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The Role of School Leadership in Promoting Technology Integration in the Education System in Insiza District, Matebeleland South Province

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Abstract: *Technology integration in Zimbabwe's education system has been a gradual process. The government of Zimbabwe launched the Presidential Schools Computerization Programme in year 2000, which aimed at transforming the country into an information technology hub. This initiative introduced computers and ICTs in schools, marking the beginning of technology integration in the education system. In 2016, a National ICT Policy was drafted, acknowledging the role of ICTs in the education sector. However, after this welcomed move, there has been little commitment or urgency to implement this policy by most school leaders. Notwithstanding the potential of digital technologies, it is discovered that efforts to harness the technology integration in education in some schools remain stunted. Thus, this study explored the role of school leaders in promoting technology integration in educational settings. Through a case study design, this research investigated the ways in which school leaders support or hinder technology integration. The study also revealed challenges and barriers that school leaders face in implementing technology integration initiatives. Additionally, the study provided recommendations for policy makers, educators and school leaders on how to enhance technology integration in schools. This research contributes to understanding the critical role that school leaders play in shaping the effective use of technology in education. Eight primary schools selected and studied in Matebeleland South Metropolitan Province. The study employed a purposive sampling procedure and particularly targeted heads of schools and deputy heads.*

Keywords: *Technology integration, digital technologies, school leadership, Information and Communication Technology, digital transformation, professional capacity.*

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1. Introduction

Technology integration is becoming more critical in today's rapidly changing educational settings to promote successful teaching and learning activities. This pressure has been exacerbated by the Covid-19 pandemic, which has further obliged schools to adapt to technological improvements (Darling-Hammond & Hyler, 2020). Thus, the advancements in technology integration put imperatives on schools to change the content and delivery of their provisions. Globally, educational establishments are realizing how revolutionary technology can be in improving student involvement, enabling customized education and equipping students for success in the digital

era (Mhlanga, 2023). But more than simply having access to digital tools is needed for the successful integration of technology into teaching practices. Strong support systems and visionary leadership are also essential for enabling staff members to use technology effectively (Candrasari et al., 2023). Despite the existence of wide literature on practices with the use of various technologies by teachers, studies on the role of leadership on technology integration are sparse. Specifically, existing studies consistently documented a knowledge and skill gap among teachers for effective technology integration (Alelaimat et al., 2020). Several factors, such as lack of components or courses for pre-service school leaders to develop technology integration skills and knowledge, lack of effective professional development opportunities for in-service teachers for effective technology integration still remain a cause for concern.

Leadership is critical for effective technology integration (Richardson et al., 2012). Based on a systematic review of empirical research, similarly, Dexter and Richardson (2020) suggested that effective leadership for technology integration centers around "establishing a vision, setting high-quality learning opportunities, building professional capacity, creating a supportive organization for learning, and connecting with external partners." Hence, the leadership role in promoting, guiding and supporting technology integration is vital to this undertaking. To foster an atmosphere that boosts creativity, experimentation and ongoing development in technology-enhanced teaching and learning, the school leaders' vision, support and strategic initiatives are indispensable.

Despite the excessive importance attached to leadership, many studies indicated a leadership gap for technology integration in schools. This gap partly stems from the lack of preparedness of school administrators to undertake technology leadership roles (Sincar, 2013). Yu and Prince (2016) verified this argument in a way that the school administrators' perceived need for professional development in technology is higher than their perceived ability to put it into practice. Additionally, technology integration of teachers in schools is a complex process and is exposed to several different challenges. Some of these challenges stem from the leadership, management and governance in schools (Peled & Perzon, 2022), while some others are related to the individual characteristics of teachers (Bower, 2019; Cheng et al., 2022). According to Keane, (2020) new technologies come along with new challenges for teachers, which require the active support of leadership. Leadership is seen as a critical element in the school context for providing professional development opportunities for teachers to build up the necessary knowledge and skills of the teachers for effective technology integration (Keane et al., 2020). Yet, there is sporadic empirical research on leading schools under the pressure of unprecedented technological developments and the purpose, scope, and method of technology integration to serve as a blueprint for teachers are still under-researched.

The goal of this research is to better understand and investigate the role of school leadership and how it contributes to effective technology integration in educational settings. This study seeks to clarify several ways in which leaders facilitate and enable teachers to utilize technology, improve instruction quality and student success. This study aims to offer vital insights into effective strategies that can facilitate successful technology integration in educational settings and challenges associated with leadership for technology integration. The results of this study will add to the body of knowledge already available on leadership technology integration by providing useful advice for policy makers, educators and educational leaders who aim to support successful technology integration in schools.

1.2 Research Objective

This study aimed:

1. To examine the role of school leadership in promoting technology integration in schools.
2. To analyze the role of school leaders in promoting technology integration.
3. To explore effective strategies and practices that facilitate successful technology integration.
4. To examine challenges faced by school leaders that hinder successful technology integration in schools.

2. Literature Review

2.1Theoretical Framework

According to Adom and Hussein (2018), the theoretical framework of a study serves as a guide that the researcher frequently uses to construct his or her own research question. According to Lederman & Lederman (2015), a theoretical framework is a collection of connected ideas, definitions and claims that explain or forecast a phenomenon or group of events. The study was guided by the TAM and TPACK frameworks. Using TAM gives a psychological perspective of how users acquire new technologies and embrace them. The attitude of a person towards the use of technology is influenced by two main factors, Perceived Usefulness and Perceived Ease of Use, which affect the behavioral intention of a person to use it. In schools, leaders and teachers tend to integrate more ICTs when they believe that it would increase their effectiveness and feel to be more confident with their ability to use the tools. Shaping perceptions of the two role categories

depends on institutional support mechanisms (training, peer mentoring) and leadership behaviour (encouragement, role modeling).

The Technological Pedagogical Content Knowledge (TPACK) framework, introduced by Mishra and Koehler (2006), serves as a conceptual tool to examine the role of school leaders in using technological, pedagogical and content knowledge to promote effective technology integration. In Zimbabwe, marked by educational inequalities and restricted resources, the function of school leaders in advancing this integration takes on particular significance (Mawere et al., 2020; Nhongo and Tshotsho, 2021; Makura, 2024). The dual framework also facilitates an examination of the sociotechnical factors related to technology integration in schools.

2.2 Role of School leaders in Promoting Technology Integration

To create the atmosphere and circumstances required for technology integration within educational institutions to be successful, leadership is essential (Alenezi, 2023). The use of technology in education has proven to be crucial for heightening the quality of education as a whole (Livingstone, 2012), as it can also be a valuable form of assistance in improving the leaders and teachers' carrying-out of their tasks while streamlining the process of teaching and learning (Özdemir, 2017). Thus, the rising recognition of technology's ability to improve teaching and learning experiences has led to an emphasis on technology integration in educational research and practice. Now that schools have to engage in technology ICTs, the responsibility of school leaders has drastically changed to focus on facilitating the effective realization of technological integration in teaching and learning in Zimbabwean Schools.

2.3 A Strong Vision and Strategic Direction for Technology Integration

A strong vision and strategic direction for technology integration in educational institutions are essential components for effective leadership. A'mar & Eleyan's (2022) research highlights how crucial visionary leadership is to the success of technology integration initiatives. Researchers are motivated to actively contribute to professional development activities by school leaders who present a compelling vision for the use of technology. In a similar vein, Navaridas-Nalda et al. (2020) emphasize the importance of visionary leadership in giving activities involving technology integration direction and guidance. Thus, a common vision and dedication to innovation are facilitated by school leaders who embrace technology integration as a strategic objective and make it known to staff members. Leaders provide the vision, motivation and resources necessary for teachers to develop the skills and confidence to use new technology effectively. Thus, without active leadership, technology integration is often fragmented and fails to achieve its potential.

Additionally, to be effective school leaders, there are certain principles for school heads. They must have vision, be instructional models and be adequately trained for effective technology integration. Realizing the need for vision, strategic direction and modeling, Ertmer and Bai (2008) agree that administrators need opportunities to learn new technologies. Thus, school leaders need to have vision because part of being a leader is vision. School leaders must have a vision as to the role technology plays in their school. It is a principal's job to establish the context for technology and to understand how technology can be used to restructure pedagogy (Brockmeier et al. 2005). Perhaps the central implication for technology leaders is the importance of being cognizant of the power of a technology vision and expressing the vision in a coherent manner. Further support is garnered from the Brockmeier, Sermon, and Hope study that concludes, achieving the promise requires leadership with vision and expertise. Hence, school heads are central to achieving successful learning technology integration for digital transformation. Similar stances are taken by many of the prominent authors in the area of leadership and technology integration. There is need for vision in successful technology integration (McLeod, 2012). Ultimately, teachers are motivated by having a clear vision and goals, particularly when those goals are personally compelling. Thus, having a vision with clear goals helps staff members in making sense of their work. It also allows them to find a sense of identity within the context of their work, often helping to set direction is the practice of identifying and articulating a vision (Leithwood et al., 2004). Establishing a vision is therefore the starting point for effective technology integration. School heads need to be leaders having a vision as the starting point. Vision alone is not enough but setting the goals and directing the school are essential for successful technology integration.

2.8 Challenges Faced by Educational Leaders in Integrating Technology in Schools

The problem of technology integration is not necessarily lack of funds but lack of adequate training and understanding of how computers can be used to enrich the teaching and learning process (Kozloski, 2006). School leaders cannot deliver knowledge about technology without first possessing it or realizing its significance. According to Takahashi and Rossi (2024) the reality is that the skill set of the majority of leaders falls short. School

principals were found to be inefficient in educational technologies and to be in need of personal development in all dimensions (Eren & Kurt, 2011). For leaders to achieve effective technology integration, they must experience a paradigm shift from traditional methods of leadership. Although technologies can be powerful means to improve the teaching and learning processes, the school leader remains the critical factor in the success of technology integration. Research by Sugita, (2023) indicates that lack of training in the use of technology is a major challenge for school leaders. Technology training is therefore a key factor in the context of technology integration. Sato & Tanaka, (2023) found out that the need for technology training in administrators' preparation was consistently identified as the over whelming need for making technological innovation a reality in schools.

Additionally, Flanagan and Jacobsen (2020) stated that inadequate staff development, lack of informed leadership and pedagogical issues are strong barriers for school principals while they aim to integrate technology in educational land scape. Likewise, Schiller (2015) found out that the level of ICT skills is very important for school principals to understand their role in the use of ICT in schools. Leaders who believe they lack training can either decide to work with technology at their current level of expertise or postpone the use of technology until they consider that they have sufficient competence (Ertmer, 2019). Thus, to build leaders' knowledge to a sufficient level, boosting confidence in the process training and support is necessary. Variations in technology usage reflect important differences in leaders' beliefs about the utility of technology integration in the educational process. As seen in a study by Wang, (2010), it was noted that in many schools there exits all necessary technological facilities however, the school leaders do not have the necessary skills about how to manage the resources.

Additionally, resistance by school heads is sometimes caused by their attitudes and beliefs which are crucial factors in determining the role and effectiveness of technology integration. Attitudes and beliefs about both technology integration and pedagogy in general will ultimately influence how heads promote and implement technology. Discussion of these issues and ways to promote positive attitudes that can optimize technology use. Now that technology is being widely used in schools, perhaps the most important question is how can school leaders best implement technology, rather than whether technology will be used (Ertmer et al., 2012).

It is not surprising that leaders would show some degree of resistance to changes in their leadership practices as the process of technology integration requires them to modify what they have been doing for years (McLeod, 2011). Many current school heads grew up without access to technologies but students today are raised in an environment saturated by technology integration. These "digital natives" can intimidate leaders which can lead to much resistance. If school leaders feel they do not have the necessary competencies when using technology, they may feel less in control of the teachers, use less technology and be unlikely to explore new possibilities that utilize technology integration in the school (Rakes & Casey, 2002). By sticking to traditional methods, leaders who are less fluent with technology maintain a feeling of control in the school and will not have to prepare to face the challenges of instructing digital transformation in a digital environment.

Moreover, it is clear that implementing new technologies into the school can be a difficult task. Perhaps the most common reason mentioned by heads for not actively integrating technologies is that many heads are satisfied with their traditional ways of leading schools. Leaders want educators to spend countless hours creating handwritten scheme plans. Monitoring and evaluating these scheme plans mean several hours of additional work for the leader, which is problematic given an already demanding schedule. School leaders may view the technology integration as an imposition, when in reality the technology may make their leading experience easier and more enjoyable. This role of heads is emphasized by Wilmore and Bertz (2000) as they write that the degree of technophobia and lack of training of many school principals is still holding back technology integration.

Lack of resources is seen as another major challenge for school heads in their technology integration. The research literature reports that lack of technological facilities and human resources had emerged as challenges for school leaders. Many schools in Matebeleland South do not have adequate technology infrastructure and this creates a challenge for the school heads. Similar challenges emerged from Richardson and McLeod's (2011) study in which they have found out that having poor physical facilities and outdated technology were challenges in promoting technology integration. There are similar challenges regarding the lack of human resources in some schools, leaders could not find skilled technology teachers.

2.4 Teamwork and Collaboration as a Strategy to Promote Technology Integration

Ketikidou & Saiti (2022) emphasize the leadership's responsibility to foster interdisciplinary teamwork and collaboration to promote technology integration activities. Similarly, in technology integration, leadership is essential for directing assessment efforts and fostering a continuous improvement culture. In efforts to integrate technology, Anderson et al. (2023) stress the need for leadership to create a reflective culture centred on ongoing improvement

and evidence-based practice. Thus, to create an innovative and collaborative culture that supports technology integration, leadership is crucial. Teamwork and collaboration therefore is crucial for successful technology integration because it drives adoption, fosters a culture of innovation and directly impacts digital transformation in schools. As noted by McLeod & Lehman, (2012) leadership plays a critical role in creating an environment that is conducive to teamwork and collaboration for effective technology integration. Thus, school leaders' critical role is to foster a common understanding of what constitutes a great education and enable teachers to work together collaboratively for successful technology integration in schools.

Several studies have revealed that leadership is significantly and positively correlated with teacher collaboration regarding a broad range of school development tasks (Beverbourg et al., 2015). Bass (1990) stressed the role of a charismatic leader, whereas more recent research on transformational leadership in an educational context has shifted from leader characteristics to leadership practices carried out by school leaders, such as providing a vision, fostering collaboration, leading by example, individual support and motivating the school staff toward a goal (Anderson, 2023). These practices overlap with the duties of school leaders to promote technology integration in schools, identifying a shared vision and communicating this vision, developing the people by appreciating and supporting the individual, leading by example and building a collaborative culture.

Collaborative leaders prioritize teamwork and encourage teachers and administrators to work together in exploring and implementing new technologies (Fujita, 2021). This approach involves creating structures that allow for teamwork, open communication, shared decision making and mutual support. In support is Nishimura (2024) argues that, by involving teachers in the decision-making process, collaborative leaders can ensure that technology integration is tailored to the specific needs of each classroom. This approach also helps to build a sense of ownership among teachers, making them more invested in the success of technology initiatives. Collaborative leadership fosters a learning community where staff members feel empowered to share ideas, ask questions, and seek assistance, thereby reducing the fear and resistance that often accompany significant changes (Nishimura, 2024). Thus, it is critical for school heads to foster teamwork and collaboration for effective and successful technology integration in schools.

2.5 School Leaders to be Role Models as a Strategy to Promote Technology Integration

There is need for educators to have an awareness of the effective technology integration in schools and that awareness must come from the school leader. In support of this view is Larionova et al., (2018) who states that school leaders need to support digital age learning, implement technology that promote digital transformation in the education system. Therefore, leaders must model technology use for the practical application of technology in the educational setting. As noted by McLeod & Richardson, (2011) leadership is the single most important factor affecting the successful integration of technology. This is true at the state level and at the school level. Schools which have made the most progress in technology integration are those with committed leaders that model and promote technology integration. In support is Olaniyan & Uzorka (2024). Who asserts that, for successful technology integration, a school leader should be a strong advocate and user of technology. Thus, school heads need to model use of technology, demonstrate to the staff how important and useful the tools being integrated are. As heads of schools become more skillful at guiding technology integration, more efficient and effective technology use should become prevalent in schools. The head's improved technology skills should lead to increased use of technology tools, thereby producing principals who are models of technology use (Dawson & Rakes, 2003). Hence, this modeling is essential to the success of technology integration schools. A study by Brockmeier et al. (2005), suggest that school leaders who are prepared to promote technology integration are central to computer technology's integration into teaching and learning and for achieving technology's promise. The leader's increased knowledge of the benefits and uses of technology should lead to more support of teachers to permeate technology into the teaching and learning processes.

Furthermore, the heads must be effective leaders because they play a key role in the success or failure of a school. When it comes to leadership and technology integration, there have been few studies completed, but those that exist concur that leadership involves modeling Olaniyan & Uzorka (2024). Heads of schools need to lead by example and literate so that there is effective technology integration in schools. According to the results from a study by Ertmer and Bai (2002) when leaders use the technology that they expect their staff to use, it fosters a positive perception and encourages the staff to embrace it. Good technology leadership skills are just good leadership skills (Ertmer & Bai, 2002). By being the role model and agent of change that they ask their staff mem`bers to be, the school heads make it clear that, not only is technology a goal but a

priority. School heads need the appropriate training for successful technology integration. Dawson and Rakes (2003) conducted a survey to measure the overall effectiveness of technology integration in schools. Part of their research showed there was need for leaders to take time to get adequate training for themselves so that they become effective role model of successful technology integration and digital transformation in schools.

2.6 Providing Resources and Infrastructure to Promote Technology Integration

To provide resources and create the infrastructure required to support technology integration initiatives, leadership is critical. Studies by McLeod and Richardson (2011) Grissom, Egalite, and Lindsay (2021) have examined the importance of leadership in addressing infrastructure and resource limitations. Thus, influential leaders must fight for and obtain the funding required to ensure successful technology integration. This involves allocating these resources to optimise their influence on instruction and learning. According to Ahmad and Mohebi (2025) leaders need to actively support and resource their teachers in this endeavor and plan and envision technology integration. Education leaders can significantly increase the efficacy of technology integration and consequently improve teaching and learning outcomes by focusing on these crucial areas.

Worldwide, different countries advocate for technology integration. For instance, Russia adopted use of online learning technologies in higher education (Larionova et al., 2018). As technology reveals an important role in teaching activities, it can also perform a significant role in the process of education (Liu et al., 2020). The importance of leadership practices in facilitating technology integration through infrastructure construction and resource allocation has been emphasized (Akar & Ustuner, 2019). Integration of technology is therefore perceived to be more essential for educational leaders to expand the infrastructure and provide resources for effective technology integration in schools. Educational leaders are encouraged to provide adequate resources and infrastructure to successfully incorporate technology into their schools.

Moreover, a study conducted by Hatlevik & Arnseth (2012) demonstrated that leadership support fosters positive attitudes towards TI among instructors and facilitates innovative uses for ICTs in education. Thus, an environment that is favorable to technology-enhanced teaching and learning is created by school leaders support in allocating adequate resources. Ismail et al. (2023) emphasize the significance of investing in technology infrastructure and receiving leadership support to foster innovation and experimentation within educational institutions. Thus, to effectively apply technology integration, schools should place a high priority on funding for digital infrastructure, give teachers access to the tools and resources they need, and guarantee that they receive enough technical assistance.

2.7 Professional Development of Staff Members as a Strategy to Promote Technology Integration

Dexter & Richardson (2020) highlighted the importance of leadership in offering chances for ongoing professional development and support in the field of technology integration. For example, for effective technology integration, school leaders should provide teachers with continuous training, workshops, mentorship and peer support networks to help them become more proficient in technology and successfully incorporate technology integration into their teaching methods. Furthermore, Olaniyan & Uzorka (2020) emphasize the significance of leadership initiatives that facilitate technology integration by offering chances for professional growth and acknowledging the work of academic staff. Thus, teachers' contributions in integrating technology can be encouraged and recognized by school leadership through a variety of strategies, including prizes, recognition initiatives and advancement standards. The role that the administration has in integrating technology is significant. Administrators, who provide resources such as mentoring teachers who are themselves proficient in technology, and the time needed to integrate the technology as basic support to new teachers, may likewise promote higher levels of technology integration in the classroom (Webb, 2011). Further support for the role of the principal in technology integration comes from Brockmeier, Sermon and Hope (2005), who write that what principals do to facilitate the integration of technology into the curriculum is a crucial variable. Therefore, developing and executing professional development programs and support systems for successful technology integration require strong school leadership.

Effective leaders focus on directly improving teaching and learning practices by providing relevant professional development and resources (Sato, 2022). These leaders are particularly effective in schools where the primary challenge to technology adaptation is a lack of expertise or confidence among teachers. Effective leaders as noted by Takahashi and Rossi (2024) prioritize training initiatives that equip teachers with the skills they need to use technology effectively, and they provide ongoing support to ensure that teachers feel comfortable experimenting with new tools. By emphasizing the instructional benefits of technology, these leaders help teachers see the value of these tools in enhancing student learning. Effective leaders also set high expectations for teaching and learning,

ensuring that technology integration aligns with the school's academic goals.

3. Methodology

3.1 Research Design

This study employed a case study design and enabled a thorough examination of participants' viewpoints, experiences and views of the phenomena being studied. By using a case study, this research provided an in-depth understanding of the local context and the dynamics occurring within the educational environment (Miles, 2014). The participants in this study consisted of school leaders, deputy heads and teachers in charge (TICs) involved in technology related decision-making. A qualitative research methodology (Cresswell, 2007) was conducted to determine the role of school leader in promoting technology integration in schools. This approach was chosen because it allows the researcher to explore the complex roles, experiences, perceptions, and practices of educational leaders, as well as the challenges in the process of technology adaptation (Creswell, 2013; Yin, 2018).

3.2 Sample and Sampling

School leaders, deputy heads from 4 different schools in Insiza district primary schools were involved in this study. Purposive sampling was used to pick 8 participants in total, guaranteeing representation from a range of educational backgrounds and experiences. The inclusion criteria for participants were their active involvement in technology integration or expertise in leadership roles in education. To enhance the validity of the data, this research implemented several strategies. One of them was data triangulation, where the researcher used various data sources, including interviews, observations and documentation, to verify the findings (Glesne, 2016). Flexible questioning was made possible via semi structured interviews, which allowed the researcher to delve deeper into participants' responses and collect thorough data. Ethical factors such as informed consent and confidentiality were made sure of before any interviews were conducted.

3.3 Data Collection Tools

Semi-structured interviews were used in this study to collect data, and it allowed the researcher to get rich, in-depth information from participants. Akbayrak (2010) expounds that for semi-structured interviews, a list of closed and open-ended questions is asked while the content and procedures are organised in advance. According to Copeman (2017) a semi-structured interview is a meeting in which the interviewer does not strictly follow a formalised list of open-ended questions allowing for a discussion with the interviewee rather than a straightforward question and answer format. Hence, there was personal contact between the researcher and respondents which will enable the researcher to explain unclear and ambiguous questions in detail in a language understandable by respondents.

3.4 Data Collection Procedures

A data collection procedure is a process of gathering and measuring information on variables of interest in an established system that enables one to answer stated research questions, test hypothesis and evaluate outcomes (Clarke, 2016). Hence, the process allowed the researcher to see where data collection must begin and end through laid down steps. The researcher considered the research morals which are ethical principles of research.

3.5 Data Analysis

Thematic data analysis was used, which makes it possible to find and understand themes, patterns and meanings in the interview data. To promote transparency, the researcher also kept thorough records of the data collecting and analysis procedures. Qualitative research has limits even though it provides insightful information about complicated topics. The outcomes of this study could be impacted by participants' and researchers' subjective interpretations, and their generalizability could be constrained by the unique circumstances of Zimbabwean educational institutions. Notwithstanding, concerted attempts were undertaken to augment the validity and reliability of the research outcomes by meticulous data collection and analysis protocols.

3.6 Ethical Considerations

The researcher followed the line of authority and sought permission from the district. Polit and Hungler (2010) argue that researchers need to exercise care that the rights of individuals and institutions are safeguarded. Hence, the researcher maintained a high standard of ethical considerations as ethical issues were considered at all stages of this case study. Clark (2016) asserts that, research projects mandate the informed consent of participants, which is typically achieved by having them sign a consent form. In this study the researcher informed the heads about the general nature of the study before administering the research instruments. The researcher respected the privacy of all respondents. Polit and Hungler (2010) stress that, researchers need to exercise care that the rights to privacy of individuals and institutions are safeguarded. Therefore, interviews with school heads and deputy heads were carried out in their offices where no one was able to eavesdrop what the heads and the researcher were discussing.

Participants were assured of confidentiality. As noted by Copeland (2017) confidentiality refers to a condition in which the researcher knows the identity of a research subject but takes steps to protect that identity from being discovered by others. Thus, the researcher asked teachers not to write their names on the questionnaires and respected their confidentiality in the process. The researcher informed the heads about the methods which were used to protect anonymity. Anonymity according to Mugenda (2013) refers to keeping secrets by not identifying the ethnic or cultural background of respondents, refrain from referring to them by their names or divulging any other sensitive information about a participant. As noted by Grinyer (2012) anonymity is a condition in which the identity of individual subjects is not known to researchers. Thus, the researcher protected the information given anonymously and therefore the heads and teachers were advised not to write their names on the questionnaire. Before administering the questionnaire, the researcher advised the school heads and teachers to feel free as they had a right to anonymity.

4. Results and Discussion

Several major themes have emerged from the study objectives, underscoring the complex role that school leadership plays in promoting technology integration in schools. These themes cover a wide range of leadership topics, from establishing a vision and strategic direction, promoting teamwork, collaborative and innovative culture, school leaders as role models of technology integration, providing resources, offering professional development for teachers as well as the challenges faced by school leaders in technology integration.

4.1 Vision and Strategic Direction for Technology Integration as a Role of Promoting Technology Integration

Both the literature review and the interview responses highlighted the significance of visionary leadership in driving and promoting technology integration in schools. Thus, research findings underscore that, strong vision and strategic direction for technology integration in schools are essential components of effective leadership. When it comes to defining objectives, priorities and expectations for the use of technology in teaching and learning, leaders are essential. This theme is consistent with earlier studies by A'mar & Eleyan (2022), who highlighted the role that visionary leadership plays in advancing technology integration initiatives. In support of the findings, Malik (2015) states that, staff members are motivated to actively participate in professional development activities that are intended to realize the compelling vision of a leader who effectively communicates it. These findings provide valuable insights for educational leaders and policymakers, guiding them in implementing effective strategies to enhance and promote effective technology integration and support digital transformation in schools.

Furthermore, the study findings reveal that, for effective technology integration, a school leader should desire to be an agent of change through developing a vision and foster school culture that is directly linked to the adoption and use of modern digital tools. The respondents were qualified for the leaderships positions and were familiar with vision setting, hence positive results were gathered during the study. In support of the findings is a study by Bennett and Everhart (2003) who noted that the first step in technology planning is setting the vision. The school technology vision should include specific details on how the learning environment will support the use of technology. Thus, the study findings concur that, vision and strategic direction are both an important part of school leadership for successful technology integration. In consistence with the study findings Sato & Tanaka, (2023) argue that, setting a vision for effective technology integration has been found to be one of the most important elements of school leadership.

Additionally, the study findings reveal that, a prominent strategy for successful technology is establishing a clear vision and direction. In support of the findings Ohashi, (2023) asserts that, school leaders should develop a strong vision regarding the importance of technology integration in education, viewing it not only as a tool but as an integral part of the learning process. Baba, (2023) further argues that school leaders should set a vision and direction to recognize that technology can enhance teacher-student interaction and make learning more engaging and relevant. The study findings revealed that, through effective communication, this vision and strategic direction is conveyed to all stakeholders, including teachers, students and parents, ensuring that everyone has a shared understanding of the goals of successful technology integration to be achieved.

4.6 Challenges that Hinder Successful Technology Integration by School Leaders

This study also made an attempt to examine the challenges school leaders face in the context of technology integration in schools in Matebeleland South, Insiza District. The study determined that school heads encountered some challenges in the context of successful technology integration. The first challenge facing school leaders in the context of technology integration is lack of in-service training. The number of in-service training activities to fulfill the needs of school principals and teachers concerning the use of technology in education is not

sufficient and the organized training activities have not a continuous nature.

The study further revealed that resistance to change by school leaders is another challenge. Especially school heads with a long period of service resist to the use of technology in education, which adversely affects some teachers who are normally open to change. The resistance to change is the finding that shows most parallelism with the results of the studies conducted in international contexts (Dawson & Rakes, 2003; Richardson & McLeod, 2011; Wang, 2010).

The study found out that there was lack of resources at schools that makes things difficult for the school leaders who want to integrate technology into schools. These results are parallel with the results of some studies conducted in international contexts (Richardson & McLeod, 2011). Thus, the findings underscore that, lack of resources can be a biggest obstacle for school leaders who want to make innovation-related decisions.

4.2 Teamwork and Collaboration as Strategies for Promoting Technology Integration

The study findings revealed that, school leaders' teamwork and collaboration among staff members promote technology integration by fostering a supportive culture for innovation, improving communication between stakeholders and building capacity for effective tech use. By working together, leaders can identify the best tools, share best practices and provide consistent support, which in turn allows teachers to better integrate technology into the classroom, enhancing learning experiences for students. In support of the findings, Hargreaves (2021) states that, it has become evident that teacher collaboration not only fosters teaching quality and student achievement, as numerous studies have shown, but it could also be helpful in achieving common goals for technology integration in schools. Thus, this study in particular revealed that, collaborative activities promote higher levels of technology integration in schools. In support of the above, for example, Inan and Lowther (2010) indicated that peer support from other teachers regarding digital technologies is a significant and positive predictor of teachers' readiness to use digital technologies and teachers' beliefs about digital technologies, which in turn have a significant and positive influence on technology integration operationalized as the frequency of teachers integrating technology into their instruction. This can only be successful if the leader is able to foster teamwork and collaboration within staff members.

The study further revealed that, creating innovative teams and collaborative culture that supports technology integration, leadership is essential. This entails fostering multidisciplinary collaboration among staff members, encouraging risk-taking and providing opportunities for experimentation. The results align with previous studies which highlighted the significance of leadership in moulding corporate culture and cultivating an environment that encourages innovation and constant enhancement (Barnett, 2018; Ghamrawi et al., 2024; Simaremare et al., 2023). The study found out that, successful leaders foster a common understanding of what constitutes a great education and enable staff members to work together to further technology integration in schools.

Furthermore, the study discovered that, teamwork and collaboration are significant and positive predictors of school heads and teachers fostering students' engagement and effective technology integration. Prasse (2012) in support of the findings, found that heads of schools and teachers' teamwork and collaboration, goal clarity in technology integration, and the strategic importance of technology integration in the school strategy play key roles in effective technology integration. Thus, the findings underscore that, school leaders who promote teamwork and collaboration among staff members in the school strategy, significantly and positively predict successful technology integration in schools.

4.3 School Head as a Role Model for Promoting Technology Integration

The study findings reveal that school heads are role models for their teachers to use technology to promote technology integration. In support of the findings is a study by Suzuki, (2024) which revealed that heads of schools should model and promote the frequent use of technology. Describing the nature of being role model during the interviews school heads stressed that they provided all kind of support to the teachers in technology integration where 'support' means that they facilitate them in providing digital and non-digital resources, human resources and technical support. They claimed that this makes them role models for their staff. Respondents highlighted that, they model technology integration by using emails for official purposes or that they used multimedia presentation and videos for professional courses. However, the findings revealed that, a few of the heads had attended any kind of professional training in terms of ICT nor had they made any personal efforts to participate in any ICT related course/workshop. The study found that, some of these seasoned heads of schools aged above 50 did not emphasize on the importance of using technology in the pedagogical practices and their role in modelling a culture of technology use was very weak. In line with the findings, a study by Sato & Tanaka, (2023) revealed that, teachers hardly received any mail from their heads of schools and they rarely experienced any training for technology

integration. The school heads particularly those above 50 years according to study findings take assistance from the ICT teachers for their computer related tasks. Responding to the question of how they use technology in the schools, one school head replied; 'I use technology as I read my mails and reply my mails. I also take provide full support to my teachers in terms of providing resources.' The respondents stated that, usually IT teachers are always there to provide them with the technical support.

The responses from the school heads in the age range of between 40 and 49 years revealed that they considered themselves as facilitators to support the concept of technology integration in pedagogical practices. The findings from the interviews are clear that most school heads try to facilitate teachers to use technology for teaching and learning according to their sources. They do not have sufficient resources, and almost all the heads stated the similar response.

4.4 Resource Allocation as a Strategy for Promoting Technology Integration

The study findings revealed that, proper resource allocation is essential to support technological adaptation. In line with the findings is a study by Kobayashi, (2022) who argues that school leaders strategically allocate budgets and resources to ensure teachers and students have sufficient access to necessary technology. This includes providing modern hardware, appropriate software, and technical support to assist teachers in effectively using technology. In support Sholeh, (2024) states that, with adequate resources, schools can create a conducive learning environment for technology integration. Hence, the study found that, the deployment of resources and the creation of infrastructure to enable technology integration are vital components of school leadership in promoting digital transformation in schools. Olaniyan & Uzorka (2024) are in agreement as they suggest that, making investments in digital infrastructure, giving staff members access to the tools and resources they need and making sure they receive enough technological support is critical for successful technology integration. The importance of resource allocation in supporting successful technology integration in educational contexts is highlighted by Backfisch et al. (2021) as they argue that, prioritizing funds and effectively allocating resources are essential for leaders to foster a climate that supports professional growth in technology integration. However, successful technology integration was hindered by insufficient resources as well as inadequate technological infrastructure in some schools which was a problem almost all respondents highlighted as a barrier.

4.5 Professional Development Strategy for Promoting Technology Integration

The study found out that, professional development is a top priority within the educational leadership strategy for successful technology integration. The study further revealed that, for school leaders to promote successful technology integration their staff members should also have adequate skills and knowledge. In consistent with the findings is Suzuki, (2024) who argues that effective school heads organize various training programs and workshops specifically designed to enhance teachers' technical skills. The findings show that, this training covers not only hardware and software usage but also ways to integrate technology into daily curricula and teaching. Through ongoing professional development, teachers gain confidence in using technology in the classroom, which in turn enriches students' learning experiences. Hence, the findings show that, it is the role to foster and promote professional development for teachers for effective technology integration in schools. Additionally, respondents highlighted that collaborative efforts by school heads can lead to pursuing professional development opportunities, enabling staff members to continuously upgrade their skills to match evolving technological demands.

Furthermore, key informants highlighted how leadership plays a crucial role in developing all-encompassing professional development initiatives and support systems. As supported by Olaniyan & Uzorka, (2024) in their study, leaders collaborate with academic staff to ascertain their present level of technical proficiency, pinpoint deficiencies, and pinpoint particular areas that require enhancement. Thus, a more focused and significant learning experience is promoted by leaders being able to customize professional development programs to the various needs of staff members. Based on the information gathered from respondents, leaders create customized professional development initiatives that address the particular needs of teachers. The study findings revealed that, school leaders should provide professional development programs that give staff members practical experience so they can immediately implement newly learned techniques that promote technology integration in schools. The study findings also revealed that, staff members have different needs and goals in which school leaders should provide opportunities for specialized training that will lead to effective technology integration in schools. In consistence with the findings is Yamada, (2021) who states that, leadership designs and supports tailored training programs that cater to the specific technological needs of educational leaders was found as a critical component for successful technology integration in the education system. However, the findings identified a

gap of lack of technological skills from a number of school heads especially those that are closer to the retirement age.

5. Conclusions and Recommendations

5.1 Conclusion

This study has illuminated the vital role that school leaders play in supporting professional development for the integration of technology in educational settings. Several major themes have surfaced from thematic analysis, underscoring the diverse roles that leaders play in advancing successful technology integration. Setting a clear vision and strategic direction, allocating resources, creating professional development programs, encouraging innovation, collaborating with others are all parts of leadership. These results highlight how crucial it is to have supportive and imaginative leadership to foster an environment where staff members may improve their technological proficiency and successfully incorporate technology into their teaching methods. This study has also advanced the knowledge of the role that leadership plays in the incorporation of technology in educational settings. The results highlight how important it is for leaders to give resource allocation priority, offer professional growth for staff members and cultivate an innovative and collaborative culture. Given the unique and promising technologies which can provide effective technology integration the role of the leader is essential to ensure that technology integration is successful in schools. Overall, successful leadership is necessary to promote long-lasting progress and change in technology integration, which eventually improves schools to digitally transform teaching and learning processes in educational settings. Educational leaders have had an impact on the field of education, specifically in the use of technology as a means to enhance learning. However, there are some challenges that hinder successful technology integration. School leaders must be able to understand, overcome challenges and adapt to changing technologies and guide an organization towards accepting and implementing that change. They should also have knowledge of technology and its relationship to content and pedagogy in order to have an effective integration of technology into teaching and learning processes.

5.2 Recommendations

From the findings, the study made the following recommendations:

1. The heads of schools must create a vision where technology plays a pivotal role to enhance teaching and learning.
2. Policymakers to provide training and development programs for school leaders.
3. Policymakers to provide resources and support for successful technology integration.
4. School heads should depict the role model attitude towards technology integration by exhibiting its use in their tasks and encouraging teachers to use as an effective tool.
5. School leaders must develop the evaluation system that includes conceptualizing the effective use of technology in the pedagogical practices.
6. School leaders should have a structured plan to enhance technology integration in the pedagogical practices involving all stakeholders.

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