CHAPTER 10

School Leaders' Attitude Towards the Use of Digital Technology in the Early Grades

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Abstract

Technology is changing the way we learn in the 21st century. It has found its way into schools at an increasing pace. This study seeks to examine the attitude of school leaders towards the use of technology for teaching and learning. The study was conducted in a district in Gauteng. A qualitative case study involving methods such as interviews and document analysis containing notes was examined through the lens of the Technological Pedagogical and Content Knowledge model. The data gathered showed that school leaders supported the use of technology. School leaders were more focused on 'reading, writing and arithmetic', which are known in South Africa as the '3Rs'. Most leaders did

not see the importance and necessity of technology in the early grades. Managers indicated that they were reluctant to allow staff to use technology because of theft and lack of training. Many cited their schools did not have the infrastructure and connectivity to support the use of technology. It was recommended that school leaders should be capacitated in the use of technology. The Department of Education should ensure that all schools have the necessary infrastructure in place before technology is introduced and that stricter security measures are put in place to prevent the theft of equipment from schools.

Keywords: school leaders, Technological Pedagogical and Content Knowledge model, digital technology, attitudes, challenges

Introduction

The introduction of technology for teaching and learning needs a major transformation in schools. This complex, difficult, and non-linear process requires commitment and support from all stakeholders (head teachers, heads of department (HoDs), teachers, learners, parents, and the Department of Education). The Department of Education (DoE, 2004) introduced the e-Education policy intending to transform teaching and learning for the development of 21st-century skills. This policy placed an obligation on educators to use educational technology to deliver on the expectation for quality education for economic growth. This caused problems across public schools in South Africa, with various reasons cited. Johnson et al. (2016) and Vandeyar (2013) agree that there is a lack of systemic support and that there is resistance to the implementation of technology, and this has given rise to differing attitudes from school leaders and teaching staff. This study focused on the attitude of school leaders towards the use of technology in the early grades as mandated in the e-Education policy. The following primary research question guided this study: What are school leaders' attitudes towards the use of digital technology in the early grades? Kayalar (2016) states that our lives revolve around technology and its continuous use. According to Venketsamy and Wilson (2020), it is used daily in some form or another to simplify our daily activities, thus making it inevitable that digital technology has become part of the teaching and learning process.

Digital technology integration into the classroom can be described as the process by which digital technologies are used as tools to support

the process of teaching and learning (Sung et al., 2016; Venketsamy & Wilson, 2020). This process involves the construction of learning programmes that are best suited to incorporating digital technologies as teaching tools into the curriculum to enhance and provide a meaningful learning environment for all learners (Sung et al., 2016).

School leaders (head teachers and HoDs) are at the core of the technological shift in education systems (Richardson et al., 2013). Mahoney & Khwaja (2016) reiterate this by stating that school leaders play a significant role in providing leadership and vision. Digital technology and the expeditious growth thereof increasingly place pressure on schools, school leaders, and teachers to adapt, improve, and streamline teaching and learning programmes (Richardson et al., 2013). Richardson et al. (2013) further state that the effectiveness and efficiency of the use of digital technology in teaching and learning programmes depend solely on the adaptiveness and innovativeness of the leadership team in a school. Ugur & Koç (2019) indicate that it is extremely important that both school leaders and staff share the same vision when it comes to the use and implementation of digital technology.

School Leaders' Attitudes Towards the Use of Digital Technology in Teaching and Learning Programmes

School principals hold the positions of policymaker and leader, and thus play a crucial role in determining to what extent digital technology is implemented in the curriculum and in learning procedures in the school (Mahoney & Khwaja, 2016). Ugur & Koç (2019) support this by stating that the attitude school leaders have towards digital technology implementation plays a significant role in the attitudes of teachers when they have to implement and make use of digital technology in teaching and learning programmes (Venketsamy & Wilson, 2020). Johnson et al. (2016) and Richardson et al. (2013) both agree that effective school technology leadership and the navigation thereof by school leaders remains a field of investigation where limited research has been done. Still, it is perceptible that without a collective vision of how technology should be implemented in teaching and learning programmes—among school leaders and staff—effectiveness and efficiency cannot be achieved (McLeod, 2015). Creating immense challenges, these disruptive changes call for a reexamination of all ele-

ments in teaching and learning programmes (Richardson et al., 2013), which should be led by school leaders.

As stated by Ugur & Koç (2019) and Venketsamy and Wilson (2020), school leaders recognise the importance of digital technology and its use in teaching and learning programmes, but many factors influence the process of integration and implementation. One such example is tradition and school culture. School leaders take great pride in upholding traditions and the fundamental culture of their school. In some cases, this ideology of tradition and school culture prevents development and adjustment in teaching and learning programmes to best suit the academic needs of learners (McLeod, 2015), thus preventing digital technology from being used in a transformative manner in future classrooms. This may result in the misconception among teachers, school leaders, and parents that digital technology utilisation in teaching and learning in the Foundation Phase is ineffective (McLeod, 2015).

Ugur & Koç (2019), however, have found that some leaders advocate for change in their schools. This process of transformation and growth is sometimes restricted, as some teachers and staff are reluctant to change, and they resist the implementation of digital technology. Mahoney and Khwaja (2016) support this statement, saying school leaders choose not to advocate for the implementation of digital technology in their schools because of staff attitudes and lack of knowledge and understanding of the use of technology. One of the challenges includes the effectiveness of teacher training, which according to Mahoney & Khwaja (2016) is not considered to be successful. This places considerable pressure on teachers when they must use digital technology in teaching and learning programmes. To avoid such situations, some school leaders choose not to use digital technology in teaching and learning (Venketsamy & Wilson, 2020), but rather focus time on teaching young learners the 3Rs—reading, writing, and arithmetic.

Venketsamy and Wilson (2020) state that it is not only teachers that have been found to lack the relevant knowledge to successfully use digital technology in teaching and learning programmes. According to Mahoney & Khwaja (2016), this lack of knowledge is also evident among school leaders. Richardson et al. (2013) state that in situations where most school leaders lack basic competency in technology, their ability to understand various policies and planning issues associated

with the effective implementation of digital technologies in teaching and learning programmes is effectively impeded. Furthermore, even though school leaders have a positive attitude towards the use of digital technology in teaching and learning programmes (Venketsamy & Wilson, 2020), they are also under the impression that it is not essential for them as leaders to develop their technological skills (Ugur & Koç, 2019). In contrast, Yurdakul et al. (2012) stress the importance of both teachers and school leaders developing technological pedagogical knowledge so that they have a better understanding of learners' needs and so that they can equip learners with 21st-century skills. As such, school administrators and leaders need proficient pedagogical content knowledge to establish a holistic view of how technology influences the development of learners (Richardson et al. 2013). For school leaders, according to McLeod (2015), the fear of the unknown and of being learners again impedes the process of digitalisation in teaching and learning programmes. McLeod (2015) further states that if school leaders do not pilot the implementation of digital learning programmes in their schools, little to no success will be effectuated in developing technological skills among teachers and learners.

Yurdakul et al. (2012), Venketsamy and Wilson (2020), and Wilson (2017) assert that the biggest barrier to technology integration is the lack of knowledge and competency of school leaders to implement and manage the use of technology in the classroom. According to Hennessy et al. (2015), school leaders are often not consulted regarding the use of digital technology. They are given policies and requested to implement them. According to Wilson (2017), school leaders are the key component in the effective development and implementation of digital technologies in the 21st-century classroom (Kayalar 2016), making it imperative that their experiences and perspectives on the use of digital technologies in the classroom are considered. According to Hennessy et al. (2015), teacher education and professional development have been neglected, especially in African countries. As a result, the focus has been diverted to the capability of a single technological device and not to the holistic integration of the device as a support tool in the education programme (Philip & Garcia, 2013; Wilson, 2017).

The use and implementation of digital technologies in learning programmes and classrooms can be effective in creating a successful learning environment for all learners. Unfortunately, implementation is easier said than done (Philip & Garcia, 2013). The partici-

pants' voices in the findings and discussions highlight the challenges they experience in the implementation of digital technologies in their teaching and learning.

Technological Pedagogical and Content Knowledge Framework

The Technological Pedagogical and Content Knowledge (TPACK) conceptual framework has been introduced in the field of education (see Figure 10.1) and is used as a framework in this chapter (Wilson, 2017). This model, developed by Koehler and Mishra (2006), focuses on Technological Knowledge (TK), Pedagogical Knowledge (PK), and Content Knowledge (CK) that support school leaders in the implementation of educational technology in their schools in the early grades (Venketsamy & Wilson, 2020; Wilson, 2017). The model encompasses the interaction and collaboration between the three basic building blocks of knowledge—technology, pedagogy and content—and interconnects with the basic assumptions of the application of suitable teaching content with appropriate pedagogical methods and technology (Koehler & Mishra, 2008; Koehler & Mishra, 2006). Although the model emphasises the crucial role technology plays in teaching and learning, the attitudes of school leaders towards the implementation of technology are of concern. According to Celep and Tülübaş (2014), there is a significant correlation between school leaders' attitudes and teachers' enthusiasm for implementing technology. They found that in schools where leaders were averse to the use of technology, teachers also became nonchalant. The TPACK model strongly promotes the use of digital technologies for teaching and learning (Archambault & Barnett, 2010; Chai et al., 2011).

Hannaway (2019) clearly outlines the seven components of the TPACK framework as shown in Figure 10.1 (Wilson, 2017). The first component of this model by Koehler and Mishra (2006) is Technological Knowledge (TK). According to Wilson (2017), in this study the focus of TK includes the school leader's basic knowledge of the various technologies, from pencil and paper to interactive whiteboards and digital technologies such as computers, the internet, and other software. The second component is Content Knowledge (CK), which pertains to subject matter knowledge (Koehler & Mishra, 2006)—the content that school leaders need to understand so they can sup-
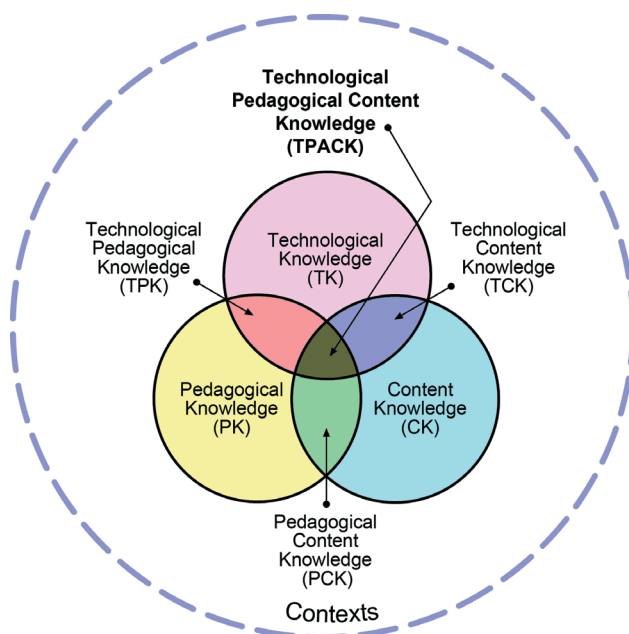
Figure 10.1: The TPACK model (Koehler & Mishra, 2006). Reproduced by permission of

port teachers to deliver the expected or prescribed content. The third component in this model is known as Pedagogical Knowledge (PK), which pertains to the strategies and techniques of teaching, learning assessment, lesson planning, methodologies, and classroom management. As instructional leaders of curriculum, school leaders should be familiar with this aspect to provide the necessary support and guidance. Pedagogical Content Knowledge (PCK) is the fourth component, and refers to content knowledge about the process of teaching. PCK differs for individual content areas, as it is a mixture of content and pedagogy to improve teaching practices in the different content areas (Howell, 2012). The fifth component of the TPACK model is Technological Content Knowledge (TCK). TCK refers to how specific content can be presented effectively using technology (Schmidt et al., 2009). School leaders need to be aware that the use of technology changes the way teachers can support learners to comprehend concepts with a specific knowledge content area. Technological Pedagogical Knowledge

(TPK) is the sixth component, and highlights the application of different forms of technology that can be used in teaching. Wilson (2017) further states that school leaders should have a sound understanding of TPK to promote the implementation of technology in their schools. Finally, the seventh component of this model is known as Technological Pedagogical Content Knowledge (TPACK). TPACK is associated with the knowledge that school leaders and teachers need to have for technology and teaching to converge in any given knowledge content area.

Research Methodology

The researcher applied a qualitative research approach to investigate the attitude of school leaders towards the use of digital technology in early-grade classes (Wilson, 2017). Qualitative research assists researchers in understanding the social phenomenon from the participants' point of view (Mogashoa, 2014). This approach also attempted to unravel the school leaders' attitudes, challenges, and personal views in relation to the implementation of digital technologies. The sampling method was purposive. Six participants were included in this study from two schools in Gauteng. Two head teachers and four Foundation Phase HoDs participated in focus group interviews. In South Africa, Foundation Phase refers to learners who are in Grades R–3. The age cohort of these learners is between five and nine years old. Separate interviews were held with the head teachers and HoDs. The head teachers each had over 20 years' teaching experience and more than 10 years' management experience. The HoDs had more than 8 years' management experience in the Foundation Phase. Data collection strategies included in-depth and focus group interviews. The unstructured questions probed the attitudes, challenges, and views of school leaders in relation to implementing technology for teaching and learning in the early grades.

Data analysis was inductive. This means that the researchers used the raw data that was collected during the interviews to identify categories and themes. To structure the process of gathering and analysing data, the researchers adopted a process suggested by Creswell (2008) that sees data analysis as a spiral, moving from a narrow perspective to a broader one towards the end.

The trustworthiness of this research was addressed by posing the broad question of whether the researchers as inquirers would actually hear the meaning they thought they heard (Maree, 2020; Wilson, 2017). The researcher compared multiple data sources in search of common themes. The ethical consideration included obtaining informed consent from the university and maintaining anonymity, confidentiality, privacy, and avoidance of betrayal and deception to meet the requirements of the ethical code of conduct (Wilson, 2017).

Ethics approval was granted by the ethics committee of the University of Pretoria (EC16/06/01) and the Gauteng Department of Education. All participants were formally invited and signed the consent forms agreeing to participate in the study willingly. They were further informed of voluntary participation and were not obliged to remain throughout the study. All participants consented to participate in the face-to-face interview at their school. They were guaranteed anonymity and confidentiality in their participation. They were also informed that no names would be used during the reporting phase of the study.

Findings and Discussion of the Empirical Data

The attitudes of school leaders towards the use of digital technology in the early grades were categorised into two broad themes:
- School leaders' knowledge, skills, and attitudes towards technology
- Factors that limit the use of technology

Verbatim and paraphrased quotes are used as evidence in the results. The codes H1 and H2 refer to the head teachers, and HoD1–4 refers to the heads of departments. This is to ensure the anonymity and privacy of all participants.

Knowledge, Skills, and Attitudes

Richardson et al. (2013) state that school leaders need to possess the knowledge, skills, and understanding of the use of technology if they are to prepare teachers for the 21st century. They need to keep abreast with and recognise the importance of technology for teaching and learning. Technology is gaining impetus in every sphere of education. When school leaders were asked about the importance of technology for teaching and learning, there was agreement regarding the use

of technology. This is articulated in the responses of H1, HoD1 and HoD2 that we are moving into the 21st century and everything around us is about technology, with young children using laptops, iPads and cellphones for learning. HoD1 went on to state that 'if we need to use technology for teaching and learning, then we must start immediately, otherwise we will be left behind.' H1 also indicated that '[w]e needs to encourage our young children to use technology'. HoD2 shared her view by stating: 'At my school we know technology is important and we should embrace it, but there is a big challenge. Many of us still don't know how to use some of the technologies, especially interactive whiteboards and desktops.' There are teachers and HoDs who have technology in their classrooms that is not used or is not used as much as it might be because of factors such as technical problems, lack of training and support, or the attitude of staff towards the use of technology. Mihai (2020) proposes that suppliers of technologies to schools should demonstrate to all staff how to use the technology effectively. Furthermore, there should be ongoing continuous support for all staff members.

Hennessy et al. (2010) state that many school leaders understand the importance of technology for teaching and learning, but that they lack ICT-related knowledge and understanding. Although the resources are available, there is inadequate knowledge of specific technology, technology-supported pedagogy, and technology-related classroom management. This phenomenon is voiced by HoD3, who stated that 'although we have all this high-tech equipment in schools most of the teachers do not know how to use [it]'. HoD4 and H2 also shared a similar view when they stated that the department has not trained teachers on how to use the equipment. All the participants agreed that resources are available; however, they believe their staff lack the appropriate knowledge and skills to implement the technology.

Powers and Blubaugh (2016) agree that a vast majority of school leaders and teachers have some experience using computers but lack the knowledge, understanding, and opportunity to use them as a learning resource. Ramorola (2013) states that technology can be a frightening concept and experience for many school leaders (head teachers and HoDs) who did not grow up with computers or the internet. When school leaders find technology overwhelming or frightening, it is unlikely that they will encourage its implementation. This view is aptly voiced by HoD3 and HoD4, who said that the Department of Educa-

tion wants them to use computers in their classrooms, but that they (the Department) do not understand or know how scary it is for some of them. H1 and H2 also agreed that some of their teachers are often embarrassed to use technology. H2 stated: 'One of my seasoned grade 1 teachers told me that her learners know more about computers than she does. She has to ask the children how to use certain programmes and the children often laugh at her.' This phenomenon is prevalent in most schools. Children are exposed to technology from a very young age, and most of them are confident and competent in using technology. Ebner (2017) agrees that it is a daily classroom reality that students often know more about technology than teachers do, which often terrifies teachers. She proposes that teachers need to change their attitudes and thinking about technology in order to overcome these fears. She states that school leaders and teachers should note that many technology tools are not as scary or intimidating as they might seem. It is not possible to know how to use every single resource available, and technology tools are going to come and go. When school personnel internalise this idea about technology, then the use of technology becomes much easier and less intimidating.

Ugur and Koç (2019) state that the decision on whether and how to use technology in the curriculum ultimately depends on school leaders and the attitudes they hold towards technology. According to the TPACK model, it is crucial that school leaders are appropriately capacitated with content knowledge about the use of technology and how to support the use of technology for teaching and learning (Venketsamy & Wilson, 2020). Shulman argues that appropriate content knowledge enhances a deeper understanding of the learning subject. Furthermore, Koehler and Mishra (2006) mention that it is crucial that school leaders have a firm understanding of how technological knowledge relates to pedagogical and content knowledge to ensure effective teaching and learning. The attitude of the participants towards the use of digital technology in the early grades was ambivalent. Participants indicated that they did not mind teachers using technology in the early grades, and that they should at least have the knowledge and skills for using it. H1 stated: 'I would like my teachers to use technology, but my teachers don't have the appropriate skills to implement technology effectively.'

All the participants agreed that in South Africa there is a high rate of illiteracy and low achievement in mathematics. They agreed that

technology is important for the future, but as HoD1, HoD2, and HoD3 said, they consider the 3Rs to be equally important. They stated that they must still teach their children how to read, write, and do arithmetic (mathematics), that computers cannot help their learners to form letters and write words properly, and that writing is a skill that has to be taught practically. H1 and H2 also agreed with the low literacy and numeracy levels. They both referred to the system evaluation, which showed that learners cannot read and do mathematics properly. They therefore feel that their teachers should spend more time teaching children how to read and do mathematics rather than playing games on the computer. HoD4 mentioned: 'Instead of spending one hour on the computer playing games, I want my teachers to spend that hour teaching children basic computational skills.'

From the discussion above, it is evident that school leaders agree on the importance of technology, but that their priority is to ensure that learners can read, write, and do mathematics. There is an emphasis on strengthening the 3Rs in the early grades. HoD2 and HoD3 suggested that learners could start using computers when they are in grade 4, and that so long as they master the basic skills in the Foundation Phase, they can learn how to use computers later.

Factors that Limit the Use of Technology

Lack of Resources, Maintenance and Technical Support

Data obtained from the participants revealed that their schools did not have sufficient computers, printers, scanners, mouses, mousepads and updated internet connections. According to the participants, this posed a major challenge to them as school leaders. Both schools have large class sizes and few computers. Learners are forced to sit in groups of five around one computer. H1 and H2 indicated that the use of digital technology in the early grades is challenging because of the limited resources. This resulted in participants facing major challenges in classroom management. All HoDs agreed that teachers cannot manage their learners in the computer lab, as there are few computers and children are constantly fighting with each other to use the computers. HoD1 said: 'In every computer lesson, teachers are sending learners or calling me to maintain discipline. I have to manage the discipline of learners in the computer room because children are just fighting to gain access to the computer. Learners often become unruly and

bored.' HoD2 and HoD4 both agreed that more computers and large computer classrooms to accommodate all the learners should be provided by the department. All participants agreed that when teachers take learners to the computer room there is no internet connection and there are software problems or vandalism. They said that teachers waste more time taking the learners to the computer room and that they should just stay in the classroom and focus on reading, writing, and mathematics.

Another major challenge is maintenance and technical problems. Many teachers are unfamiliar with the use of technology, and technical problems exacerbate the situation. Teachers feel helpless with a rowdy class of learners. Schools do not have qualified technicians to assist teachers in a timely manner. Schools must employ technical support from outside services, since the Department of Education does not provide this service. Because of maintenance and technical problems, lessons are often disrupted. HoD2 stated: 'Every time a teacher goes to the computer lab, they always find computers not working. Since the entire school uses the same computer room, items such as the mouse and computer cables are often found missing. This is a big problem for early grade teachers.' To minimise the loss of equipment, it is recommended that schools should mark all properties, keep an inventory of items in the computer room, and purchase insurance against theft (Spracklen, 2019). The researchers believe that values in education play a significant role in inculcating respect for other people's property, trust, and honesty among all learners. This can be done through the life-skills programme in the early grades. When learners internalise these values, there is a greater possibility of learners emulating good values.

Poor Support from the Department of Education

Factors outside the school are another challenge to school leaders. There is a lack of support from the Department of Education, and this is articulated by both H1 and H2, who said that they must call the district office for support with their computers, and that while the office takes their calls, they don't send anyone to help them, so their biggest need is to have a technical support person on site. H2 stated: 'At least the department should take one staff member and train them on computer support.' HoD1, HoD2, and HoD4 said that when the Department of Education or the circuit managers are unsupportive in rela-

tion to their challenges, they often tend to lose interest in promoting the use of technology for teaching and learning. Effective technology planning is a process. The Department of Education did not consider the supportive structures that are required from the district and provincial levels. The urgency in encouraging schools to use technology has created a support gap in the Department. There is a lack of capacity at the district level and thus many teachers do not receive adequate and timely support with technological issues. According to Headstart (n.d.), it is important to establish leadership and support teams at all levels of the education system. Schools should be able to access support and resources within a short space of time to motivate teachers.

Risks and Security Problems

Theft and vandalism are other challenges school leaders need to manage. Computer equipment is often stolen. HoD1 and HoD2 said that learners stole computer equipment such as flash drives, mouses, and mousepads. H2 stated that 'most of the time our computer lab is broken into during the weekends and school holidays.' H1 mentioned that 'theft is a big problem. If people in the community know you have a computer device in your school or classroom it gets stolen very quickly.' According to Ramorola (2013), this frequent theft of equipment often leaves the school without any equipment. H1 and H2 agreed they serve as gatekeepers and safety officers of the computer centre because of theft and vandalism. Mbusi (2020) states that break-ins and vandalism are not new in South Africa. Schools have become more vulnerable to crime as they are increasingly equipped with ICT devices. He proposes that community involvement and protection of the school environment are pertinent. Schools should ensure that they are fitted with security gates and alarm systems linked to security companies. In this way, there would be an immediate reaction if there were any form of vandalism.

Teacher Development and Training

Teacher training and development in the use of technology are important. 'My schools do not have any qualified teachers in technology and this is a big challenge,' said H2. H1 and HoD2 indicated that as school leaders they are not trained in computer education. They are called to a workshop but describe this as very theoretical. In the workshop, the presenter usually tells them about the importance of technology,

but there is very little hands-on practice. When the participants were asked whether they felt they were sufficiently trained to support the implementation of digital technology in their schools, all indicated that they were insufficiently trained to support the use of technology and therefore cannot encourage teachers to use it. Most school leaders leave workshops feeling incompetent because of a lack of understanding and hands-on experience. This enhances their negative attitude towards technology implementation at the school level. According to Archambault and Barnett (2010), the TPACK model is helpful for understanding, developing, and improving the use of technology for teaching and learning. Koehler and Mishra (2006) emphasise the importance of making technology available to all teaching personnel and claim that as soon as teachers are familiar with the use and value of technology they will show enthusiasm and eagerness to implement it in their teaching and learning. It is therefore important that school leaders share equal passion and enthusiasm with their staff to promote technology purposefully (Powers & Blubaugh, 2016).

For the successful implementation of technology in schools, there should be ongoing staff development programmes for school leaders as indicated in the *Guidelines for Teacher Training and Professional Development in ICT and Training* (DoE, 2007). School leaders need to understand the value of technology for teaching and learning. According to Koehler and Mishra (2008), professional development in technology should take into consideration the fundamental knowledge fields described by the TPACK model, and facilitators should build on each knowledge field.

As cited by Vandeyar (2013) regarding the lack of support services, it is envisaged that schools should be given ongoing support from district and technical support staff in the Department of Education. This support should include technical support whereby technology hardware is regularly serviced and kept in working condition. Software support is also essential. Staff should be able to consult with professionals on technological programmes best suited for specific grades. With the appropriate training and capacity-building programmes, support from the Department, adequate infrastructure, and hardware and software support, it is envisaged that school leaders will develop a more positive attitude towards the implementation of technology in their schools. They will see the value of technology for teaching and learning in the

early grades and for preparing young learners for the 4th Industrial Revolution.

Conclusion

This chapter highlighted the attitudes of school leaders on the use of technology in early-grade classes. Given the importance of the new information technologies in the creation of knowledge, schools are seen as suitable and relevant places in which to equip learners with the necessary skills. Despite introducing new technologies at school, not all school leaders have embraced them. School leaders in the early grades believed that their focus is to prepare young learners to read, write, and do mathematics before using technology. Their learners' performance in international assessment and in the Department of Education's systemic evaluation provides key indicators to school leaders of the need to focus on improving learner performance in the 3Rs rather than focusing on technology in the early grades. They also believe that learners will be able to learn to use technology in later grades when they are competent with the basic 3Rs. To ensure that learners are competent in the 3Rs, school leaders have increased teaching and learning time in the 3Rs, encouraged extra classes, and developed a 'bridging class' to help learners master the 3Rs.

While school leaders may be against any form of transformation, especially the integration of technology into teaching practices in the early grades, their learners are using technology wherever and whenever possible for learning. According to Sithole et al. (2012), learners whom they refer to as the Y-generation are competent with sophisticated technology and media learning, are independent problem-solvers, and value teamwork and engaging in multitasking.

According to Mukhari (2016), given the nature of contemporary social structure and the type of workforce required in the global economy, school leaders must be part of the network society and engage in lifelong learning. The global economy expects school leaders and teaching professionals to facilitate pedagogical activities to produce 'self-directed' learners who will be skilled in executing ICT-related activities and capable of being employed in jobs that do not yet exist.

Limitations

This study was limited to the attitudes of school leaders regarding the use of technology in the early grades for teaching and learning. The study was further limited to Gauteng Province. The researchers believe that the study would yield different results if it were undertaken in all nine provinces in the country. Further exploration of the use of technology in the early grades should include larger samples across several provinces in South Africa. As a course for further studies, the researchers recommend that there is a need for an in-depth investigation of the use of technology from the perspectives of teachers and early-grade learners within the South African context. It is believed that the findings may surprise researchers, considering the cadre of prospective teachers who have been using technology at tertiary levels. The COVID-19 pandemic was an eye-opener to schools, where teaching had to take place online. This posed a major challenge to quality teaching and learning.

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