



Teaching Visually Impaired Learners through ICTs: Lessons from Teachers' Perceptions in a Full-Service School

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Abstract

An international shift towards inclusivity has prompted the use of Information Communication Technologies (ICTs) to teach Visually Impaired Learners (VILs) accommodated in Full-Service Schools (FSSs). This paper explores teachers' perceptions of using ICTs to teach VILs in a Full-Service School (FSS). The study adopted a qualitative case study design while nested within the interpretive paradigm. Focus group interviews, observations and document analysis were triangulated to collect data. Purposive sampling was conducted to identify suitable teachers, and subsequently, four focus groups consisting of five teachers (20 in total) each were conducted. Generated data were analysed thematically. Despite the positive perceptions towards using ICTs to teach VILs, teachers experience challenges when using ICTs to teach VILs. We recommend that the school procure adequate and various ICTs used to teach VILs.

Keywords: Information Communication Technologies; Visually Impaired Learners; Full-Service School; Inclusive Education

Introduction

Full-service schools or inclusive schools are ordinary or mainstream schools that are meant to give access to quality education to all children living in a particular area, irrespective of their learning needs (Department of Education (DoE), 2001). Accommodation of learners with disabilities, specifically VILs in FSSs, has compelled teachers to blend ICT modalities in their teaching. Such devices provide flexibility in teaching, wherein teachers' attitudes, ICT knowledge, and skills play a significant role in their effective usage (Biswalo, 2024). To truly understand and implement the vision of using ICTs to teach VILs, it is important to first clarify the definition of ICTs since the concept has been evolving over time (Cheng, Lavieri, de Sá & Astroza, 2024), and researchers should avoid discussing technology in a general and naïve way (Mertala, 2020). ICTs refer to all communication technologies (software and hardware) that

comprise the internet, wireless networks, cell phones, social networking, and other media applications and services (Enebeli, 2024). This study explores teachers' perceptions about using ICTs with VILs within FSS (Yang, 2024).

Approximately 350,000 children under 15 years are blind in Sub-Saharan Africa (Eticha, Tsegaye, Assem, Alemu & Birhan, 2024). Studies have revealed that South Africans experience severe visual difficulty (Sinclair, Sussman, Zerrouk, Savahl, Florence & Vanderplasschen, 2025; Lourens & Zeyen, 2024; Botha & Watermeyer, 2024). As of 2022, there were 832 FSSs and 489 Special Schools in South Africa (Mbingo-Gigaba, 2023). However, according to Statistics South Africa (2016), at least 180,957 individuals aged 5–24 years, experience some functional limitations. As a result, there are insufficient schools to accommodate all school-aged learners with functional limitations in both inclusive and special education settings. In the main, special and inclusive schools became a

government strategy to ensure that all learners had access to quality education regardless of age, race, gender, cultural background and mental or physical state. While this imperative is critical, inclusive schools pose some challenges for some teachers (Hugo & Mobara, 2024; Maesala & Ronél, 2024; Walton & Engelbrecht, 2024). For instance, teachers encounter numerous challenges when teaching VILs in inclusive classrooms. These challenges include inadequate resources, strained support systems, limited expertise, and insufficient time to effectively accommodate such learners without disturbing their peers (Hugo & Mobara, 2024). Inclusive education for VILs in the Free State Province of South Africa was of particular interest in this study, as it has not previously been explored from teachers' perspectives.

It is noteworthy that VILs are a heterogeneous population (McLinden, Douglas, Hewett, Lynch & Thistlethwaite, 2020). As such, they benefit from differentiated teaching, which provides elements that promote a positive learning environment. Teachers must recall this issue before lesson preparations since cognitive skills mature at different rates and in different ways for each person (Hobbiss & Lavie, 2024). Teachers are required to offer the necessary support and adaptations (Moustache & Makhoba, 2024), not only to VILs, but also to sighted peers, achieving inclusion in its true sense (Hugo & Mobara, 2024). Therefore, using ICTs to teach VILs not only improves the quality of teaching but correspondingly enables VILs to develop skills, enhance their motivation, and advance their knowledge and information efficiently (Cheng, Hung, Chang, Lin & Lai, 2018).

Adaptability in teaching methods enables teachers to readily incorporate ICTs and approaches into their lessons, adapting them to different VILs and learning styles (Lanbon, Lee & Yan-Li, 2021). Adaptability is associated with using ICTs to create unique learning experiences (Sukma, Ramadhan & Ikhlasi, 2024). Also, ICTs offer adaptable learning methods that can make provision for diverse needs, allowing VILs to acquire quality education (Parwoto, Llas, Bachtiar & Marzuki, 2024). In this context, teachers' conventional responsibility of being a 'sage on stage' has been remodelled to being a 'guide on the side' (Bailey, 2024), and the VILs' responsibility

has been remodelled from being an inactive beneficiary of subject matter to being a functional participant in the process of teaching and learning (González-Pérez & Ramírez-Montoya, 2022). Since 2001, the education system in South Africa has endorsed the use of hardware and software devices such as Job Access on Windows (JAWS), Zoom text, Windows Eyes, No-Visual Desktop Access (NVDA) and Integrated White Board (IWB) to encourage VILs to fully participate in their classrooms.

Literature reveals the importance and efficacy of using ICTs to teach VILs (Sri Takshara & Bhuvaneswari, 2025; Sharma, Dureja, Saini, Jose, Pant & Singh, 2025; Biswalo, 2024). Effective use of ICTs to teach VILs is crucial since ICTs help VILs to gain access to digital and textual data (Fuentes, Moreno, & Díez, 2022). VILs can use ICTs to complete their assignments. Similarly, Sharma et al. (2025) emphasise that ICTs are an important tool which enhances the academic performance of all learners, especially VILs. The process of using ICTs to teach VILs is complicated and requires all stakeholders in a FSS to collaborate with teachers of VILs to design Individual Support Plans (ISPs) for each VIL (Chisango, Marongwe, Mtsi & Matyedi, 2019), which include how teachers intend to differentiate curriculum for each VIL (Mogale, 2024). Regular communication to achieve harmony on which ICTs to teach each VIL demands a relationship of trust between teachers and VILs (Kizilaslan, Zorluoğlu & Sozbilir, 2021). Without ICTs, teachers would not be able to teach VILs, and this group of learners will continue to underperform academically (Zorluoğlu, Kizilaslan & Sozbilir, 2021).

In the process of using ICTs, teachers benefit by gaining the ability and confidence to arrange for accessible learning materials in alternative formats such as Braille and audio, allotting for participation that is higher, improved communication, and an extra inclusive environment, thus permitting VILs to engage actively during teaching and learning (Oji, Okanume & Nwabueze, 2024). However, teachers face challenges when using ICTs to teach VILs. These include lack of ICTs used to teach VILs, lack of ICT infrastructure, lack of expert technical support, lack of electricity, lack of funds needed to buy ICTs used to teach VILs, lack of effective

training on how to use ICTs to teach VILs, expensive ICTs used to teach VILs and lack of teacher competency (Sharma et al, 2025; Lima, 2024; Chakabwatwa, 2024). This leads to the isolation of VILs, who ultimately cannot follow their envisaged careers. The academic performance of VILs in South Africa is poor, which indicates the need to improve the potential of ICTs to develop VILs' comprehension and intensify their interest in Science, Technology, Engineering and Mathematics (STEM) subjects in the early years (Liaga, Ogonnaya & van Putten, 2024).

The Department of Basic Education (DBE) initiated Education White Paper 6 (EWP6) (DoE, 2001) and e-Education (DoE, 2004) policies in South Africa to guide schools and teachers on the use of ICTs to teach all learners, including VILs. These two documents are very important because they shape the use of ICTs in FSSs and structure ICT-reinforced education development since the introduction of democracy in South Africa in 1994. The two policies delve into learner-centred approaches and the use of ICTs to satisfy the needs of VILs. Subsequently, the Screening, Identification, Assessment and Support (SIAS) policy persists in inspiring teachers to use ICTs when they teach VILs and requires further planned and all-embracing use of ICTs to teach VILs (DBE, 2014).

Clearly, the above-mentioned public policies show signs of demanding FSS teachers and FSSs to use ICTs in practically all facets of the educational context involving teaching and learning. This nature of demand affiliates with Mphahlele and Nel's (2018) findings, which presuppose that teachers in FSSs should use ICTs to teach VILs. Abdulah and Mahmud (2025) argue that one way to support this demand is to make sure that FSS teachers are trained on how to use ICTs to teach VILs.

Problem statement

In South Africa, teachers face significant challenges in using ICTs to teach learners who experience barriers to learning, particularly VILs. These challenges include the exclusion of VILs due to the lack of appropriate ICT tools, insufficient training for teachers on how to effectively use ICTs to support VILs, and

inadequate infrastructure needed for the successful implementation of ICT-based teaching methods (Walton & Engelbrecht, 2024). Despite these barriers, many teachers express positive attitudes and perceptions towards the potential of using ICTs to teach VILs. The presence of these positive perceptions can contribute to an increased use of ICTs in the classroom, suggesting that, with the right support, teachers are more likely to adopt technology in their teaching practices for VILs (Moradi, 2025; Akanzire, Nyaaba & Nabang, 2025). As a result, addressing these challenges and fostering a supportive environment for ICT integration could improve educational outcomes for VILs.

Research has shown that the use of ICTs in teaching can significantly enhance the learning experiences of learners with disabilities, including those with visual impairments (Sri Takshara & Bhuvaneshwari, 2025; Sharma et al, 2025). When teachers receive targeted professional development and access to the right resources, they are more equipped to utilise ICTs effectively, creating a more inclusive learning environment (Memon & Memon, 2024). This professional empowerment is crucial in overcoming the barriers that teachers and learners face, as it ensures that the teaching strategies are both accessible and impactful.

Additionally, scholars emphasise that the implementation of inclusive education policies, which incorporate ICT use, plays a vital role in promoting equality in education for learners with disabilities. Studies by Sayari (2024) as well Chakabwata (2024) indicate that governments and educational institutions need to prioritize investing in accessible technology and providing teachers with ongoing support and training. Such investments can lead to more sustainable and effective educational practices, ultimately benefiting not only learners with visual impairments but also other learners who face various learning barriers. Hence, this paper explore perceptions of using ICTs to teach VILs in a FSS.

Literature review

FSSs are targeted to deliver quality and equitable education to all learners, irrespective of the learning abilities (DBE, 2010:7). The DBE

(2010:21) postulates that one of the main reasons why presumed FSSs were inaugurated into the South Africa system was to offer support to learners with mild-to-moderate learning barriers. Learners with low vision are believed to have mild to moderate visual impairment. With regard to the use of ICTs to teach VILs in South Africa, reference is made to internal and external challenging factors leading to the disuse of ICTs to teach VILs. Internal factors denote conditions within the teacher and external factors are conditions outside the teacher. A moderate level of support refers to the nature of support that the teachers can use to advance to VILs in their classrooms with supplementary backing received from Learning Support Teachers (LST), counsellors, and therapists. Teachers perform a critical role in determining how ICTs are used to teach VILs (Sri Takshara & Bhuvanewari, 2025). They are supposed to use ICTs to encourage constructivist teaching, whereby VILs have a choice and control over their learning and perform active roles in genuinely learning with ICTs to develop collaborative, creative, critical thinking, high-order cognitive and problem-solving skills (Abedi, 2023). FSS teachers rely on DBE and IE officials from district offices for extra training and improvement of their know-how to use ICTs to teach VILs. This is notably correct when teachers all FSS teachers have to use ICTs to teach VILs.

Research aim and objectives

The aim of the study is to explore FSS teachers' perceptions about using ICTs to teach VILs in an FSS. To achieve this aim, the following research questions are addressed:

- What do FSS teachers understand about the use of ICTs to teach VILs?
- How do FSS teachers perceive the challenges and barriers associated with using ICTs to teach VILs?
- What benefits do FSS teachers identify in using ICTs for teaching VILs, and how do these align with their teaching practices?

Theoretical framework

To provide a comprehensive understanding of the factors influencing the use of ICTs in teaching VILs, this study applies Bronfenbrenner's bio-ecological systems model,

exploring the interplay of micro, meso, exo, macro, and chrono systems that shape teachers' perceptions and practices in a FSS (Bronfenbrenner, 1977, 1979). The model was selected as the theoretical framework because all its systems apply directly to this study. Bronfenbrenner (1979) conceptualised the ecosystem as a series of nested systems, each influencing the development of an individual. These include the microsystem which is the inner layer of Bronfenbrenner's bio-ecological model (Bronfenbrenner, 1979). Factors within this system include ICTs, LVIs, a FSS, beliefs and families of teachers who can influence teachers' perceptions towards the use of ICTs to teach VILs. These environmental factors may well support the use of ICTs, in which case the teachers may well have a positive attitude toward using ICTs since these proximal factors are the most influential. But, if the environment is unfavourable, these teachers may also have a negative attitude towards the use of ICTs to teach VILs.

According to Bronfenbrenner (1979), the mesosystem refers to the relationships among two or more microsystems. It indicates families of both teachers and VILs, a FSS, teachers, and neighbourhoods. If these systems support ICT use in schools, the teachers may not encounter difficulties in using ICTs to teach VILs. A disjuncture between the systems on the use of ICTs in schools could be hostile to the use of ICTs to teach VILs in a FSS. The system in which teachers are detached, yet what happens distracts them is called the exosystem. Teachers may not be part of the mass media that portrays the use of ICTs in a classroom as being harmful to VILs, which can ultimately negatively impact how teachers use ICTs to teach VILs. The macrosystem encompasses the broader cultural, societal, and ideological forces that shape an individual's development. Teachers' use of ICTs may be impacted by cultural beliefs, values, customs, and social norms, which will shade how teachers incorporate ICTs when they teach VILs (Yang, 2024). The chronosystem focuses on an ongoing process of how other systems impact individual development (Lasekan, Godoy Pena, Odebode, Mabica & Mogbadunade, 2024). According to Bronfenbrenner (1979), these nested structures work together to shape individual development. The current study locates FSS teachers at the

centre of interconnected systems asserting that they form perceptions about ICTs use to teach VILs through their interactions within these multi-layered ecosystems.

Research methodology

The research methodology for this study was grounded in a qualitative case study design situated within the interpretivism paradigm (Kalua, 2023). This approach allowed for an in-depth exploration of the teachers' perceptions of using ICTs to teach VILs in an FSS. To gather rich, detailed data, the study utilized a combination of focus group interviews, document analysis, and observations, which provided multiple perspectives and insights into the experiences and viewpoints of the participants (De Paoli, 2023). The use of focus group interviews facilitated interactive discussions where participants could ask for clarification on questions they found unclear, ensuring that responses were relevant and minimizing the risk of unnecessary or unclear answers (DeJonckheere & Vaughn, 2019).

In order to address the research questions, the researchers also analysed a variety of relevant documents, including the EWP6, the White Paper on e-Education, the School-Based Support Team(SBST) file, lesson plans, personal files of the participants, and profiles of the VILs. This document analysis allowed the researchers to assess the depth and breadth of ICT usage in teaching VILs within the context of FSSs, offering important insights into the institutional and policy frameworks guiding the use of ICTs in these schools (Bowen, 2009). This process not only complemented the data gathered from interviews and observations but also played a crucial role in reflecting the teachers' perceptions regarding the effectiveness and challenges of ICT use in the classroom.

The use of these various data generation instruments enabled triangulation, which promoted a more robust comparison of teachers' perceptions from different sources and perspectives. This triangulation of data helped to confirm the trustworthiness of the findings, ensuring a more accurate and credible understanding of the phenomenon under investigation, as outlined by Ahmed (2024). By combining focus group discussions, document

analysis, and observations, this study sought to provide a comprehensive understanding of the challenges and benefits of using ICTs to teach VILs, while also ensuring the reliability and validity of the research findings.

Sampling

To select information rich participants who donated relevant and rich data, purpose sampling was employed (Bowen, 2009). In order to select twenty teachers who used ICTs to teach VILs purposive sampling was used. Subsequently, the participants were varied and had between 5 and 35 years of experience in teaching in a primary schools that accommodated VILs. All 20 participants held teacher qualifications relevant in primary schools. For this study, participating teachers are coded FGT1 to FGT20, with the first teacher being FGT1 followed by FGT2, up to FGT20. They were requested beforehand by the first researcher to be interviewed and to have their documents analysed. He explained the purpose of the study to them. Four participants (FG1T5, FG2T1, FG3T1, and FG4T1) volunteered to participate during the observations and document data collection processes. They were shown the first researcher's ethical clearance letter from UNISA and were asked to read, understand, and sign consent letters.

Data collection

Consistent with the qualitative research methodology, we adopted the use of focus group interviews, classroom observations and document analysis to collect data (Tracy, 2024). Participants responded to focus group interview questions based on a prepared interview schedule on how teachers perceived the use of ICTs to VILs. Four participants volunteered to participate during the observation and document data collection processes. This approach specifically aimed to facilitate exploring the perceptions of teachers in using ICTs to teach VILs in Fezile Dabi District Office of Education in South Africa (Tracy, 2024). The interviews were recorded using a mobile phone, with each interview lasting 45 minutes. The interviews were conducted, transcribed and analysed by the first author.

Data analysis

Data analysis followed a thematic process (Liu, 2023). Focus group interviews with teacher participants, document analysis, and classroom observations were utilised to gather data, and the steps were successively followed by Creswell (2014) for data analysis. Therefore, data were classified and organised according to themes and codes. The data were assembled from teachers who were experienced in using ICTs to teach LVIs over a number of teaching years in FSSs and qualifications. The first researcher first used raw data from the research participants that were transcribed and codes that were prepared manually using highlighters and was correlated with assembled data. He utilised open coding that encompassed examining data by repetitively reading the copies of the participants' responses and the notes taken during document analysis and classroom observations. The authors then coded the similarities and the variances that appeared. In this activity, stickers that produced meaning from the information the participants offered were crafted. This included searching the links amid the open codes and determining what swayed these links, what situations triggered their occurrence and the backgrounds against which teachers used the ICTs to teach VILs. To obtain the essential themes, the first author tainted sections and grouped them according to patterns that appeared from the reviewed literature and from the teachers' utterances. The themes emerged from the major findings and the themes were arranged as they appeared. The themes were semantic and the author used precise data that were assembled from the participants and not latent themes with underlying ideas and assumptions.

Ethical considerations

Ethical clearance to conduct the study was obtained from the Unisa's College of Education's Research Ethics Review Committee. Furthermore, the Free State Department of Education's Research Directorate granted permission to the authors to conduct the study and the participation of a single FSS and individual teachers. Next, the principal of the identified FSS stipulated permission to conduct the study. All the participants received a request letter to participate in the study, which specified the purpose of the study and assured them that their involvement was

voluntary and they could withdraw from the study at any time (Dahal, 2024). The twenty participants conceded their informed consent after being assured that their privacy, confidentiality and anonymity would be protected (Semyonov-Tal, 2024). Moreover, the participants presented written permission for the focus group interviews to be audio-recorded. The ethical obligations extra included shielding the participants from harm and escaping any form practise of dishonesty (Dahal, 2024). Member checking provided a way for the authors to guarantee an accurate depiction of participants' voices by granting the participants a chance to confirm or deny the accuracy and interpretations of data (Brear, 2019), therefore accumulating credibility for this qualitative study. The participants' moralities were considered during the entire process and were treated with respect and fairness. The authors stored all hard and soft copies safely for a duration of 5 years as commanded by UNISA.

Results and discussion

The main purpose of the research was to explore the perceptions of teachers in FSS about the use of ICTs to teach VILs. The data presented five main themes, which are, (a) helping VILs to understand learning content better, (b) helping VILs to access information enclosed in printed materials, (c) allowing VILs to access same information such as sighted peers, (d) assisting teachers to teach VILs, and (e) improving VILs' knowledge and usage of ICTs. .

Theme 1: Helping VILs to understand learning content better

The data collected revealed that helping VILs to understand learning content better during teaching and learning is how teachers perceived using ICTs to teach VILs. In answering the question related to what teachers understood about the use of ICTs to teach VILs, FG1T1 said:

As teachers we use these ICTs in order to help these visually impaired learners to understand better during teaching and learning.

The teachers conveyed the view that VILs could acquire the same understanding and opportunities like their peers. FG2T4 said:

They can acquire the same understanding and have equal opportunities like other children

during teaching and learning because technology help me to do so.

FG3T2 added:

My understanding on the use of ICTs to teach learners who are visually impaired is that ICTs will help me to facilitate their deeper understanding of content and move learners from the unknown to the known and to make writing in bigger and in colour.

Teachers declared that using ICTs to teach VILs made learning better or helped VILs to transition smoothly from one stage to the other. FG1T3 said:

It smooths [sic] their learning.

The above information reveals that, teachers perceived the concept as helping VILs to understand better. Teachers' responses highlighted that the use of ICTs in classrooms that contain VILs helped them to improve their academic performance (Sharma et al, 2025; Kamaghe, Luhanga & Kisangiri, 2020). This implies that teachers in Fezile Dabi, South Africa supported the idea of using ICTs to teach VILs (DBE, 2014). Teachers' perceptions on using ICTs to teach VILs was instrumental, given that ICTs are the most convenient tools that teachers can adopt when teaching VILs (Biswalo, 2024; Adalakun, Abdulsalaam, Michael, Evangeline & Misibau, 2022). UNESCO (2020) has supported this viewpoint. Seemingly, the participants in this study concurred with Dong and Mertala (2021), and this rationale was directly shaped by the microsystem elements such availability and accessibility of ICTs (Mahdum, Hadriana & Safriyanti, 2019).

Teachers in the study expressed that ICTs significantly aided VILs in understanding learning content more effectively. As highlighted by several participants, the use of ICTs enabled learners to understand better during teaching and teaching, enhancing their understanding of various topics. One teacher noted that ICTs helped VILs to acquire the same understanding and have equal opportunities like their peers during teaching and learning. However, document analysis revealed that teachers' lesson plans did not include information on the use of ICTs to teach VILs. This lack of documentation suggests that, while

teachers may acknowledge the benefits of ICTs in theory, their practical application in lesson planning and execution remains insufficient. Additionally, observations indicated that teachers often applied a one-size-fits-all approach when using ICTs with VILs, which may limit the potential for personalized learning. The Universal Design for Learning (UDL) framework, which advocates for tailored educational approaches that meet the diverse needs of all learners, was not fully reflected in the classroom practices observed (Veshal, 2024).

The lack of individualized ICT usage underscores a gap between teachers' perceptions and the use of ICTs that could better support VILs' learning. This finding is consistent with research by Dunan, Mudjiyanto, Karman and Walujo (2025) and Sato dos Santos, De Andrade Rodrigues, Woodburn, Culver and Rafaela Galatti (2025), which emphasize that ICTs can enhance academic performance when used effectively. However, the application of these tools in classrooms needs to be more strategic and adaptable, as suggested by Dritsas and Trigka (2025), who stress the importance of personalized learning experiences.

Theme 2: Helping VILs to access information enclosed in printed materials

One of the reasons that teachers conferred about exactly their understanding of using ICTs to teach VILs was that ICTs help VILs to access information enclosed in printed materials. FG4T3 said:

“For me I understand that it is important to use information communication technology to teach such learners [LVIs] as these tools give access to information found in books.”

Teachers mentioned that they understood that it was important to use ICTs to teach VILs since ICTs convey to them clear descriptions of what is being discussed in the classroom and sometimes, they can experience the texture and landmarks of objects. FG4T3 said:

For me I understand that it is important to use information communication technology to teach such learners as these tools give access to information, the tools can give them a clear description of what I am teaching. Those tools

describe something to them because they can feel details such as the texture or shape and landmarks of objects.

FG1T5 mentioned the following on the same issue:

If I give them a laptop or computer that is connected to the internet or JAWS to use, it reads to these children a book in English. Computer or Laptop or Tablet is able to access many things that I teach in my class.

The information here shows another teachers' perceived merits of using ICTs to teach VILs as helping VILs to access information enclosed in printed materials. The Constitution of the Republic of South Africa (Section 29[1][a] (SA, 1996a) and the EWP6 (DoE, 2001) endorse this finding. Through ICTs, VILs are able to independently access printed and digital materials (Tom, Mpekoa & Swart, 2020). However, printed materials should be converted into Braille so that VILs can access them (Van Leendert, 2021). Contents of the School Based Support Team file disregarded this finding, as the file missed the catalogue of ICTs, which teachers recommended to VILs so that the learners could use them to access printed materials. The four lesson plans of the participants who were interviewed and observed were without information on ICTs arranged to be used to help VILs access printed information predominantly under the section 'teacher activities and resources. The microsystem requires ICTs that VILs can use to access printed materials.

Theme 3: Allowing VILs to access same information like sighted peers

Another perceived merit of using ICTs to teach VILs was that ICTs allowed VILs to access the same information like their peers. FG2T4 said the following:

"I try to use them [ICTs] help them [LVIs] to access education like their peers"

Teachers perceived that they were obliged to use ICTs to teach VILs since they desired to show VILs' parents their peers and other teachers that although VILs lacked vision, they too can learn like their sighted peers. FG2T1 said the following:

I understand that I should use these ICTs in order to show other learners, parents and colleagues that even though learners who are visually impaired cannot see, they can learn like their sighted peers.

FG1T1 concurred thus:

I load a taped message for them, and they will listen to it through the headphones while they are sitting with other children in the same classroom because that information is the same for all my learners.

The teachers mentioned that they recognised the concept as allowing VILs to access same materials like sighted peers. This finding is validated by Copy Right Act (No 98 of 1978) (RSA, 1978), which conveys that VILs should be allowed to access information through alternative forms of access such as tactile graphics, enlarged or audio-converted text. The view is also echoed by other researchers (Sri Takshara & Bhuvanewari, 2025; Sharma et al, 2025). VILs can download, print, and submit their homework to their classroom teachers the same homework like their sighted peers without requiring assistance from others (Shaheen, 2024). However, observations revealed that the ICTs used to teach VILs were not tailored to the specific needs of VILs. For example, while ICTs were used to project written materials on the screen, they were often not customized to enhance the sensory experience of VILs, such as through the use of tactile or haptic devices. This suggests that, although teachers recognized the importance of providing equal access to information, the actual implementation did not always align with these intentions.

Theme 4: Assisting teachers to teach VILs

In South Africa, teachers comprehended the concept as using ICTs to assist teachers to teach VILs. Teachers complemented this testimony by indicating that the use of ICTs in a classroom, helped them when they taught VILs. FG2T3 said:

'The white board helps me to write with big letters so they will be able to see my writing on it'.

FG3T1 had this to say:

'These tools can help us with curriculum adaptations'

And FG4T4 said:

'These tools helps me when I want to enable collaborative work between themselves [LVIs] and sighted peers'

According to the participant teachers, VILs assisted teachers to teach effectively. ICTs help teachers to meet curriculum expectations and connect VILs with authentic learning (Abedi, Prestridge & Hodge, 2024). Other researchers (Shahira & Lijiya, 2021; Chaidi, Drigas & Karagiannidis, 2021; Verver, Vervloed & Steenbergen, 2020) endorse this statement. When the microsystem is stuffed with relevant, updated and sufficient ICTs teachers find it easier to use them when they teach VILs. ICTs support teachers to teach VILs more effectively. Gaining access to ICTs is not crucial for teachers, however, correspondingly, the proper use of ICTs enriches VILs' pedagogical practises resembling learner-centred teaching (Shehata et al., 2024). Teachers can provide VILs with question papers in substitute formats; for example, large prints, Braille, digital PDFs, coloured paper or use of amanuensis that help VILs to finish their examinations. Observations displayed an unsuitable knowledge of using ICTs in a classroom that contained VILs. Likewise, documents analysed lacked information that showed how teachers intended to use ICTs to facilitate their teaching of VILs. The microsystem deterred to teach VILs through ICTs.

Theme 5: Improving VILs' knowledge and usage of ICTs

Teachers stated that using ICTs to teach VILs improved VILs' knowledge acquisition and usage of ICTs. Teachers said that they acquired this information from workshops on inclusion. FG4T5 said:

'I understood from one of the workshops that when I use them to teach learners who are blind, then these learners can improve their marks in class. I also understand that my using those ICTs, I am also teaching them how to use them in their life'

FG1T2 stated the following on this matter:

'My understanding is that we are helping them on how use technology because they don't know how to use that technology. I must show them. So for me using ICTs is to help them use it when they want to read and write'

Teachers perceived the use of VILs' knowledge and usage of ICTs is how teachers perceived the concept. Researchers (e.g., Mirtsch, Bind, Koch & Dudek, 2021; Khan, Nazir & Khan, 2021; Amutha, 2020) exhibited that ICTs can really improve the quality of learning of the VILs, their usage and innovative abilities to a great extent. According to Abedi et al. (2024), availability and usage of ICTs in the microsystem increases the knowledge and learning skills of VILs. Teachers can provide VILs with haptic devices (Muhsin, Qahwaji, Ghanchi & Al-Tae, 2024), which VILs use to study virtual copies. Through them, VILs can acquire perceptual knowledge such as shape, size, weight, texture and material properties, while using three dimensional virtual objects or other computer-generated environments (Vaz, Freitas & Coelho, 2020). However, while teachers saw the value of ICTs in fostering VILs' independence, the observations indicated that the actual opportunities for VILs to interact with these technologies were limited. This finding aligns with research by Muhsin et al. (2024), which emphasizes the potential of haptic devices in improving VILs' critical thinking and learning skills.

Conclusion

A number of conclusions regarding the use of ICTs to teach VILs in FSSs can be drawn from this study. The findings from focus group interviews, observation and document analysis indicate that teachers in the Fezile Dabi District Office of Education, South Africa, recognize the significant advantages of using ICTs to facilitate VILs' learning. Teachers perceive ICTs as tools that can help VILs understand learning content more effectively, access information enclosed in printed materials, and engage with learning materials in a way that is comparable to their sighted peers. Additionally, ICTs were seen as helpful in assisting teachers to teach VILs and in enhancing VILs' knowledge and usage of ICTs.

Therefore, it can be concluded that ICTs are viewed as important for teaching VILs.

However, despite teachers' positive perceptions and willingness to use ICTs, several challenges hinder their effective application. These challenges include the lack of ICT resources, inadequate access to computers and internet connectivity, frequent power outages due to load shedding, insufficient training on how to use ICTs effectively for teaching VILs, and the scarcity of funds for the procurement and maintenance of these tools. These issues are compounded by existing disparities and constraints within the Department of Basic Education's (DBE) requirements. Thus, while teachers are prepared to integrate ICTs into their teaching practices, structural and resource-related barriers remain significant obstacles.

Recommendations

Based on the findings, the study recommends the following actionable steps:

1. Provision of ICTs: FSSs in South Africa should be equipped with ICTs specifically designed for teaching VILs. Schools should procure a diverse range of ICT resources that are accessible and effective for teaching VILs.

2. Training for teachers: Teachers should receive comprehensive training on how to use the procured ICT tools to teach VILs. Training sessions should be organized by the suppliers of the ICT resources and should be conducted in-house, ensuring that all teachers are equipped with the necessary skills to use these technologies effectively.

3. Power Backup Solutions: To mitigate the impact of load shedding on teaching, schools should install backup electricity sources, such as generators or uninterruptible power supplies (UPS), to ensure uninterrupted use of ICTs during power outages.

4. Improvement of Internet Connectivity: Schools should invest in technology to strengthen internet connectivity, such as Wi-Fi boosters, to ensure reliable and high-quality internet access for all ICT-based learning activities.

5. Increased Funding: The Department of Basic Education (DBE) should allocate more funds to FSS for the procurement of ICT resources, as well as for the ongoing maintenance and upgrades of these technologies. This would ensure sustainability and facilitate effective use of ICTs to teach VILs.

Study's limitations

Since this was a case study, the sample size was small, mainly focusing on a specific group of teachers in one FSS. This could limit the generalisability of the findings to other contexts or larger populations of teachers or schools with VILs. Additionally, the study relied on teachers' self-reported perceptions, which may have been influenced by personal biases, beliefs, and experiences, potentially leading to an overestimation or underestimation of the effectiveness of ICTs based on individual teaching styles, comfort with ICTs or prior experiences with VILs.

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