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Principals and Teachers' Perceptions about Using Technology in Children's Education

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ABSTRACT
The use of technology in children's education has been a topic of interest after the COVID-19 pandemic. However, rural schools are often situated in remote and quite underdeveloped areas where there is lack of resources and basic infrastructure. This study reports on the principals and teachers' perceptions about using technology in the classrooms, including devices aimed to improve children's education. It was conducted within four Limpopo rural schools in South Africa. It used a phenomenological design, and qualitative approach to collect the data. A semi-structured interview guide was utilised with nine teachers and four school principals. The data were analysed thematically being a more accessible form of analysis for qualitative research. The findings showed the potential benefit of using technology to improve communication and children's education in those schools that have limited access to technology. Additionally, it was found that school policies forbid students from using technology on school property, which served as a barrier for its utilization in the classrooms. The study made a series of recommendations that could promote educational equity, boost student performance, and deepen the teacher-parent-school relationships in those rural schools.

KEYWORDS
Children's education; rural schools; teachers' perceptions; use of technology.

INTRODUCTION

Technology use in education has become more common, with an emphasis on its potential to enhance learning outcomes for children (Cuocci & Fattahi Marnani, 2022). This has been researched in several situations around the world, but its precise use in Limpopo rural schools in South Africa has not been fully examined. The 2030 Agenda of the United Nations emphasizes the importance of access to Information and Communication Technologies (ICT) and the technology use to create knowledge societies where everyone can learn and interact with one another. Therefore, Sustainable Development Goal (SDG) 9 calls for countries to construct resilient infrastructure, advance inclusive and sustainable industrialization, and support innovation (United Nations [UN], 2015). This goal specifically mentions the use of ICT to build a resilient and sustainable future as well as ensuring the global connectivity. The same is true for SDG 4, which calls for ensuring inclusive and equitable quality education and promoting opportunities for lifelong learning for all (UN, 2015). However, this goal appears to be implemented with a one-size-fits-all approach, making it possible to overlook and disregard crucial aspects of the lives and needs of communities (Gardiner, 2008), particularly in the rural context of Limpopo, South Africa.

Limpopo is one of the provinces in South Africa that can be characterised as predominantly rural. Many communities and individuals lack access to services such as basic infrastructure for sanitation, water, roads, transport, electricity, computers, and the internet (du Plessis & Mestry, 2019) which affects the quality of children's education. For instance, the South African Schools Act (1996) urge that children enrolled in schools must have access to the same level of instruction, comparable facilities, and equitable educational opportunities (Maphalala & Khumalo, 2023). Additionally, as a strategy to enable the satisfying delivery of services and resources to enhance rural education, the South African government has vowed to intervene by offering technology (Maphalala & Khumalo, 2023). This is consistent with Maja's (2023) assertion that technology use (such as computers, laptops, online platforms) can enhance both teachers' teaching strategies and students' learning. Even though the use of low-technology channels can readily help teachers and students in the supply of education content in a meaningful fashion, a recent study has shown that this is not always the case (Dlamini et al., 2022).

To successfully utilize technology into the classroom, Akram et al (2022) contend that teachers' attitudes, beliefs, and perceptions are essential. However, they acknowledged that some teachers find it difficult to successfully use technology into the learning process as digital tools and devices become more widely available. Chen (2022) argues that although teachers may be encouraged to use technology in the classroom, they may not receive instruction on how to do so. Additionally, Kuo et al. (2023) discovered that teachers' views regarding the technology use were influenced by their prior experiences with and training in using technology. For instance, it has been determined that having access to technology infrastructure and resources is essential (Maja, 2023). Despite rising acknowledgement of the crucial use of

technology in children's educational success, there remains a significant gap in understanding its dynamic use in Limpopo rural schools in South Africa. The existing body of literature presents conflicting views, with some researchers arguing for technology enhancement of teachers' instructional approaches (Maja, 2023) and others arguing for teachers' inadequate instruction on the use of technology in the classroom (Chen, 2022). As a result, integrating these opposing viewpoints within the socio-cultural and economic context of Limpopo rural schools is a substantial challenge. Nevertheless, it remains unclear as to how principals and teachers in those schools perceive the use of technology to enhance children's education.

This study explores the perceptions of Limpopo rural schools' principals and teachers regarding the benefits, challenges, and potential implications of using technology to enhance children's education. School principals and teachers' perceptions in rural schools will differ from those in other contexts because of the concerns regarding South Africa's rural areas that are marginalised and under-resourced (Du Plessis & Mestry, 2019). In addition, Van Zyl and Sabiescu (2016) postulate that in South Africa, ICT is far from a tangible reality in many local schools, especially in terms of the availability of resources and infrastructure; access to information and educational opportunities; and a holistic understanding of the enabling values of technology. Furthermore, while South African education policy directives emphasise to improve rural education by providing technology in schools (Maphalala & Khumalo, 2023), empirical knowledge of the actual implementation and consequences of these policies within Limpopo rural schools remains poorly unexplored. Based on the above, this study is significant because understanding rural school principals and teachers' perceptions is essential for effective policy making and the development of appropriate interventions to support the use of technology in the classrooms. The literature review, theoretical framework, methodology, results, discussions, conclusion, recommendation, and the limitations of the study are covered in the sections that follow.

LITERATURE REVIEW

The promise made by South African government to provide technology to enhance children's quality education (Maphalala & Khumalo, 2023) seems to be uncertain when it comes to the rural schools that are characterised by under-resourced infrastructure (Du Plessis & Mestry, 2019). This is because Rakolobe and Teise (2024) postulate that when policies are developed, the contextual factors that influence the development, content, or the environment within which it is destined to function must be considered to avoid a one size fits all approach (Gardiner, 2008). This is corroborated by a Zimbabwean study that revealed the necessity of giving rural educational institutions access to technology in order to guarantee productivity and foster collaborative interactions with students (Maphosa & Dube, 2020). Maja (2023) further states that technology can improve students' education, particularly in rural schools where teachers can provide parents a greater grasp of their child's academic achievement while fostering relationships between the school and the community. Therefore, the use of

technology in schools to enhance children's education must consider the implementation context alongside the geographical space to which a policy should respond (Rakolobe & Teise, 2024). Otherwise, ignoring the context in policy development and implementation could lead to what was found by Dlamini and Nkambule (2020) as a gap between schools' access to technology and the teachers' readiness to instructionally integrate it into teaching.

On the one hand, technology can improve communication between parents and teachers by allowing for access to learning resources that can enhance children's education as well as timely updates on school activities (Dlamini et al., 2022), however it also depends on their knowledge to use it accordingly (Chen, 2022). Technology can also help teachers and other school stakeholders to collaborate effectively in sharing knowledge regarding children' academic and social development (Dlamini et al., 2022). A clear example of this was the technology use during the Covid-19 pandemic, when many schools chose to continue teaching and learning online while allowing parents to keep an eye on their children's academic progress (Ogbonnaya et al., 2020). Using technology can make it possible for teachers and parents to communicate more openly and frequently, which might result in stronger relationships and improved educational outcomes for children (Maja, 2023).

Recent studies have emphasized the advantages of using technology in conventional classroom settings. In higher education, for instance, Pechenkina et al. (2017) discovered that the usage of interactive instructional applications and games boosted students' engagement and information retention. Additionally, using multimedia components like simulations and films has been shown to improve students' comprehension of difficult ideas (Courts & Tucker, 2012). The capacity to customize learning experiences to meet the requirements and preferences of individual students is one of the main advantages of technology in education. However, teachers' under-preparedness, negative attitudes, and low self-efficacy for teaching learners with different learning needs (Andrews, 2019) proved to be a constraint in some rural schools in South Africa. According to Shemshack et al. (2021), adaptive learning systems analyse student performance data to offer individualized learning routes and content. Higher motivation and academic accomplishment have been connected to such individualized teaching methods (Tetzlaff et al., 2021). Technology use in education aims to better prepare students for the digital age as well as deliver content. According to Tohara et al. (2002), having the ability to critically assess and utilize digital information has become a necessary skill for the twenty-first century. Additionally, using technology in the classroom has been linked to increased creativity and problem-solving skills (Khalid et al., 2020).

While the technology use in schools may offer advantages, there are also drawbacks. Aruleba and Jere (2022) claim that poverty, unemployment, and a lack of education predominately describe the socioeconomic background of communities surrounding rural schools in South Africa. According to other researchers (Aruleba & Jere, 2022; Letswalo, 2023; Mthethwa & Kutame, 2023), many parents in the rural areas have not completed their own education, which may limit their capacity to help their children with their studies using

technology. Lack of infrastructure in the rural schools, restricted access to technical tools like computers and the internet, and restricted funding for technology have all been found to be significant impediments, as well as some teachers' insufficient digital literacy abilities (Maja, 2023; Mthethwa & Kutame, 2023; Ogunshola, 2015).

On the other hand, concerns have been voiced regarding the over reliance on technology. Domingues-Montanari (2017) draws attention to the possible harm that too much screen time may do to children's health and social growth. In addition, the problem of the digital divide, in which different socioeconomic groups have unequal access to technology and the internet, continues to be a major worry (Tohara et al., 2021). According to Lwoga and Chigona (2019), barriers that can prevent the successful implementation of ICT in children's education in rural schools could include the lack of access to technology in the rural areas. Some teachers in the rural schools do not have access to computers or the internet, which could make it difficult for them to use technology to get involved in children's education (Ogbonnaya et al., 2020). Another barrier is the lack of technology skills and knowledge among teachers, which can hinder their ability to effectively use technology to support children's learning (Letswalo, 2023). The latter author identified issues of limited comprehension by teachers towards the technology use alongside with lack of confidence, attitudes, time, and inadequate skills to use technology to teach in children's education (Letswalo, 2023).

However, Themane and Thobejane (2018) found that teachers' resilience when resources are insufficient, could overcome some of the barriers that are experienced in rural schools to promote the technology usage. This suggests that technology may be used to help teachers and parents of students to communicate more easily. Teachers may use emails or messaging services like WhatsApp, Twitter, and others to inform parents of their children's progress, respond to inquiries, and offer feedback (Dlamini et al., 2022). Teachers may find it simpler and more dependable to monitor students' progress, connect with key participants, and access academic resources thanks to these technologies (Dlamini et al., 2022).

Furthermore, Letswalo (2023) suggested giving teachers access to regular professional development opportunities to boost their technological proficiency and their confidence in using technology in the classroom.

THEORETICAL FRAMEWORK

The Technology Acceptance Model (TAM), proposed by Davis (1986), was used as a lens to understand school principals and teachers' perceptions on the technology use in children's education in Limpopo rural schools. According to TAM, people's attitudes and perceptions of technology are key factors in influencing whether they are willing to use it (Davis, 1986). Maja (2023) has recently used TAM to describe how teachers' perceptions of integrating technology in rural primary schools play a substantial role in the Intermediate Phase (grades 4 to 6) in enhancing the teaching of English first additional language with a specific focus on how

technology is used, with perceived usefulness and perceived ease of use being two strong factors that affect whether someone is willing to use technology.

Therefore, TAM serves as a useful model to help the researcher understand the attitude of teachers towards the technology use in rural schools teaching environment (Nair & Das, 2012). The latter found that in India teachers agreed to the usefulness of computers in teaching, even though they were not conversant in using technology for teaching. The success of TAM implementation rests on the attitude of teachers, who ultimately decide whether to use technology when teaching as well as how to do so (Davis, 1986; Maja, 2023). Although some teachers expressed their positive attitude towards the adoption of technologies in the rural schools in the Eastern Cape and were ready to integrate ICTs in teaching and learning, they were found to lack the requisite ICT skills (Chisango et al., 2020). In a study conducted in Uganda, Kule et al. (2021) found that perceived usefulness is a prerequisite for teachers' use of ICT, while perceived ease of use is imperative for the use of ICT. Furthermore, competence is essential for the use of ICT. Therefore, a recent study by Davis et al. (2023) illustrates the development of TAM that is influenced by how technological solutions are perceived across different industries, with its societal benefits relying on the target users' acceptance and utilization.

METHODOLOGY

To analyse principals and teachers' perceptions of the use of technology to improve children's education in rural schools in Limpopo, this study used phenomenological design as described by Rakotsoane (2019). Two research objectives that guided the study were: a) to describe the experiences of school principals and teachers on the benefits of using technology to improve children's education in rural schools; and b) to establish the barriers of using technology to improve children's education in Limpopo rural schools. The data was gathered using participants' perspectives regarding the phenomena (Groenewald, 2004; Praveena & Sasikumar, 2021) of technology use to improve children's education in Limpopo rural schools. According to Rakotsoane (2019) phenomenological research attempts to understand people's perceptions, perspectives and understandings of a particular situation or phenomenon. Similarly, Valentine et al. (2018) indicate that phenomenological research could go beyond human interactions and include relations with other things. Consequently, van Manen and van Manen (2021) emphasize the importance of the use of phenomenological attitude (method) to study phenomena (things). While phenomenological qualitative research methodology places emphasis on participant experiences and opinions regarding common patterns rather than specific traits (Ntinda & Ngozwana, 2021; Praveena & Sasikumar, 2021). The major goal of the research design, according to McMillian and Schumacher (2014), is to outline the strategy for drawing conclusions from the available empirical evidence. With rural schools situated in and around the surrounding community's poverty, phenomenology is not just about describing the phenomenon but also about an interpretive process (Groenewald, 2004; Maja, 2023; Rakotsoane, 2019; van Manen & van Manen, 2021). The primary school-teacher ratio in South

Africa is met in some of these schools' classrooms, however it is not in all of them (Department of Basic Education, 2016). In this example, the focus was on letting principals and teachers to express their perceptions on the use of technology in their schools because phenomenology is about making meaning from the practices, feelings and understanding certain aspects. The goal of a qualitative nature was to study the experiences, meanings, beliefs, and views that participants ascribe to a social phenomenon (Nieuwenhuis, 2020).

Participants were drawn from the four rural schools that were purposively selected because they are part of the community engagement research project, which the researcher leads. The selected participants comprised of four principals and nine teachers from the four primary schools and were purposively sample as key informants. All the thirteen participants were interviewed individually using a semi-structured interview guide (Greeff, 2017) at their respective schools. According to Greeff (2017), semi-structured interviews are defined as interviews organized around an area of particular interest, while still allowing considerable flexibility in scope and depth. The inclusion criteria were to select principals mainly as the gatekeepers to the schools; and teachers who have had more than ten years' teaching experience in those schools and were currently serving in the school governing bodies (SGB) in all the four Limpopo rural schools. The believe was that teachers were familiar with issues concerning children and therefore, could better respond to questions as key informants who are knowledgeable about the topic. Their choice was advantageous since individuals and places are picked because they have characteristics and information in which the researcher is interested (Creswell, 2014).

Due to the author's access to the chosen primary schools as part of the community engagement project, data were gathered during the baseline and intervention support phases through extensive face-to-face interviews. The individual interviews lasted between forty and sixty minutes with each participant and were conducted in English. Inductive thematic analysis was used to analyse qualitative data in the manner described by Braun and Clarke (2006). Data analysis was performed by transcribing the interview data and reading the transcripts several times for familiarization and to understand it. Then codes were generated from the interview transcriptions, which is akin to formulation of meaning in phenomenological analysis (Praveena & Sasikumar, 2021). In the following step, the initial themes were developed from the coding, then reviewing and refining the themes was done as an iterative process to generate possible responses to address the research objectives, which was followed by the write up of the findings (Braun & Clarke, 2006). Some of the field questions that were asked are:

1. What types of technology resources are available in the school? (Follow-up: What are the advantages of using technology to enhance children's education in this school? How do schools communicate with parents about their children's performance?)
2. What are the main challenges faced by teachers when using technology when teaching? What strategies can be implemented to support and empower teachers in effectively using technology to enhance children's education?

Pseudonyms were utilised to anonymize everyone to protect the participants, and the University of South Africa's ethical clearance was followed (Ethics certificate number: 2016/09/14/90171969). The participants were made aware of the study's objectives and that they might revoke their consent at any time without facing any repercussions. The informed consent forms were granted and signed by all the participants.

RESULTS

The data regarding principals and teachers' perceptions about the use of technology to enhance children's education in Limpopo rural schools yielded two themes of potential benefits to use technology and barriers to use technology. The responses from all the participants are presented using the selected direct quotations to support the identified themes.

Theme 1: Potential benefits to use technology.

The participants were questioned regarding their thoughts on utilizing technology in the classroom as well as about the resources offered to children in their schools. In lieu of allowing children to bring smartphones into the classes, Teacher Thando from School C said that if they had tablets, they would let children to use them. Simon from School D said the same thing:

> *We do have tablets which we use, where sometimes us teachers are using those tools for teaching and learning. And sometimes we give to those [children] in Grade 7 in certain subjects like NS [Natural Science] but sometimes when you are out of class, they [children] will be googling something else, (Simon, teacher, School D).*

The statement from a school C teacher suggests that there aren't any such tools available, even if she wishes they could provide children access to them. Another teacher from school A affirmed the value of utilizing technology when stating:

> *Technology is crucial for children. They usually want us to buy data for them when they get home from school. Therefore, if they lack such [data], it is more challenging for them to conduct research and complete their assignments. However, technology sometimes benefits our children too much, (Themba, teacher, School A).*

Another teacher states:

> *Unless if we have our tablets, where we put them at school, for children to use, then after that we collect them to a safe place, but with them [children] bringing their phones, you don't know what's inside the phone (Thando, teacher, School C).*

Only teachers working with children at school D highlighted iPads as potential instruments to employ. One teacher brought up the need for data, which he must give his children so they can conduct research for their homework. Similarly, although acknowledging their understanding of the rules, some principals encouraged the use of technology, which signify that they consider its importance. Steven said:

> *The policy does not allow children to bring their phones to school but there are days where we make special arrangements with them to bring along their gadgets so that they could*

perform a particular task. Teachers use their own tablets as the school does not have enough devices (Steven, School B, Principal).

It is interesting to note that the principal reported his encouragement for children to bring devices to use in class, thus violating the school policy. On the same issue, Thelma said:

Yes, I agree that we should deal with this. And because we have influence over them, we must allow these children. For example, if I advise the Grade 7 to bring their phones to class in the morning, I can take them and set the devices on my table. When it's time for Natural Science, the teacher can come and grab the phones, instructing the students to check anything on WWW dot one, two, and three, then take their phones with them. After school, they can simply pick them up (Thelma, teacher, School C).

In these remote rural schools, some teachers agreed to utilize iPads with children under certain conditions. According to teachers, students in grade 7 are occasionally requested to use iPads to do pertinent information searches to further their understanding of specialized subjects like the natural sciences. But according to the principal of school B, it is against the rules for children to bring smartphones to school. In response to the question of how schools communicate with parents about their children's progress, needs or when making any announcements, Selby, a teacher from School B responded by saying, "*No, we call a meeting. This applies even when we contact sister organizations, like the social workers to handle a child's psychological needs*." Tim, a different teacher at the same institution said, "*We call them [parents] when we have functions like the end-of-year events to thank them*." Tim said, "*I have so many videos for awards giving. I have all the evidence of what we are doing that I can share with the community*." This means that teachers possibly communicate by calling parents whenever there is a need, which implies the potential use of technology in school B.

Teacher Lilly from school A said "*It is difficult to communicate because most of them[parents] do not have phones. We write letters to the parents via children. We tried to use WhatsApp group but only 10 learners have it."* In another response teacher Taylor from school D elaborated that "*Yeah, those with WhatsApp are in Gauteng, so grannies are the ones taking care of children. We do have the WhatsApp group for the school but only for less than 15 people*." Similarly, Peter from School C indicated that many parents are illiterate especially the grandmothers who are looking after children. Further, he stated that some parents are not on WhatsApp because they usually indicate problems with their phones. In his words, "*Their phones are not working… It's like the parents keep changing the SIM cards… while some are unable to read especially the illiterate grannies at home, they are not able to read [messages] from WhatsApp*."

Most children reportedly had their grandparents as guardians. Some of these grandmothers are reportedly illiterate, making it difficult for them to interpret communications sent over WhatsApp text. This suggests that the grandparents face significant challenges with technology, which may possibly limit their ability to help grandchildren with schoolwork that

may require technology. The answers differed when it came to how teachers get parents to visit the school to check on their children's progress. School C's principal reiterated that:

> *Okay, a big thanks. Regardless of whether the teacher is okay or not, teachers give them (parents) time based on the schedule. The parents must wait for the teacher to finish class if the teacher is still in a session. Therefore, we advise parents to speak with the teacher first before coming in. If the parents wish to visit and observe the student's progress, they must schedule a visit. The teacher may ask them to arrive after 11 a.m. on Mondays when they are free from the staff meeting. (Peter, School C Principal).*

A response from School D principal showed that parents are given the reports when the term comes to an end:

By giving them [parents] reports each term and, we've got a contact number for each one because when we register the child, there is a person responsible, where we put every detail of the parents. So, when we want to communicate with parents, there's a responsible person who will give us all the details, the phone number and so we use those contact numbers to contact them and give them feedback. And sometimes by calling them to the office like if the child is not performing well for the continuous assessment and showing the poor performance, then we call them individually to the school, (Vuyo, School D Principal).

The principals from schools C and D reported that parents occasionally walked to schools to check on their children's academic progress, which teachers confirmed. According to the comments, teachers still send letters, schedule meetings with parents, distribute reports, and summon parents to the office as conventional forms of communication. Teachers in these Limpopo rural schools must understand how technology may be used to build a feeling of community among staff members and parents, enabling them to work together and communicate clearly. Given that some principals have admitted to keeping records of parents' contact information, this might be possible.

Theme 2: Barriers to use technology.

Principals and teachers were questioned regarding the technological tools that the school permits children to use for learning, whether smartphones or any other mobile devices. Additionally, they were asked if there were any obstacles to the usage of technology in their schools. The responses indicated that children were not allowed to use technology, Sheila from School A said:

> *I am aware that technology is crucial in the classroom, but we decline because it is difficult to supervise these children when they are using technology; just look at one child at home; when you try to send them somewhere while they are holding the phone in their hand, they are unable to hear you. Thus, when these children bring their phones to school, they are unable to listen and are not present in the classroom. (Sheila, teacher, School A Principal).*

The same was corroborated by teacher Vuma from school C, who stated, "*No, school policy does not allow phones.*" Additionally, he stated that "*Some children don't use these*

phones for schoolwork. They view videos and TikTok. Some might utilize them honestly." Tim from School B stated, "*We don't use technology in this school, more so, the policy does not allow that.*" Thando communicated on the same matter:

Okay, what if there's, there's porn there and you will only discover maybe after three weeks when one child will come and report that so and so is saving a phone with video… So that's why it's a total No, at school Yeah! (Thando, teacher, School C).

According to some principals and teachers' remarks, schools do not utilize technology because that is prohibited by the policy. Again, some participants raised concerns about how technology can keep children from learning. The opinions revealed their concern that children may use technology for purposes other than education. The responses highlight the lack of oversight, some attitude, and concerns with trust that principals and teachers may need to address to ensure that children use technology for its intended educational purpose. Additionally, according to some participants, resources may be difficult for children who are socioeconomically deprived and may even widen the digital divide, as Lilly noted:

> *And this technology will make one learner to feel less confident [insecure] not having the phone and going back home it would mean more problems as parents will again come here to say principal you want these children to have phones, where do you think we can get money to buy phones. It is because the school cannot afford to provide data for learners, so, that can be a problem for us (Lilly, teacher, School A).*

According to teacher Lilly, technology may widen the digital gap for children who might not afford to buy mobile devices for use in the classroom. Again, she reported on the possibility of school's inability to supply data for children, which might be another possible challenge. It was then questioned why, given that life went on throughout COVID-19 epidemic; whether children were not encouraged to join the larger population that uses technology. "*And it's true, you know, you just opened my eyes, you know, I'm studying ICT with Wits*," the principal of school C responded. On the same issue, School B principal said:

> *I think we need to talk about it even in our principals' meeting, [and] in the parents meeting, just to encourage parents, sometimes we are the ones who's encouraging them not to buy these smartphones for these children, they don't buy them because they're taking all their[children] minds [from studying], they're not learning, (Steven, Principal, School B).*

Principals and teachers in Limpopo rural schools reported several opinions about the usage of technology. According to some principals, they advise parents against purchasing smartphones for their children because they think that technology could keep them from finishing their homework. Seemingly, principals and teachers in Limpopo rural schools underestimate the value of technology, which is why they reported to be discouraging parents from purchasing smartphones and other technological devices for their children.

DISCUSSION

The study was conducted to find out principals and teachers' perceptions about the use of technology to enhance children's education in Limpopo rural schools. The study's findings revealed the potential benefits of using technology in the Limpopo rural schools. However, despite participants' reports that the school policies do not allow the use of technology, the study found that principals and teachers were generally supportive of its use. This was evident when a school B principal articulated his encouragement for children to violate the policy and bring devices to the classroom when it was needed. This finding shows the significance about resourceful participants who would bring their own personal devices in the classroom, especially in a resource challenging context such as Limpopo rural schools. Despite the promise that government made to improve rural education by providing technology in schools (Maphalala & Khumalo, 2023) some of these schools have insufficient resources to use for improving children's education except for school D where tablets are provided by the school. This finding supports what Maja (2023) discovered regarding the usage of technology that fosters teachers' teaching styles while fostering children's increased grasp of difficult subjects (Courts & Tucker, 2012). However, lack of technological devices by the schools may have an impact on teachers' ability to use technology (Kuo et al., 2023; Akram et al., 2022). The use of technology with children in classrooms backs up what Khalid et al (2020) discovered on how technology can enhance learning and foster children's creativity. The fact that some teachers explicitly violate school regulations by telling students to bring devices to use in specialized classes (such natural science) is interesting to notice. This finding implies the need for policy review to allow and accommodate the use of technological gadgets by both teachers and children to enhance their educational outcomes in these schools.

The study found that technology might be perhaps used by parents and schools for communication. According to the data, however, teachers in Limpopo rural schools heavily rely on sending letters to parents via their students when they have parent-teacher meetings. This finding contradicts recent research by Dlamini et al. (2022) that urged teachers and parents to embrace technology for efficient communication. Even though many parents were reported to lack smartphones, it was discovered that teachers occasionally used WhatsApp to connect with a small number of parents. The study also found that many children are under the guardianship of their grannies who are illiterate and rarely able to understand WhatsApp messages. This finding supports concerns highlighted by Tohara et al. (2021), Mthethwa and Kutame (2023), Letswalo (2023), Aruleba and Jere (2022), on the underprivileged socioeconomic status of some rural schools and the areas in which they are located. This has implications for the help that parents must provide for their children, particularly that use technology for their studies.

The findings showed that some schools give parents a copy of their children's progress reports at the end of each term, but teachers claimed that parents are free to walk to schools whenever they want to check on their children' progress (Maphosa & Dube, 2020). It was demonstrated that schools contact parents by phone, particularly when children are performing

poorly. This represents the potential for technology use by schools to engage parents in their children's education while saving them time, energy, and travel distance. This contrasts with Maphosa and Dube's (2020) assertion that technology can encourage regular gatherings and effective communication between teachers and parents to guarantee the children' enhanced performance in the classroom. This difference could have been due to socio-economic background of grandparents, particularly their low levels of literacy, thus affirming the findings about challenges faced by most parents in the rural areas of South Africa (Letswalo, 2023; Aruleba & Jere, 2022; Mthethwa & Kutame, 2023).

On the other hand, the findings established the difficulties in implementing technology in Limpopo rural schools. The study identified impediments to technology use in terms of a lack of technological resources and the potential for a digital divide, school policies that forbid students from using technology on school property, and trust and monitoring problems that principals and teachers mentioned. The finding about the difficulty of using technology in Limpopo rural school is supported by recent studies (Letswalo, 2023; Mthethwa & Kutame, 2023; Aruleba & Jere, 2022) when they indicate that South Africa's rural areas have restricted access to resources. Likewise, Themane and Thobejane (2019) and Maja (2023) support the idea that using technology in rural schools can be difficult. Once more, the study found that Limpopo rural schools' policies prohibit students from using technology (such as smartphones and other mobile devices) on the school grounds, which is a disjuncture to what government promised regarding the strategy to supply schools with technology to develop rural education. This implies the lip service which lacks implementation and monitoring by government, which requires the need for bottom-up and contextualized policies that can address the needs of the people affected on the ground as Rakolobe and Teise (2024) indicate.

After the recent COVID-19 pandemic, this finding was an intriguing, especially because technology is practically used to improve all areas of life, including its application in education (Ogbonnaya et al., 2020). It is remarkable to note that some schools in the rural parts of Limpopo Province are unable to implement government plans to provide technology as a method that can facilitate and improve the school's performance in addressing issues faced in rural education (Maphalala & Khumalo, 2023). As stated in the 2023 Agenda (United Nations, 2015), this has ramifications for the proposed SDGs 4 and 9, which coincide with the one-size-fits-all approach (Gardiner, 2008) to all places, whether rural or urban.

The use of technology to assist children was found to be a far-fetched issue because teachers indicated that they discourage parents from buying mobile devices like smartphones for their children. This implies that parents may not be eager to use technology to help children with schooling at home if teachers do not fully encourage children's usage of it. To overcome the obstacles and enable the use of technology in children's education, teachers in Limpopo rural schools and other stakeholders need focused digital interventions and support (Maphalala & Khumalo, 2023; Tohara et al., 2021).

The study reveals that many teachers did not employ technology in the classroom because they worried that it might be seen as a barrier that prevented children from learning rather than an aid as suggested by TAM (Davis, 1986). However, there may be more factors for the limited use of technology by teachers in Limpopo rural schools, including attitudes (Akram et al., 2022; Maja, 2023) and a lack of comprehension (Letswalo, 2023). Previous studies by Aruleba and Jere (2022), Mthethwa and Kutame (2023), and Letswalo (2023) affirmed that teachers may not properly integrate technology into their lessons without proper training in digital technologies. This suggests that teachers may not possibly question the school's technology policy because of how they would view it, which supports TAM's element of how people might view technology's utility, including how simple it is to use (Davis, 1986; Maja, 2023). Studies have shown that, contrary to what was observed in Limpopo rural schools in South Africa, teachers may persevere in the face of difficulties even when resources are limited (Themane & Thobejane, 2019).

While the findings may add to literature in the field of rural education, the study has limitations to acknowledge. The study's shortcomings are its small sample size and its study area. As a result, the results cannot be applied to all rural schools in Limpopo, but similar trends could be repeated in other places. Other approaches might be utilized in future studies with a larger research scale because the study only used qualitative methods on a limited research scale.

CONCLUSION

The study has clarified that technology may play a role in increasing children's education in Limpopo rural schools. According to principals and teachers, technology may be used to improve children's performance in specialized topics by using tablets and allowing children to utilize their mobile devices. Technology utilization may enhance parent-school contact and make it easier for them to check their children's progress. Technology was seen as a hurdle that can prevent children from learning and result in a digital divide for children and teachers who lack access to resources. The restrictions were made easier by the schools' rules prohibiting technology use by students. Teachers expressed uncertainty about giving children access to technology and they would have to keep an eye on the children' use of gadgets while on school grounds. To maximize the advantages of technology, teachers need to tackle challenges related to their training, digital literacy, and equitable access. Future studies should keep looking for novel approaches to maximize the beneficial effects of technology on children's education.

Recommendations

This study recommends that policymakers, school administrators, and other school stakeholders should work together to review the rural school policies that prohibit children from using technology in the school premises. Such policies would guarantee equal access to technology. For the practice, both teachers and parents should be provided with regular tailormade trainings by the Department of Education and other significant stakeholders. The

training would enable teachers to offer teaching to children using technology in the classrooms, while enabling parents to assist and support their children with schoolwork using technology.

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