at keeping students engaged during lockdowns (UNESCO-UNEVOC, 2020). An Australian case study claims that by implementing Universal Design for Learning (UDL) frameworks, educational institutions improved learning outcomes and decreased student disengagement through proactive support services, flexible assessments, and accessible technologies. Mesuwini (2024) enumerated issues facing the TVET industry, such as restricted device access, poor connectivity, insufficient online readiness, and interruptions to hands-on learning.

According to the literature, COVID-19 did not create new inequality in South Africa, but rather exacerbated pre-existing exclusion. According to Ndlovu (2021), accessibility issues that affected students with disabilities were there before the pandemic but were more apparent during emergency remote instruction. Ndlovu's (2023) comprehensive study found that many institutions had sufficient disability-inclusive planning, which limited access to instructional materials and support services. Case studies from South Africa bolster these worries. According to Ngubane-Mokiwa and Zongozzi (2021), the lack of assistive technology and support services during lockdowns made students with disabilities more alienated. In a similar vein, Magedi et al. (2023) documented issues with inadequate coordination, inconsistent accommodations, and poor communication between teachers and disability support units.

The literature claims that accessibility, institutional preparedness, and inclusive teaching strategies are all essential for educational resilience. The evidence suggests developing TVET systems with Universal Design for Learning, accessible technologies, and disability-responsive support mechanisms to ensure equitable participation during future crises.

4. Theoretical section

By connecting disability inclusion and crisis pedagogy with TVET's practical-training logic, the results can be comprehended. The epidemic revealed how learning continuity hinges on instructional design, support systems, and institutional responsiveness, rather than seeing the difficulties as a straightforward transition from in-person to online learning.

TVET education is by its very nature practical, students must gain competences through practical exercises, workplace simulations, mentoring, and ongoing feedback. Vocational skills are frequently learned through repeated practice and supervised involvement, in contrast to traditional academic programs. The training-feedback-mastery loop that supports employability and competence development was thus upset by the quick shift to remote learning. According to Czerniewicz et al. (2020), when learning relies on contact, scaffolding, and steady support structures, emergency remote teaching can compromise educational continuity and is very different from planned online learning. In TVET settings in South Africa, where practical training is essential to curriculum delivery, these difficulties were especially severe.

Online education is not inherently inclusive, according to a critical disability perspective. Meaningful engagement is not always ensured by having access to digital channels. Accessible content, assistive technology, alternate communication formats, and flexible teaching methods that take into account a range of learning requirements are all necessary for inclusion. According to Averett (2021), many institutions prioritized technology provision over accessibility and instructional adaptation, which resulted in major obstacles for students with disabilities during COVID-19. According to critical disability theory, exclusion is frequently caused by ableist presumptions and institutional practices rather than personal disabilities (Hall, 2019). As a result, students with disabilities may be systemically disadvantaged by inaccessible materials, a lack of captioning, incompatible learning platforms, and insufficient support services.

Crisis pedagogy also emphasises that equal learning is not always guaranteed by preserving educational continuity during emergencies. Quick changes frequently put content delivery ahead of inclusive design, which limits chances for significant engagement (Czerniewicz et al., 2020). Inaccessible resources, less opportunities for hands-on learning, a lack of support, and insufficient accommodations for remote participation can all lead to exclusion in the context of disability-inclusive TVET. According to participant experiences, online education was not seen as a suitable substitute for in-person vocational training. Rather, the disruption revealed deeper structural issues with TVET institutions, showing that information transmission alone cannot completely replace hands-on, experiential learning without radically rethinking methods to vocational training.

5. Results

Participants in the interviews consistently reported that while online learning frequently "continued," it did not consistently facilitate learning continuity for students who need adjustments relating to their disabilities. Not only was disruption perceived as a short-term shift in delivery, but also as a daily obstacle rooted in disorganised communication, inaccessible content, and disrupted, career-threatening practical routes.

Students studying engineering and health sciences, for instance, discussed projects related to waste management, local environmental monitoring, and sanitation practice initiatives influenced by changing health standards. These results are consistent with studies conducted in the Asia-Pacific region that indicate TVET institutions that use green training and modules exhibit greater resilience to disruptions (Klaus-Dieter & Thi Huyen, 2016; UNESCO, 2020). Additionally, according to a 2020 World Bank survey, TVET institutions with well-established greening initiatives were better equipped to make the shift to pandemic-resilient operations while preserving crucial hands-on learning through community gardening initiatives, renewable energy projects, and hygiene-focused entrepreneurial work. Although acceptance of greening remains low in South Africa, participant narratives indicate a growing interest in green professions and the importance of environmental skills for recovery after the pandemic. Crucially, students with disabilities showed a strong interest in inclusive, accessible green projects, supporting claims that developing inclusive green skills increases resilience and employability (International Labour Organization, 2021; UNESCO-UNEVOC, 2020).

Accessibility and Pedagogical Unpreparedness

Participants talked about two related issues of continuity failure, or the challenges of online learning: (a) the accessibility of learning resources and (b) the preparedness of instructors for remote pedagogy. When these errors occurred concurrently, learning became ambiguous, slow, and even emotionally hazardous, especially for children who required accommodations for disability.

Learners with visual, auditory, or cognitive assistance needs reported that online resources were often not provided in suitable formats. Content that was theoretically "available" but effectively inaccessible included documents that screen readers could not interpret, slides with unintelligible layouts, movies without captions, and learning instructions that assumed independence without assistive assistance.

The study's account of Thandi, for example, demonstrates how "access can fall short in real-world situations: resources were disseminated online but not in easily accessible formats, leading to misunderstandings rather than facilitating autonomous engagement." It was evident from her description that the barrier was not merely misunderstanding but actually the incapacity to get the necessary education.

Cumulative impacts were also reported by participants. Paul stated, for instance, "Students fell behind on subsequent assignments when weekly resources were missing, particularly when those assignments depended on earlier explanations". As a result, the barrier appeared to be more permanent than transient. UNESCO's advice, which makes a distinction between providing content and supporting accessible participation in distance learning programs, supports this interpretation (UNESCO, 2020).

Participants also described cumulative effects. When weekly materials were unavailable, students fell behind in subsequent assignments, particularly when those assignments depended on earlier explanations. The barrier therefore seemed more enduring than temporary. This view is supported by UNESCO's advice, which distinguishes between content distribution and ensuring accessible participation in distance learning initiatives (UNESCO, 2020).

This tendency is consistent with research showing how crucial teacher training is for equity and inclusion in digital pedagogy. Van De Werfhorst, Kessenich, and Geven (2022) claim that when teachers are unprepared, students may be less open to changes and have less interaction. Participants conceptualized barriers as shortcomings in instructional design and access rather than as distinct technology problems. When platforms were confusing, materials were lacking, and communication lacked structure, learners saw learning interruption as a lived everyday constraint rather than a controllable disturbance.

Feelings of Isolation (Loss of Peer Support and Visibility)

Isolation worsened during COVID-19 because TVET learning is not just instructional but also social, mentoring-based, and supported by peer visibility. In-person education usually offers peer companionship, unofficial support, disability-aware feedback loops through observation, and timely staff recognition of learner problems. Aisha's remark of feeling invisible perfectly captured this shift. She discussed diminished institutional reaction and diminished online presence. "It felt like an absent participant rather than someone who needed adjustment". She claims that because she could no longer rely on professional observation or the presence of peers to confirm learning progress and misconceptions, being invisible had an effect on her motivation and mental health.

Practical Training as Core Value (Competency Disruption and Employability Anxiety)

Participants generally described practical training as vital. Lerato's claim that "watching videos is not the same" highlighted the differences between watching processes and using tools and between supervised feedback and remedial advice for practicing skills.

Even when theoretical work continued online, learners struggled to make the shift from knowledge to competency. The shift from watching to take part did not occur in the same way. There were two results from this theme:

1. Concern about skill acquisition: students described "missing practice," not just missing lessons, due to lost rehearsal and fewer opportunities for supervised corrective feedback.
2. Employability anxiety: participants were concerned about the long-term effects on their careers. Demonstrated practical competence can impact hiring, job placement, and employer selection in TVET settings. Interruptions to practical training were therefore perceived as risks to future prospects, particularly because students believed their lack of preparation would continue to hinder their ability to enter the workforce.

Breaks in the competency pathway were perceived as disruptions. The rupture of the "learning by doing" identity led to skill gaps and increased anxiety about employability prospects even when theoretical learning persisted.

Needs for Institutional Support (Accessible Resources, Mentorship, and Adaptive Services)

Participants highlighted institutional support as a factor that could lessen harm, even as they described obstacles related to pedagogy and access. Thandi's appeal for proactive mentoring and easily accessible resources emphasised that support should not be given in a general manner but rather should be customised to how students really obtain information and hear explanations. Aisha also discussed how the college's online tutoring program improved her experience. Through modifications to tempo and explanation style, tutoring reestablished inclusiveness, enhanced perseverance, and restored clarity.

Institutional support functioned as an access mediator. When colleges implemented accessible content, disability-aware tutoring, and mentorship, they did not merely offer services; they created continuity structures that made remote learning navigable and emotionally manageable. Overall, the findings show that equity was not always the result of TVET interruption during COVID-19. Rather, pandemic experiences exposed a discrepancy between the online platforms and delivery methods utilised to replace in-person instruction and TVET's practical training approach. Inaccessible learning resources, unprepared distant instruction, diminished social visibility and peer support, and disrupted practical training routes all contributed to the marginalisation of learners. The study also found a workable solution: adaptive institutional techniques can lessen harm and promote continuity. These measures include accessible formats, disability-aware tutoring, structured mentorship, and inclusion scaffolding.

Greening of TVET Colleges

Lastly, the importance of practical skills in sustainability-related sectors for promoting educational continuity during the COVID-19 pandemic was a recurrent theme in participants' narratives. Despite delays in regular teaching and work-placement arrangements, several students noted that training topics in environmental services, sustainable agriculture, and renewable energy remained relevant. Participants observed that because some practical activities comprised smaller groups, were conducted in outdoor settings, or were still considered necessary during times of constraint, they could be modified more readily than in other vocational programs.

Although there were fewer in-person activities, students participating in agriculture-related programs stated that certain learning opportunities persisted through modified practical sessions and virtual instructor support. According to one participant, to adhere to health laws while still enabling students to acquire vocational skills, practical chores, including soil preparation, irrigation planning, and composting operations, were rearranged. According to these reports, sustainability-related training areas can provide greater flexibility in maintaining hands-on learning during times of disruption.

The participants also emphasised the ongoing importance of skills related to environmental services and renewable energy. Even when economic activity in other areas slowed, students reported that these sectors were seen as providing employment chances. Participants' experiences indicate that training associated with sustainability-oriented industries was perceived as more adaptive to crisis conditions than some standard vocational pathways, even though it did not directly provide evidence of labour-market outcomes.

The significance of incorporating health, safety, and environmental practices into vocational training was another finding. Participants stated that their knowledge of pandemic-related health needs, such as hygiene practices, personal protective equipment (PPE), and safe working procedures, was aided by earlier exposure to workplace safety measures. James, one of the participants, clarified: "Phased checklists for risk detection, safe material handling, and sanitary work practices were frequently incorporated in green module education." This experience suggests that training incorporating environmental health and safety principles may help students adapt more effectively to emergencies requiring heightened attention to health and risk management.

The results also emphasised how crucial inclusion is for maintaining involvement during disruptions in education. Despite disruptions to regular instruction, students with disabilities reported being able to complete their studies because they had access to modified learning materials, flexible assessment schedules, and additional learning support. Participants observed that transitions to alternative learning arrangements were typically less disruptive when accessibility measures were already incorporated into teaching practices. These incidents highlight how crucial it is to incorporate accessibility and inclusion into TVET programs to reduce the risk of exclusion in future crises.

Overall, participant reports indicate that inclusive teaching methods and sustainability-focused training programs may help TVET institutions become more resilient during times of disruption. However, these results should not be taken as direct proof of institutional or labour-market consequences, as they reflect students' perspectives and experiences. The following Discussion section examines broader implications for greening TVET and pandemic resilience.

6. Discussion

The findings of this study suggest that while South African TVET colleges successfully maintained instructional delivery during the COVID-19 pandemic, they did not consistently ensure meaningful continuity of learning for students with disabilities. Participants' experiences indicate that the pandemic exposed and intensified existing inequalities rather than creating entirely new challenges. This observation supports Ndlovu's (2023) argument that students with disabilities experienced barriers during the pandemic that reflected longstanding shortcomings in institutional preparedness and support. Similarly, Ndlovu (2021) contends that COVID-19 magnified pre-existing patterns of exclusion within South African education rather than initiating them.

A central finding concerns the distinction between access to learning materials and their accessibility. Participants reported that resources were often uploaded online but were not available in formats compatible with assistive technologies, such as screen readers or captioning systems. As a result, content that was technically

available remained functionally inaccessible. These findings are consistent with Magedi et al. (2023), who found that students with disabilities frequently encountered difficulties because lecturers overlooked accommodations such as enlarged fonts, additional assessment time, and accessible study materials. The results, therefore, suggest that accessibility should be embedded into curriculum design rather than treated as an additional support service offered only when difficulties arise.

The report also emphasises the importance of lecturers being ready for the shift to online instruction. Participants talked about poorly organised online courses, uneven communication, and a lack of knowledge about disability-inclusive teaching methods. These results are consistent with those of Aina and Ogegbo (2022), who discovered that a lack of institutional support and insufficient training made it difficult for many TVET instructors in South Africa to adjust to virtual instruction. As a result, pupils faced difficulties that stemmed from both pedagogical and technological constraints. This result highlights the necessity of Universal Design for Learning (UDL) strategies that account for learner diversity and incorporate accessibility into curriculum development, teaching, and evaluation from the start (Ndlovu, 2023).

The report also emphasises the importance of lecturers being ready for the shift to online instruction. Participants talked about poorly organised online courses, uneven communication, and a lack of knowledge about disability-inclusive teaching methods. These results are consistent with those of Aina and Ogegbo (2022), who discovered that a lack of institutional support and insufficient training made it difficult for many TVET instructors in South Africa to adjust to virtual instruction. As a result, pupils faced difficulties that stemmed from both pedagogical and technological constraints. This result highlights the necessity of Universal Design for Learning (UDL) strategies that account for learner diversity and incorporate accessibility into curriculum development, teaching, and evaluation from the start (Ndlovu, 2023).

Perhaps the biggest obstacle participants faced was the interruption of practical training. TVET education mainly relies on experiential learning and is essentially competency-based. Participants repeatedly emphasised that supervised skill development and hands-on experience could not be replaced by watching demos online. This result highlights a significant drawback of emergency remote instruction in vocational education. Opportunities to develop practical skills were severely limited, even though theoretical learning could continue online. Mesuwini (2024) found that South African TVET students faced substantial difficulties with online learning and technological constraints, raising similar concerns.

Concerns regarding future employability were also exacerbated by the disruption of hands-on learning. Participants believed that limited exposure to workplace skills would negatively affect their preparation for employment and their professional confidence. These issues are especially important in light of South Africa's high rates of youth unemployment. According to the findings, disruptions to vocational training may affect long-term employment prospects as well as academic success.

Notwithstanding these difficulties, participants recognised institutional assistance as a critical component in reducing the impact of disruption. Maintaining educational continuity was seen to require accessible resources, mentorship programs, tutoring programs, and disability-aware support services. These results corroborate other research conducted in South Africa, which highlights the significance of proactive institutional support for students with disabilities during times of crisis (Magedi et al., 2023; Ndlovu, 2023).

Lastly, the results imply that greening TVET institutions could support both economic and educational resilience. Participants reported projects pertaining to sustainable agriculture, renewable energy, waste management, environmental health, and sanitation. Throughout the epidemic, these programs remained relevant and offered various ways to learn and develop skills. The results, however, also show that inclusive implementation of greening efforts is necessary. Students with impairments may continue to face marginalisation in the development of green sectors if accessibility is not given due consideration. To guarantee that green transitions support social justice and resilience, sustainability and inclusiveness should be pursued concurrently.

Overall, the results show that the pandemic revealed serious flaws in the inclusion and accessibility of South African TVET education. For students with impairments, educational continuity was compromised by social isolation, insufficient online pedagogies, inaccessible resources, and disrupted practical learning. However, the study also demonstrates how accessible green skills projects, inclusive teaching methods, and disability-responsive support systems can boost resilience and advance more equal educational results.

7. Conclusion

The COVID-19 pandemic exposed significant challenges in delivering inclusive TVET education for students with disabilities. The findings show that many students faced barriers to learning continuity, including inaccessible online resources, inadequate disability support, reduced interaction with peers and lecturers, and disruptions to practical training, which is central to vocational competence development. These challenges affected students' academic progress, sense of belonging, and perceptions of future employability.

The study also highlights the importance of institutional preparedness in mitigating educational disruption. Participants reported more positive learning experiences when accessible materials, flexible teaching approaches, assistive technologies, and disability-responsive support were available. In contrast, limited preparedness and inadequate accessibility measures intensified existing inequalities and restricted meaningful participation.

These findings demonstrate the need for TVET institutions to integrate disability inclusion into crisis preparedness and educational planning. Strengthening accessible digital infrastructure, providing assistive technologies, developing contingency plans for practical and workplace-based learning, and maintaining effective disability support are essential for sustaining equitable learning during future disruptions. Policies and monitoring mechanisms should also strengthen institutional accountability for inclusive education.

Overall, TVET resilience depends not only on maintaining teaching during emergencies but also on ensuring that students with disabilities can participate equitably in learning and skills development. While greening TVET may provide a valuable direction for future policy and research through its emphasis on sustainability and adaptability, this study primarily demonstrates that accessibility, institutional support, and inclusive teaching practices are fundamental to reducing educational inequalities and strengthening TVET systems during crises.

8. Recommendations

Based on the results, the study recommends several strategies to strengthen institutional resilience and learning continuity in TVET colleges during future crises. First, TVET institutions should invest in continuous professional development for instructors, with emphasis on inclusive online and blended teaching strategies. Educators should be equipped to adapt instructional materials and delivery methods to changing learning conditions. The study also recommends flexible instructional models that can transition between face-to-face, online, and hybrid delivery. Modular course structures and a combination of synchronous and asynchronous learning can support continuity while accommodating diverse learner needs. TVET institutions should further develop contingency plans that incorporate industry partnerships, digital technologies, and simulation-based approaches to support practical skills development when conventional training is disrupted. Finally, institutions should establish monitoring and evaluation mechanisms to assess the effectiveness of emergency teaching interventions and inform future preparedness. Future research should examine the long-term effects of disability inclusion, blended learning, and crisis-response strategies in TVET settings. The potential contribution of the greening TVET agenda to sustainable and inclusive skills development also warrants further investigation.

Conflict of Interest

There is no conflict of interest. Nothing to disclose.

References

- Averett, K. H. (2021). Remote learning, COVID-19, and children with disabilities. *AERA Open*, 7, 23328584211058471. <https://doi.org/10.1177/23328584211058471>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp0630a>
- Creswell, J. W. (2013). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. Sage Publications. <https://www.ceil-conicet.gov.ar/wp-content/uploads/2018/04/CRESWELLQualitative-Inquiry-and-Research-Design-Creswell.pdf>

- Czerniewicz, L., Agherdien, N., Badenhorst, J., Belluigi, D., Chambers, T., Chili, M., ... & Wissing, G. (2020). A wake-up call: Equity, inequality, and the Covid-19 emergency in remote teaching and learning. *Postdigital Science and Education*, 2(3), 946-967. <https://doi.org/10.1007/s42438-020-00187-4>
- Hall, M. C. (2019). Critical disability theory. <https://plato.stanford.edu/entries/disability-critical/>
- Hoftijzer, M., Levin, V., Santos, I., & Weber, M. (2020). TVET systems' response to COVID-19. Washington, D.C. : World Bank Group. <http://documents.worldbank.org/curated/en/930861589486276271>
- International Labour Organization. (2021). *Skills development and the future of work in the context of the COVID-19 pandemic*. Geneva: ILO. <https://doi.org/10.1163/15723747-18030004>
- Klaus-Dieter, M., & Thi Huyen, M. (2016). Greening TVET: A global perspective. <https://saltogreen.eu/wp-content/uploads/2025/04/Greening-technical-and-vocational-education-and-training.pdf>
- Kvale, S., & Brinkmann, S. (2015). *InterViews: Learning the Craft of Qualitative Research Interviewing*. Sage Publications. <https://doi.org/10.1177/1354067X16650816>
- Landa, N., Zhou, S., & Marongwe, N. (2021). Education in emergencies: Lessons from COVID-19 in South Africa. *International review of education*, 67(1), 167-183. <https://doi.org/10.1007/s11159-021-09903-z>
- Liamputtong, P. (2007). *Researching the Vulnerable: A Guide to Sensitive Research Methods*. Sage Publications. <https://books.google.co.za/books?id=Mc9-5oOQhKgC>
- Magedi, M. J., Rakgogo, T. J., Mnguni, O. S., Segabutla, M. H., & Kgwete, L. (2023). COVID-19 and its impact on students with disabilities: A social justice expression at a South African university. *Transformation in Higher Education*, 8, 1-14. <https://doi.org/10.4102/the.v8i0.212>
- McRuer, R. (2006). Crip Theory: A Critical Cultural Studies of Disability. <https://doi.org/10.1080/10714413.2012.687284>
- Mesuwini, J. (2024). South African TVET students' perceptions of their online learning experiences and challenges: A pilot study. *International Journal of Learning, Teaching and Educational Research*, 23(9), 592-616. <https://doi.org/10.26803/ijlter.23.9.29>
- Mhlanga, D., & Moloi, T. (2020). COVID-19 and the digital transformation of education: What are we learning on 4IR in South Africa? *Education Sciences*, 10(7), 180. <https://doi.org/10.3390/educsci10070180>
- Morgan, D. L. (1997). Focus groups as qualitative research. Sage Publications. <https://methods.sagepub.com/book/mono/focus-groups-as-qualitative-research/toc>
- Ndlovu, S. (2021). The impact of COVID-19 on students with disabilities' access to education in South Africa. *Journal of Social Development in Africa*, 36(1), 131-156. <https://doi.org/10.20853/36-4-5194>
- Ndlovu, S. (2023). Preparedness and response to COVID-19 disruptions and learning challenges for students with disabilities in South Africa: A systematic review. *Sustainability*, 15(2), 1420. <https://doi.org/10.3390/su15021420>
- Ngubane-Mokiwa, S. A., & Zongozi, J. N. (2021). Exclusion reloaded: The chronicles of COVID-19 on students with disabilities in a South African open distance learning context. *Journal of Intellectual Disability Diagnosis and Treatment*, 9(2), 137-147. <https://doi.org/10.6000/2292-2598.2021.09.01.17>
- Patton, M. Q. (2015). *Qualitative Research & Evaluation Methods*. 4th Edition, Sage Publications, Thousand Oaks. <https://www.scirp.org/reference/referencespapers?referenceid=1915688>
- UNESCO (2025). Guidance on distance learning | UNESCO. <https://www.unesco.org/en/digital-education/distance-learning-guidance>
- UNESCO. (2020). *Education in a post-COVID world: Nine ideas for public action*. Paris: UNESCO. <https://www.unesco.org/en/articles/education-post-covid-world-nine-ideas-public-action>
- UNESCO-UNEVOC. (2020). *Strengthening the Responsiveness, Agility and Resilience of TVET Institutions for the Post-COVID-19 Era*. https://connect.unevoc.unesco.org/pub/covid-19_response_project_final_report.pdf
- Van De Werfhorst, H. G., Kessenich, E., & Geven, S. (2022). The digital divide in online education: Inequality in digital readiness of students and schools. *Computers and education open*, 3, 100100. <https://doi.org/10.1016/j.caeo.2022.100100>
- World Bank Blogs (2021). [COVID-19 highlights the urgency of TVET reforms](https://blogs.worldbank.org/education/covid-19-highlights-the-urgency-of-tvet-reforms).
- Yin, R. K. (2018). *Case Study Research and Applications: Design and Methods*. Sage Publication. <https://www.sagepub.com/shop/buy-a-book/case-study-research-and-applications-6-250150>

Cite this article as:

Muzite, P., & Khoza, S. (2026). An Analysis of How TVET Colleges in South Africa Can Help Mitigate Future Global Pandemics : Insights from the Experiences of Students with Disabilities. *GHMJ (Global Health Management Journal)*, 9(3), 291–301. <https://doi.org/10.35898/ghmj-931350>