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Rural Primary School Principal's Leadership Strategies for ICT Integration

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ABSTRACT
This paper explored the factors influencing the leadership strategies of school principals in rural primary schools regarding the integration of information and communication technologies (ICTs) in the process of teaching and learning in their schools. School principals are responsible for ensuring that there is ICTs integration in their schools' teaching and learning processes. Embedded within the theory of learning-centred leadership (LCL), school principals have a responsibility to lead, foster, manage, and support the learning process for teachers and learners in their schools. Thus, school principals need to be well acquainted with innovative technologies for teaching and learning amidst the Fourth Industrial Revolution (4IR), which is global, complex, and fast-paced, to lead learning through ICT integration. Underpinned by the interpretive qualitative approach and using a multiple case study as a research design, this study generated data from three selected South African rural primary schools through face-to-face interviews with the three school principals. Data were analysed thematically. Findings revealed that school principals' leadership strategies are influenced by their attitudes towards ICT integration into teaching and learning, their exposure to ICT workshops, and their own judgements of their abilities in using ICT. The paper recommends customised in-service training for school principals and teachers to alter and improve their exposure to, attitudes, perceptions toward ICT integration in teaching and learning.

KEYWORDS
Leadership strategies; ICT integration; teaching and learning; learning-centred leadership.

INTRODUCTION

As the world becomes a global village through the use of information communication technologies (ICTs), so does the way in which schools transmit information to learners. School principals have a duty and a responsibility to ensure that teachers integrate technology in all their subjects. Research has shown that most schools, even those in rural communities, now have access to different kinds of technology that teachers can use to make effective use of some instructional applications (Howley et al., 2011; Roy, 2012). School principals must exercise their instructional leadership strategies to ensure that ICT is integrated into the curriculum. Solas and Sutton (2018) indicate that technology-based education is a reality that is increasingly becoming significant, and this means it has to be embraced. The implication is that as leaders, school principals need to have the understanding and the ability to use ICTs, establish a culture of ICT integration in teaching, support and provide professional development growth opportunities for teachers in using ICTs for teaching and learning. Chang et al. (2021) argue that there has been an evolution in the role of the school principal from that of being a manager to that of being a technological leader. The author further argues that the leadership strategies that the school principal employs, tend to enhance teachers' technological literacy and positively affect teaching effectiveness. Papaioannou and Charalambous (2011) assert that school principals value the importance of ICT integration in the teaching and learning process, however, with specialised training and a change in attitude, their theoretical enthusiasm can be translated into practice. School culture tends to have a negative influence on school principals' leadership practices in ICT integration (Spiteri & Chang Rundgren, 2020). This view is corroborated by Francom (2019), who indicates that an unaccommodating school culture prevents the school principal to exercise their leadership skills in assisting teachers to integrate ICTs into their teaching. Further to this, Kale and Goh (2014) indicate that the rurality of a school has the potential to negatively influence the integration of ICTs into teaching and learning. Wang et al. (2022) state that besides rural schools referring to the lack of ICT foundational resources, digital content, training of teachers, and technical support as some of the challenges, they also list an unsupportive management structure as a human challenge to ICT integration into teaching and learning.

Statement of the problem

Some of the challenges that South African school principals face as far as ICT integration is concerned include, but are not limited to, a lack of responsibility and ownership from the community (Myende & Nhlumayo, 2022), lack of support from the relevant Department of Education (Fray et al., 2023).), inconsistencies with power supply (Tigere & Netshitangani, 2022), and high levels of crime in the community (Ishimaru, 2019) amongst many**.** In some rural schools, most teachers have never been trained in the use of ICT in their early teacher training programmes (Rana et al., 2022). In the teacher training programmes at most universities, ICT education leans towards learning to develop computer programmes, rather than teaching the use of ICTs in teaching and learning (Dhakal & Pant, 2015). The school principal plays a leading

role in creating a teaching and learning environment that thrives with ICT integration. According to Alkaabi et al. (2022), the school principal as an instructional leader, performs the following duties: supervising curriculum implementation, promoting the development of teachers, supervising teachers, and establishing an environment that is conducive to learning, among many others. Therefore, this paper explored the factors influencing the leadership strategies of rural school principals in the integration of ICTs in teaching and learning in their schools.

Research question

This paper responded to the following question: What factors influence rural school principals' leadership strategies for ICT integration?

Literature Review

The current state of ICT integration in SA rural primary schools

Current scholarship on the integration of ICT in teaching reveals that there are notable differences between rural and urban primary schools, in the implementation of digital transformation and the integration of ICT in teaching and learning (Moreira et al., 2019). Despite the lack of resources in rural schools, teachers perceive the integration of ICT in their teaching positively. The findings in Mwapwele's et al. (2019) study on adoption of ICT in rural schools, revealed that South African teachers were enthusiastic about the use of ICTs in teaching and learning, despite the present monetary, technological, and digital skills challenges in their schools. South Africa's rural schools are facing several challenges, including power shortages, security problems and inadequate school infrastructure, among others (Adukaite et al., 2017). However, the amalgamation of ICTs in teaching and learning could be an empowering strategy for teachers since it could enable them to retrieve and utilise teaching content from the internet, derive insights into the subject matter they are teaching and take part in online learning for their professional development. Skhephe and Mantashu (2021) assert that when technology is used in the classroom, it improves learning through other means, which optimises the way learners learn. In their study on how the lack of ICT resources negatively affect teaching and learning in selected South African primary schools, Munje and Jita (2020) found that even schools that do have ICT resources, tend not to use them for teaching and learning as envisaged, with negative implications for instruction delivery. ICT integration does not simply refer to procuring, owning, and having computers in the classroom, the implication of ICT integration is that the ICT resources must be used to facilitate teaching for the teacher and learning for the learners. This points to the leadership skills and strategies of the school principal, to ensure that school resources are utilised for the benefit of the whole school community.

The integration of ICT in South African rural primary schools might prove to be a turnaround strategy and a gamechanger in rural primary school education. To achieve this, depends on how the ICT resources are used in the classroom. Heo and Kang (2010) assert that when ICT resources are used to facilitate teaching and learning, improve, and enhance administrative efficiency in the school, and boost information literacy for teachers and learners, learners' performance is set to improve. Therefore, the modification of pedagogical practices in

using ICT is highly dependent on the vision of the school principal as a leader, and their understanding of the influence and impact of ICT integration in the curriculum. In the practice of their leadership, school principals need to show that they understand the goals and objectives for ICT integration, as discoursed in the following section.

The leadership role of the school principal in ICT integration

A positive leadership role of the school principal cannot be divorced from the effectiveness of the institution. Schools demand leadership that is comfortable with the ever-changing and fast-paced world of technology. This places a burden on school principals to be conscious of the factors that enable or hinder ICT integration. In their study, conducted in Chinese rural schools on integrating ICT in their education, Wang et al. (2022) suggest that school leaders need to share a vision that determines the success of ICT integration, have a school policy that details how ICT resources can be integrated into the school curriculum, and need to ensure that teachers have the necessary expertise to integrate ICTs into their teaching. The school principal is central to the professional development of the teachers and has a responsibility to ensure that they continuously learn. Tulowitzki et al. (2022) assert that the role of the school leader is the professional development of the teachers, and this role has a direct impact on the teachers and an indirect but substantial impact on learner outcomes. This view is supported by Li et al. (2019) when they indicate that school leadership is responsible for teacher professional development in the use of ICT, for both teaching and management functions. Teacher development activities need to incorporate new practices for instance the use of ICT. However, A dearth of ICT knowledge and skills from school principals, a lack of responsibility and ownership from community in which the school is located, inadequate support from the Department of Basic Education, inconsistency of power supply, and elevated levels of crime within communities are some of the challenges school principals encounter in exercising their leadership strategies (du Plessis & Mestry, 2019).

In their study conducted in a South Africa rural school context, by du Plessis and Mestry (2019), further findings revealed that the quality of education was compromised by some factors which included, the lack of essential physical resources such as poor infrastructure, lack of transport, and lack of facilities relevant for housing and storing ICT resources in the school. Despite these challenging circumstances, the role of the school leadership is to ensure that the education provided in the school must meet the teachers' professional learning needs and the demands for desired academic learner outcomes. In a study on school leaders' digital leadership, Alajmi (2022) indicates that the school principal's digital leadership has an impact on the use of technology in the school. The author further states that digital leadership refers to the leadership strategy that is consistent with the support of technology platforms. Therefore, school principals have a responsibility to alter their roles from that of the traditional manager to technology-based leaders by introducing and implementing an ICT-based vision and strategy. Through an ICT-based leadership strategy, not only will school leaders equip teachers

to integrate ICT into their teaching, but will also improve their competency as leaders, and provide teachers and learners with abilities to develop their expertise.

THEORETICAL FRAMEWORK

This paper is underpinned by Liu and Hallinger's (2017) learning-centred leadership theory. In learning-centred leadership (LCL), the school principal employs their leadership skills to control, regulate, direct, promote, foster, and provide for teaching and learning in the school. As framed by Hallinger, Liu and Piyaman (2019), this theory consists of four dimensions that the school principal needs to consider, these are creating a vision for learning, ensuring support for learning, overseeing the learning programmes, and demonstrating what needs to be done. As leaders, school principals have a duty to exercise effective leadership that would ensure that teachers perform at their best by guiding, energising, and motivating them. This would ultimately lead to improved learner outcomes. A'mar and Eleyan (2022) indicate that the school principal's leadership is the key instrument in the effective integration of ICT in schools. It is through LCL that school principals can manage all ICT devices and decide how they will be used, they can also support ICT integration through necessary access to available ICT in the school. In their study on the findings and consequent challenges on how school leaders should promote ICT integration in schools, Rojas Briñez et al. (2023) found that school principals influence ICT integration in schools in the following ways: promoting ICT integration within the school community, enabling ICT use in the school, ensuring monetary support, providing opportunities for ICT training, teamwork, planning, and supervising. LCL ensures that the school principal plays a role in guiding, steering, executing, and assessing, relating to the integration of ICT in teaching and learning by teachers.

METHODOLOGY

This study used a qualitative multiple case study couched in the interpretive paradigm. Data were generated through semi-structured individual face-to-face interviews from three rural primary school principals who were from the same education circuit. The interview questions were open-ended questions so that participants could respond freely. I obtained permission from the circuit manager as a gatekeeper to interview the school principals. The school principals were purposively selected since the study was about their leadership strategies due to their function as managers, and therefore, they were the relevant people to respond to the interview questions. Data were analysed using thematic analysis, as guided by Braun and Clarke (2006). Through thematic analysis, I was able to identify patterns and emerging themes by highlighting similarities, differences, any interconnectedness and relationships between participants' responses. This method of analysis assisted to recapitulate the focus of the paper, prevented analysis from straying and strengthened the focus of the paper. For triangulation purposes, I conventionally used of three cases to replicate or converge the findings across the cases, as guided by Farquhar et al. (2020). To ensure trustworthiness of the research, the

interviews were audio-recorded, and the paper was presented to prominent scholars on the topic for peer and critical review.

The participants are identified using the following codes.

Schools: School A to School C

School principals: Principal A to Principal C (Pa to Pc)

Table 1.

Profiling schools and participants

Criteria→ Names ↓	Gender	Number of learners in school	Number of teachers in the school	Computer laboratory in the school	Computer in the principal's office	Computer/Laptop at home
Principal A for School A	Male	348	10	No	No	Yes
Principal B for School B	Male	416	13	No	No	Yes
Principal C for School C	Female	298	9	No	Yes	Yes

FINDINGS

Three critical themes of factors that influence school principals' leadership strategies for ICT integration, emerged from the data. These are school principals' attitudes towards ICT integration in teaching and learning, school principals' exposure to ICT training and courses, and lastly, school principals' perceptions about their ICT competence. The data is presented in verbatim quotes from the participants and the research sites.

The findings from the data are presented and discussed in the following sections.

School principals' attitudes towards ICT integration in teaching and learning

Responding to the question about exercising their leadership skills in assuring that ICT is integrated into teaching and learning, it emerged from the data that participants had indifferent attitudes towards the integration of ICT in teaching and learning. *Pa* from School A revealed that the ICT integration into teaching is not his responsibility but there is a delegated member of staff who looks into that.

> *Mine is to procure the devices that teachers need and to ensure that they are safe because the school is located in a rural area, and crime is rife here. I have a dedicated member of staff who sees to it that those teachers who need anything related to ICT for teaching and learning are taken care of.* **Pa**

From School B, the school principal revealed that teachers used their own devices if they needed to enhance their teaching through ICT.

> *Our school is very poor as you can see, so ICT integration is not something that you can impose and enforce on teachers, because they do go to class with chalk and book to teach.*

So, those who have laptops find a way to use them like typing and then making copies since we also do not have an internet connection. **Pb**

A nonchalant attitude about ICT integration in teaching and learning was observed from the *Pc*. The participant revealed that the school has been and continues to do well without the use of ICT in teaching. This was his view:

I understand the importance of using computers in this day and age to prepare our learners, but we use the little that we have to introduce that culture, otherwise, we are doing well regarding teaching and learning so far. **Pc**

The data findings reveal a detached-from-reality attitude from the school principals. The reality of ICT integration in teaching and learning is that it assists teachers with the universal obligation to substitute outdated teaching methods with technology-based teaching and learning methods (Jadhav et al., 2022). The participants in the study needed to display a sense of urgency in desiring to change from the traditional methods of teaching. From the South African perspective, the reality is that there has been a younger cohort of teachers who are considered to be digital experts (Padayachee, 2017), and the school principals rely on them to ensure that ICT integration takes place. The theoretical framework of this study demands that school principals as leaders guide, lead, direct, and promote all teaching and learning. This implies that school principals should not abdicate their rightful responsibilities and delegate to staff members, thereby relinquishing their fair duties for which they are accountable.

School principals' lack of exposure to ICT training and courses

When asked if participants had any personal training on the use of ICT tools or attended any professional development programme on the use of ICT in school, the data reveals a need for more exposure to training on the use of ICT tools. If school principals do not have a personal relationship with technological devices, it might be difficult for them to promote and encourage their integration into teaching and learning in their schools. These are the views from the participants:

The only connection I have with technology is my cellular phone because the department gave us admin clerks to do all the admin work. At home, I have kids who assist me if there is something that needs to be typed. Even the cellular phone, I was taught by my kids to use it. **Pa**

At one stage, the DBE provided us with workshops to learn how to use different ICT tools and also how these can be integrated into teaching and learning, but I have always delegated that to our admin clerk and the younger staff members who are enthusiastic about technology. I am glad that they can assist other teachers. **Pb**

No, I have not had any personal training on the use of computers, whiteboards, projectors, etc. but the Department of Education has provided us with a few workshops. I always make sure that I go to the workshops with the young teachers here in the school who are experts in using these gadgets and devices. **Pc**

It is one of the leadership strategies for school principals to include members of staff to attend workshops so that some duties may be delegated to them, but their inclusion seems to stem from a lack of knowledge and exposure to ICT tools, on the part of the school principals. The data confirms the issue of ICT illiteracy among school principals (Muchiri, 2014), which ultimately informs their negative attitudes towards ICT integration into teaching and learning. These negative attitudes lead to school principals' lack of confidence in their own competence in using ICTs. A lack of knowledge and skill on how to use ICT results in school principals losing confidence in their own ICT competence. Two school principals did not have computers in their offices, nor any general computer experience, and this seemed to have a negative impact on how they led the integration of ICTs in their schools, hence their attitudes and perceptions on the integration of ICTs into teaching and learning in their schools. As school leaders, this might have a negative impact on how the teachers in the schools integrate ICT into their teaching. This is discussed in the following section.

School principals' perceptions of their competence in using ICT resources

In response to how participants perceived their competence in using ICT resources, the data reveals that school principals lacked confidence in using ICT tools and resources. The technological skills of the school leader contribute ideally to the whole school's effectiveness. It emerged from the data that participants perceived themselves as lacking in ICT skills and coupled with the challenges that these rural schools faced, the participants seemed not even certain that ICT integration into teaching and learning might be feasible in their schools. These are the views of the participants:

> *Well, I think with training and attending workshops, I may know what it is that is expected from me as a school principal in terms of ICT integration, I mean, because I do not teach any subject…so I am not so sure if I would be able to do that myself at this stage.* **Pa**

Pb reiterated that he delegated everything that concerns ICT in the school to his trusted colleague, since he has not been confident of his own competency in the subject of ICT. This was his response:

> *Our school is very poor, and teachers have their own laptops, fortunately, I have an admin clerk that takes care of all my technological needs. As I said earlier, there is no internet connection, so teachers use their laptops if they need to. Luckily, there is one young teacher who is technologically savvy and can assist teachers if a need arises, otherwise, I would not be able to help them if they came to me directly*. **Pb**

From School C, owing to a lack of confidence in driving the ICT integration programme in the school, it emerged that the school principal was not open to change and the adoption of the ICT integration strategy as he believed that the school was doing well without the integration of ICTs into teaching and learning. These were his views:

> *Though we are in a rural area, our school is doing well in terms of learners' academic outcomes. I am aware that we may be lagging in the inclusion of ICTs into teaching and learning, I think as a leader, I would have to enforce this so that it would bring a shift into*

how we have been normally doing things, and as a school, we must not be left behind in the 4th Industrial Revolution. **Pc**

The data reveals complacency with the status quo in the school principals' leadership. The school principals seem not to have a sense of urgency towards the shift to ICT-friendly pedagogy. This level of complacency seems to stem from the school principals' perceived lack of competence in using ICT resources. ICT integration is not an event but a process that is continuous to enhance teaching and learning. Therefore, school principals need to appreciate the significance of ICT in teaching and learning as well as for the achievement of their managerial and administrative functions (Papaioannou & Charalambou, 2011). Central to the adoption of ICTs in schools, is the school principals' willingness and ability to change the status quo, particularly in rural schools. It is their role as school leaders to ensure that ICT is integrated into teaching and learning in the school as learning-centred leaders.

DISCUSSION OF THE FINDINGS

Rural school principals reveal a detached attitude towards ICT integration into teaching and learning due to their negative attitudes towards the evolution of technology in general. These attitudes are a great predictor of the leadership approach that the school principal displays. The integration of ICT into teaching and learning demands a transformational attitude in the school principal' leadership strategy. Farahnak et al., (2019) indicate that an indifferent attitude is one of the factors that impede the implementation of leadership that would bring transformation in any organization. Further to this, there is a direct relationship between leading for transformation and the implementation success of ICT integration by the school principals through their attitudes. Additionally, Naidoo (2019) argues that there is also a direct relationship between school effectiveness, learners' educational outcomes and the kind of leadership implemented by the school principal. This data finding is in contrast to the theory of learning-centred leadership which demands that school principals guide and direct the learning process. This implies that the school principal's leadership strategy should be directly linked to the teaching practices in the school, which involves ICT integration.

Data findings revealed school principals' lack of exposure to ICT training and courses that would build their capacity for learning-centred leadership. The lack of exposure seems to stem from what Curugullo and Acheampong (2023) refer to as the fear of technology. The authors further posit that the role of fear in the use of technology cannot be overlooked. For some school leaders, the lack of exposure to ICT tools stems from the fear of technological advancement which leads to the detriment of teaching practices in the schools. The authors further assert that, in such instances, this fear can be seen as a threat to the success of the entire organization rendering other operations impossible to achieve. This fear of technology is observed as a result of gender traits, years of service, lack of access to computers or laptops at school and home, and home internet.

Some rural school principals perceive themselves as less competent in the use of ICT tools. The perception they have of themselves has a negative bearing on their leadership strategies to ensure that ITCs are integrated into teaching and learning. Learning-centred leadership demands that school principals guide and direct the processes of teaching and learning. Within that perception of themselves, school principals display an attitude that lacks urgency as there is a level of complacency within the status quo. Pitsoe and Maila (2012) state that teachers in rural schools tend to describe themselves according to context where they work. Therefore, rural school principals have an advantage to use their rural contexts to their advantage and use all the leadership avenues to ensure that they lead the ICT integration process in their rural schools. School principals' competencies in the use ICT is necessary in their personal and social operations, as well as their managerial, entrepreneurship, supervision duties which have an effect in school effectiveness and learner outcomes (Soe'oed et al., 2021).

Quality leadership calls for school principals to become directly immersed in the ICT integration process, so that they can competently monitor and manage the process in their schools. The process of transforming a school into a learning organisation necessitates a significant shift, collective adjustment of teaching practices, a change of awareness for everyone involved, and a deep commitment to embracing the change. Leadership strategies for school principals contribute to and have significant effect on learner-teacher performance and the effectiveness of the whole school.

CONCLUSION AND RECOMMENDATIONS

This paper concludes that, as learning-centred leaders, school principals have a responsibility to lead the process of teaching and learning. Despite the situatedness of the school and without being directly involved, school principals have to be acquainted with the ICT tools so that they are able to advocate for and promote the integration of ICTs in their schools. The implication is that, as a learning-centred leader, the school principal needs to provide structured professional development opportunities for teachers so that they are able to rely on his or her support or guidance in integrating ICT into their teaching. Therefore, this paper recommends customized capacity building workshops and in-service training activities for rural school principals to equip them with competence, skills, and knowledge to lead teaching and learning in their schools.

It is worthy to note that the researched schools were situated in one rural education district in South Africa and therefore, the findings of this study could not be generalised to other rural districts in the wider population.

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