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Teachers' Experiences of Technology Integration in Sarah Batman District, Eastern Cape Province

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ABSTRACT

Rural schools encounter unique challenges including low socio-economic status, insufficient infrastructure, and inadequate funding, significantly affecting rural secondary teachers in South Africa's Eastern Cape province. This study explored the experiences of veteran secondary school teachers, deemed 'digital immigrants,' who independently integrate technology despite potentially limited exposure or training. Using purposive sampling, seven teachers were selected and data were collected through in-depth semi-structured interviews and sharing circles. Findings revealed that digital immigrant teachers experienced: learners with greater technological knowledge and skills; technology-enhanced teaching and learning; fundamentally transformed teacher roles; shifting beliefs and perceptions about technology use; and persistent experimentation with diverse technologies. Challenges identified by teachers included a lack of training for subject-specific technology integration, limited access to technology resources, and the need to keep up with digitally-native learners while mastering new educational technologies. Therefore, the paper proposes training programs should be provided for digital immigrant teachers to enhance their technological pedagogical content knowledge, helping them adapt to the learning approaches of modern students.

Keywords: Digital Immigrants, ICT, Integration, Rural Secondary School, Technology

INTRODUCTION

The effect of information communication technology (ICT) on society presently generates substantial concerns regarding the quality and goals of education, mainly in schools. As society becomes more dependent on ICTs, it is reasonable that the education sector experiences a similar transformation by incorporating increased use and reliance on technology (Mynaříková & Novotný, 2020; Benitez-Saza, Bustos & Arevalo, 2018). Recognizing this shift, Szymkowiak, Melović, Dabić, Jeganathan and Kundi (2021) acknowledge that it is critical to consider the implications of this shift on teachers who were born and trained before the emergence of ICTs. At the same time, today's learners have been immersed in a technologically saturated environment since birth, whereas most teachers encounter technological products only after reaching their in-service practices. Çimen and Hangül (2021) posit that such teachers possess the desire to explore and experiment with technology, but many are not equipped to do so due to inadequate learning experiences. Furthermore, intergenerational behavioural patterns tend to persist, with adults favouring established practices, youth embracing current trends, and children envisioning the future (Prensky, 2009).

Kee (2020) maintains that the integration of digital technology by teachers in schools is different from that of their students due to a disparity in learning experiences. As a result, it is vital for the connection between educators and technology to advance in order to fulfil the needs of the digital era in education. Peck

(2020) suggests that in order for ICT-integrated teaching and learning to be effective in the present educational system, teachers need to modify their thinking patterns to become more focused on digital technologies. Recognizing the gap between educators and learners can promote this development by providing educational opportunities for creating valuable professional learning experiences. This is based on the comprehension that teachers are willing to learn but require appropriate experiences to improve their expertise in using technologies.

Prensky (2009) defines learners raised alongside digital technology, who have lived lives enriched with access to computers, video games, and mobile devices, as digital natives. On the other hand, digital immigrants refer to those who became familiar with digital technology as they integrated into their professional lives. These are teachers who familiarized themselves with technologies only after they became teenagers and thus face challenges in using technology efficiently. The shift to a technology platform causes significant alterations for these digital immigrant teachers, forever transforming the educational field.

Kesharwani (2020) highlights a paradigm shift in the approach to teaching and learning, as most educators, including digital immigrants, are now obligated to incorporate digital technologies into their teaching methods. However, despite the call to integrate ICT tools into classrooms (Shambare and Simuja, 2022; Liu & Chao, 2018), most veteran teachers lack essential knowledge and competencies for successfully educating today's learners (Khatoony & Nezhadmehr, 2020). This lack of competence results from inadequate technology in-service and pre-service training or inappropriate experiences teaching with digital technologies (Johnson, Jacovina, Russell & Soto, 2016; Dontre, 2021). Moreover, technological advancements consistently offer new possibilities and applications, leading to some teachers becoming lifelong learners in the process of integrating technology (Liu & Chao, 2018).

To strengthen the technological infrastructure in teaching and learning in South Africa, particularly the Eastern Cape Province, which is primarily rural, the government has recognized the necessity of rolling out and integrating educational technologies within its education sector. Consequently, the provincial government has initiated an extensive program to deploy educational technologies to every teacher, school and learner across the province. The introduction of the technologies aimed to enhance the technological infrastructure of schools by incorporating ICTs within education through laptops issued to teachers, smart boards, the use of tablets by learners and many other technologies. However, the digital divide between generations has led to a lack of technical knowledge and pedagogical competence among most digital immigrant teachers, hindering their ability to integrate technology effectively in classroom practices (Kesharwani,2020).

Given the significant investments made in the provision of educational technologies to schools, it is crucial to understand digital immigrant teachers' own lived experiences regarding the integration of technology in teaching and learning. This is important as these teachers are anticipated to use these technologies. Research has shown that digital immigrant teachers face new challenges in accommodating students' individual needs, as well as keeping up with advances in software and hardware, while also addressing their own technology professional development needs(Çimen & Hangül, 2021; Ustati & Ismail, 2013; Borko, Whitcomb & Liston, 2009). As such, this study is grounded on the principle that effective integration of technologies in teaching and learning in rural schools in

Eastern Care must include experiences of digital immigrant teachers' use of these technologies. Most educational technology tools may end up being unused or underutilized in schools if there is no effort to understand teachers' experiences. Hence, the primary objective of this was to deeply explore the experiences of digital immigrant educators in rural secondary schools who received laptops and other technologies and were expected to integrate these tools into their teaching and learning.

The research aimed to capture the perspectives of these teachers as they reflectively recall their real-life experiences of incorporating technology into their teaching approaches. To accomplish this aim, the paper examines pertinent literature on the subject, introduces a guiding conceptual framework, and details the research methodology, data gathering techniques, and results. The results are then discussed, followed by a conclusion and limitations of the study.

REVIEW OF RELATED LITERATURE

Information and Communication Technologies is rapidly advancing and has become a vital part of society. Its incorporation into educational institutions, such as schools in developing countries such as South Africa, plays a key role not only in achieving various goals but also in enhancing lesson quality. Numerous ICT tools have been developed thanks to advancements in technology, proving to be vital in society's and education progression(Moodley, 2019; Tiwari, 2022). Given the importance of ICT in societal development, it is imperative for everyone to be skilled in using technology.

In essence, every school must be equipped with the necessary ICT tools. This will empower future generations with the requisite resources to develop skills necessary for modern society. This is especially significant in schools which play a key role in shaping learners with the knowledge and skills for life transitions (Shambare and Simuja, 2022). Hence, to achieve these perspectives, teachers in schools should be encouraged to integrate ICTs in teaching to meet the learners' learning needs and modern curriculum requirements. Moreover, it is also crucial for educators to understand how to develop lessons, choose resources, lead activities, and facilitate learning since ICT cannot single-handedly create a suitable teaching and learning environment(van Wyk & Waghid, 2023).

Integrating technology effectively in teaching is an intricate undertaking. It involves multiple facets including the technological aspect, the subject content and teaching methods, the readiness of the school, the abilities of the teachers, and sustained funding, to name a few. At present, educators, including digital immigrant teachers in South Africa, are exploring strategies to weave ICT into their instruction process(Chisango, 2020; Maja et al., 2023). The aim is to enhance educational quality by highlighting skills like critical thinking, problem-solving in dynamic situations, group collaboration, and proficient communication (Zenda & Dlamini, 2023).

Maphalala et al. (2021) study indicated that incorporating technology in education might play an important role in success of teaching and learning. However, Shambare and Simuja (2022) argued that successful technological integration in teaching arises from several factors. One key determinant is the educators' attitude towards integrating technology into instruction. Various research emphasizes that the effectiveness of technology in education largely relies on the teachers' attitude toward using it (Farjon et al., 2019; Winter, 2021; Mahlangu & Makwasha, 2023) and it has been singled out as a major predictor in adopting technology in educational environments (Chisango, 2020). Likewise, the study conducted by

Tarman, Kilinc, and Aydin (2019) revealed that factors such as technology familiarity and the duration of teaching experience may also serve as potential hindrances to incorporating ICT in the classroom. They pointed out that a lack of knowledge and experience with technology can decrease self-confidence, which may subsequently influence how willing teachers are to use technologies in a classroom. This is particularly relevant when teachers do not feel adequately supported.

Hence, Szymkowiak et al. (2021) noted that teachers who are considered digital immigrants encounter a constantly evolving teaching environment that is full of new challenges and pressures due to the rapid advancements in technology. Additionally, Al Rawashdeh (2021) highlights that the transformation of education goes beyond merely having technology available in the classroom, it is primarily about blending traditional and technology-based pedagogies to effect learning. The blended teaching approach integrates technology and digital media to improve teaching and learning activities. Graham et al. (2019) defined blended learning as a combination of traditional face-to-face learning methods and digital or online education models. According to the research conducted by Bonk and Graham (2012), this approach accommodates more different learning styles than traditional teaching methods alone. It also fosters a more student-centered learning environment, where students can control the pace of their learning. Amid the rise of digital natives, the blend of traditional teaching by some digital immigrant teachers as postulated by Prensky(2019), with technologies, is gaining popularity. The study by Ghimire (2022) indicated improved learning outcomes with the blended learning method. It also explored how this approach created more interactive and engaging learning experiences. Ghimire's study highlights the social aspects of learning, which are enhanced in the blended learning environment. However, Sundani and Mangaka (2023) noted potential challenges, such as teachers, resistance to technology integration, and the need for professional development of educators. Despite these challenges, the blended teaching approach appears promising as evidence supports its efficacy, flexibility, and adaptability in diverse learning contexts.

THEORETICAL FRAMEWORK

Koehler and Mishra's (2006) TPACK framework, which builds upon Shulman's (1986) PCK theory, was used in this study. The TPACK framework offers an understanding of the knowledge necessary for teachers to effectively incorporate technology into their classrooms. This framework outlines how technological, pedagogical, and content knowledge intertwine to successfully integrate technology. As suggested by TPACK, when implementing technology into teaching processes, it is vital to consider these three elements: content, pedagogy, and technology. The overlapping of these knowledge areas, both theoretically and practically, results in versatile knowledge, which is key for effective technology use in teaching. The knowledge aspects framed by TPACK are presented in Figure 1 and explained in Table 1. The TPACK theory in this study provides a comprehensive framework that accounts for the interaction between technology, pedagogy, and content, which deepens the study to reveal and understand the teachers' experiences in integrating technologies in the Sarah Batman district. By considering the technology, pedagogical, and content knowledge as interconnected and interdependent (Mishra and Koehler, 2008), the framework allowed the study to examine how these teachers navigate and reconcile these three domains in their teaching practice.

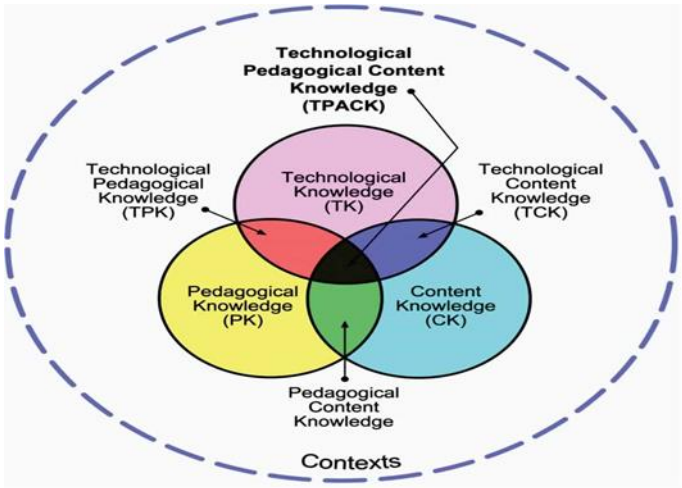

Figure 1. The TPACK framework with context adapted From http://www.tpack.org

The Constructs	Abbreviation	Definitions
Content Knowledge	CK	Knowledge of subject matter
Technological Knowledge	TK	Knowledge of various technologies
Pedagogical Knowledge	PK	Knowledge of the processes or methods of teaching
Technological Content Knowledge	TCK	Knowledge of subject matter representation with technology
Technological Pedagogical Knowledge	TPK	Knowledge of using technology to implement different teaching methods
Pedagogical Content Knowledge	PCK	Knowledge of teaching methods for different types of subject matter
Technological Pedagogical Content Knowledge	TPACK	Knowledge of using technology to implement teaching methods for different types of subject matter

Table 1. The seven constructs in the TPACK framework adapted from Chai, Koh and Tsai (2010, p.564)

The TPACK framework, therefore suggests that successful technology integration is more than just being familiar with specific technological tools; it is also about understanding how these tools can be used pedagogically within a certain content area (Mishra and Koehler, 2006). Therefore, the experiences of the selected teachers in integrating technologies could have been shaped by their ability to combine these different forms of knowledge effectively, as guided by the TPACK framework.

RESEARCH DESIGN AND PARADIGM

The current research utilizes a qualitative case-study research design (Gregory, 2020) that is grounded in the interpretive paradigm. The interpretive perspective is employed to understand participants' actions and meanings based on their subjective frame of reference, as stated

by Thanh and Thanh (2015). The study is additionally informed by Tobin and Begley's (2004) assertion that the philosophical stance underpinning the methodology utilized provides a framework for the procedure and sets forth its rationale and standards. The interpretive theoretical perspective aligns with the research, as it enables the logical construction of participants' knowledge and meaning through the interpretation of their experiences as digital immigrant teachers integrating technology in teaching in rural public secondary schools.

As regards research design, a phenomenological approach was adopted as the preferred qualitative research design to investigate cases that were deemed important for in-depth examination (Khan, 2014). The phenomenological design was chosen to reveal how individuals interpret phenomena in their consciousness through their experiences(Shambare and Simuja, 2022). The use of a phenomenological approach in this research aimed to delve into how selected digital immigrant teachers interpreted their encounters when incorporating digital resources into education. This was conducted with the intention of gaining a broader understanding of these teachers' experiences with this occurrence. Consequently, the teachers' individual encounters served as a primary data source for the study. The author collected data from each teacher's experience and practised reflexivity to highlight the connections between these experiences.

As a phenomenologist, it was imperative to acknowledge certain assumptions that underlie the research to capture the participants' required experiences. These assumptions include perceiving teachers as active and purposeful participants, their awareness of deliberate technology use, and their ability to create experiences and attitudes towards technology in their professional contexts. Furthermore, teachers possess the ability to reflect on their own teaching methods and choices. To fully understand the individuals involved in the study, the researcher considered their unique and collective circumstances, life situations, and their experiences teaching and learning with others, as explicated by Khan(2014).

Sampling

In this interpretive and qualitative study, purposive sampling (Etikan, Musa & Alkassim, 2016) was utilized as a technique for selecting participants. Phenomenological research dictates that the data must be obtained from individuals with first-hand experience with the phenomenon being investigated. Consequently, the present study employed criterion sampling, which is one of the purposive sampling techniques. The researcher purposively selected seven teachers from the seventeen participants who participated in a two-week ICT workshop facilitated by the researcher in this study. Phenomenology research design necessitates a relatively homogeneous cohort of participants to meticulously elucidate a collective essence of experiences within a specific group, whereas a heterogeneous group would impede the sampling process from a phenomenological standpoint. Due to the detailed nature of the study, sample sizes for phenomenological research are typically not expansive, with a recommended range of 3 to 10 participants, according to Khan (2014).

The selected participants were teachers teaching various grades and subjects from three rural secondary schools in the Sarah Batman district in the Eastern Cape province. Table 1, provided below, presents the relevant basic information of the teachers who were selected for the study through purposive sampling.

Table 1. Participants Basic Information

Participant	Age	Gender	Teaching Grade	Qualification	Years of Experience
P1	58	Male	12	BEd Physical Sciences	27
P2	55	Male	12	BEd Geography	23
P3	56	Female	12	BEd Accounting	23
P4	53	Male	11	Masters in Education - Science Education	29
P5	49	Female	10	BEd Mathematics	22
P6	50	Female	11	BEd Geography	24
P7	48	Male	12	BEd Natural Science	25

Data Collection Process

All participants were required to provide informed consent by signing a consent form and acknowledging the research's purpose before participating in the study. They were informed of their right to decline to answer any questions in the interviews and sharing circle discussions. Moreover, the author obtained ethical clearance from the affiliated university and the Provincial Department of Education office. The interview approach enabled participants to describe the phenomenon under study from their unique perspectives (Shambare and Simuja, 2022). To ensure the study's validity, the author conducted a literature review, created a preliminary semi-structured interview, and revised it based on field expert opinions and pre-interviews with the teachers. The final interview form consisted of twelve open-ended questions and a personal information section.

All seven purposively selected teachers participated in the in-depth semi-structured interview, and questions were provided to them via email before the interview. The interviews were conducted face to face with all necessary precautions observed, lasted for 30 minutes and audio recordings were made for transcription purposes. The participants were interviewed on an individual basis to ensure that their responses remained autonomous and were not swayed by the opinions of others. And to establish rapport and trust with the participants and mitigate any power imbalances, the researcher informed the teachers that he was interested in learning from their experiences before conducting the interviews. Moreover, the interviews were scheduled at a mutually convenient time for both the researcher and the participants.

The researcher also employed one sharing circle discussion to gather data. Sharing circles exemplify a focus group technique that stems from indigenous perspectives, which involves researchers collecting data through group dialogues (Lavallée, 2009). Within African settings and specifically among indigenous populations residing in rural areas in the Eastern cape, individuals frequently congregate in a circular arrangement, such as around a fire pit, as observed in the present study. More so, most teachers in rural schools during break times often stand/sit in a circle and converse on several issues. In this study, a sharing circle was used to construct collective knowledge by soliciting and capturing digital immigrant teachers' sense of their experiences regarding technology integration.

Data Analysis

The researcher utilized a thematic analysis approach to identify, organize, analyze, and report patterns and themes within the collected data. This process included distinct phases, namely, the transcription, organization, coding, analysis, and interpretation. Instead of

being straightforward or methodical, it was reflexive and iterative. The recorded interviews were transcribed using Microsoft Word software and analyzed with NVivo version 22 data analysis software known for its versatility, robustness, and credibility. In accordance with the process of identifying, arranging, and interpreting codes, categories, and themes as described by Creswell and Tashakkori (2007), the thematic analysis facilitated a comprehensive examination of the gathered information. This allowed for understanding the concepts, classifications, and patterns evident in the data. Recurrent occurrences in the dataset, as pointed out by participants, were used to generate codes. Through merging comparable codes, groupings and patterns were established and analyzed (Peel, 2020), and relevant information was conveyed using verbatim quotes.

The trustworthiness of this study was maintained through several strategies. The use of NVivo software, renowned for its robustness and credibility, helped in strengthening the reliability of the results obtained from the thematic analysis. The ethical considerations were respected, with the data being fully transcribed and analyzed without altering the meaning or the responses of the participants. Participant quotes were used in order to stay true to their experiences and voices, thus maintaining the authenticity and ethical integrity of the study.

STUDY FINDINGS

The research utilized interpretative phenomenological analysis to explore the digital immigrant educators' encounters as they incorporated technology in rural secondary education. The objective was to obtain a comprehensive comprehension by examining the educators' pedagogical practices involving technological tools.

Based on the participants' reflective recall of their experiences, the study uncovered the selected digital immigrant teachers' own perspectives on (a)how they describe their encounters and engagements with digital technology integration in the classroom(b) shed light on how these teachers' beliefs and perceptions regarding the role of technology in education have shifted over time, as they gained experience and exposure to different technological tools and teaching practices (c) the constraints encountered by the teachers as face as they integrate and use technology into their teaching. This section presented direct quotations from teachers to provide insights into their perspectives on the themes under scrutiny.

Encounters and engagements with digital technology integration in the classroom

When questioned about their encounters with technology integration, the research respondents provided two contrasting narratives. Some teachers experienced a significant difference between their own use of digital technologies and their learners' experiences. The classrooms they once studied in as school learners and as pre-service teachers were distinct from the ones they currently teach in. The instructional tools and resources their former teachers employed are no longer the same as modern teachers use for teaching their students. Over time, their experiences with digital technologies has evolved from non-existing to becoming an integral part of everyday living. All teachers expressed the regular use of technology in both their personal and teaching spheres. These tools include devices like laptops, tablets, smartphones, televisions, computers, and other technological equipment.

However, most of these technologies were not present during their pre-service training years. Participant P3 commented during the interviews: *"…during the pre-service training at the teacher college in Mthata, I never experienced our teachers using computers*

in the classroom, yet the DBE has gave me a laptop,Vodacom Internet data bundles and installed Wifi at my school while expecting me to use these technologies in my teaching". Despite the prevalence of ICTs in most schools and teachers receiving technologies in the Sarah Batman district and Eastern Cape province, P3, P5 and P6 noted that integrating these technologies has resulted in some negative effects. As a result, some teachers are cautious about fully incorporating technology into their teaching practices. Participant P5 expressed a concern "*I feel overwhelmed with different types of technologies I am expected to use in my teaching and expose my learners to*." P5 believes that technology tends to take much of their time in preparing and teaching lessons, as they have to deal with technical challenges to operate some of the technologies.

It is important to acknowledge that all participants involved in this research were pre-service trained in the 1990s and early 2000s. At that time, only a small number of ICT devices were available, and accessible and individuals did not have frequent exposure to them in their day-to-day routines. Teacher education programs and school systems did not allocate funds for digital devices for pre-service teachers, in-service teachers, and learners, making it highly unlikely to see such tools in the classroom setting. As such, participants P1, P2, P4, and P5 reported having no recollection of experiencing the use of ICTs during their pre-service training and before becoming teachers. Instead, they remembered seeing typewriters which are predecessors to today's digital devices but fundamentally different from what is found in classrooms today.

There were notable exceptions to the findings. The study participants expressed a sense of awe and wonder towards digital technology and acknowledged how it enhances their teaching and learners learning. Participant P3 stated, "*ICTs as a crucial resource that allows for effortless access to a vast amount of knowledge that can be used for teaching all subjects to learners*." All the participants in the study also acknowledged and experienced ICTs to have the potential to enhance teaching and learning when they are used as supplementary resources or tools to the curriculum.

Participants P4 and P6 expressed that the majority of learners showed enthusiasm towards incorporating technologies in their classrooms. They pointed out that certain tasks and features of these technological tools promoted better interaction with the study materials. However, some participants expressed doubts about how this experience alters their role as seasoned educators. They questioned if they would ultimately be reduced to supervising learners who are more socially detached and predominantly keen on using ICTs for learning. However, participant T6 also expressed significant concerns, including the perception that digital technologies seem to foster the development of poor teaching skills, impede social interactions, and contribute to complacency among most young teachers, who rely on online sources instead of seeking support from experienced teachers. These concerns resulted in some young teachers' reluctance to work with experienced (digital immigrants) teachers as they see them as not appreciating the role of technology in education.

Positive experiences of integrating technology in teaching

The study's findings indicated that digital immigrant teachers' use of technology in the classroom has undergone changes throughout their careers. The most astonishing facet of the interview procedure encompassed the recurrent use of the term 'excitement' by most respondents to characterize their encounters. The researcher additionally noted during the lesson observation that most participants were interested and happy to engage the

technologies in their classroom. Nonetheless, the prevailing sentiment constituted affirmative emotions concerning their exposure to the ICTs, even amongst those who perceived the shift as exceedingly arduous. Upon closer examination of the data, it was evident that their declarations of excitement corresponded with their favourable experiences. That is to say, the integration of technologies in teaching was explicitly the impetus that drove them to exert greater effort, embrace challenges, and ascertain that their learners received the most optimal learning experience feasible.

Some teacher participants additionally signified deriving pleasure from acquiring technological knowledge and technological pedagogical knowledge about and teaching with technologies. During the interview, participant P5 conversed with a gleeful smile while explaining an assessment task that incorporates Geogebra software she intended to implement in a Geometry lesson. Participant P2 alluded to the fact that since they received the laptop from the Department of Basic Education (DBE) in 2018, they encountered "*I have benefited greatly from a lot of new technologies and teaching methods that have been very useful to me*." Participant P3's statement might resonate with other digital immigrant teachers as they mention, "*Since I was offered access to ICTs at our school, it has an impact on me and my teaching, particular during the Covi-19 pandemic period. As the school continues acquiring and installing new technologies in classrooms, I feel energized, especially when they help present difficult content to learners*." This incentive stemming from access to various technologies and exploration of technologies can be regarded as intimately connected to the impact of unearthing new insights, as previously elaborated.

Participants further experienced gratification by witnessing their learners actively participating in the lessons, operating at different levels of technology competencies, embracing a technological pedagogical approach, and deriving pleasure from their assessments. Participant P4 was openly excited to see the transformation of students participating in the science subject. They mention, "*As you are aware, teaching science in rural school is not easy, and I was unhappy with the level of achievement demonstrated by the learners too."* This satisfaction prompted him to adopt the Kahoot! and Virtual Science Laboratory, subsequent to which they noticed that their learners " *they are prompted and become interested in science subject and confident to play the science educational games on Kahoot!."* The experience of incorporating technologies in the classroom, according to participant P1, "*got me thinking about other ways to improve the way learners learn*."

Most participants expressed the transformation of their role as teachers and the ensuing heightened engagement with their learners. They expounded that an element that sustains their enthusiasm and curiosity is the flexible interaction with learners, their active involvement, and their passion. To participant P3, "*if the students are enjoying themselves using the ICTs in my lessons, then I also enjoy the teaching*." Similarly, the author observed that access to technologies played a contributory role that enforced and empowered some of the teacher participants to have more, collaborate and actively engage with learners despite having many learners in their classes. Despite the growing availability of technology in the selected teachers' schools, some teachers are reluctant adopters. Their familiarity with traditional approaches generates apprehension when transitioning to new teaching paradigms, causing them to eschew the utilization of technology devices. Participant P4 said, "*we don't need technology in our classes it reinforces disruption and laziness among learners.*"

During the sharing circle discussions, it was noted that teachers possessed a robust work ethic and a fervent aspiration to excel using technologies not only in their teaching but also in fostering the success of learners. In order to ascertain that their students acquire profound learning, relish the learning process, and obtain valuable knowledge and competencies, teachers explore various free technologies and ideas. One might assert that these digital immigrant teachers transform their classrooms into technology learning spaces, where they consistently try and error implementations of various technologies. Although they do not perceive themselves as risk-takers, their actions reveal a penchant for risk-taking, possibly due to the amalgamation of confidence and passion that underlies their processes of incorporating technologies in teaching and learning.

Throughout the interviews, P4 maintained optimism that technology integration will eventually become a standard in the future. They acknowledged that "*although the incorporation of technology into lessons has been slow, I remain hopeful for greater use in the future*." It has become evident that most participants possess a robust conviction in the value of integration, and despite certain reservations, most have incorporated technology at some point. They aspire for other hesitant digital immigrant teachers to embrace technology implementation, realizing that it is indeed feasible. The enthusiasm and acceptance displayed by some participants reflect their genuine belief in the merits of technology, which they recognize can facilitate their work without displacing their roles but rather enhance their teaching.

Negative experiences of integrating technology into teaching

The analysis of data revealed that teachers believed access to technology and lack of training were the difficulties impeding its integration into instructional practices. Most participants emphasized the lack of training to surmount obstacles to technology integration in their teaching. Some opined that digital immigrant teachers require training on methods for incorporating technology in their lessons. Conversely, others contended that the existing three-day technology training offered by DBE in the Eastern Cape was inadequate and insufficient to support the sustained integration of technology within instructional practices. Participant P4 expressed concern as follows: "*Technology is constantly evolving and I have not received any ICT training in the past two years. This makes it difficult for me to offer my learners practical learning experience using new technologies."*

The lack of training affects teachers' inability to cultivate digital competencies at a pace commensurate with their learners, who often demonstrate near expertise in technological matters. Teachers remarked that, despite their effort to remain current with subject teaching matter, they faced difficulties in maintaining pace with their digitally-native learners in terms of mastering new educational technologies and the effective utilization of technology. Expressing their need for ICT training, P2 commented, "*I am not always aware of what educational technological resources are available, and my students are constantly introducing me to new technologies.".* Similarly, P1 expresses a need for ongoing support training sessions. In conjunction with supplementary training, they recommend establishing a point of contact for inquiries pertaining to particular technological aspects: "*While I was privileged to receive training on new technology, I often struggle to implement what I have learned in my classes as I tend to forget some of the information over time. It would be helpful if there was someone available for me to follow up with and ask questions so that I can make better use of the training I receive.*"

Some teachers further noted that the training predominantly focused on the use of technology, without addressing its implementation within the context of a specific curriculum. Participant P6, who also faced the same issue, shared their personal experience.: "*During the ICT training at Bisho, I gained knowledge about how to use Kahoot and Quizziz online educational applications. However, I am uncertain about how to incorporate them effectively in iSixhosa language class*." The teachers posited that subject-related ICT training holds greater significance. They felt that the ICT training offered by the DBE training was often hurried and generic, failing to adequately address subjects' unique needs.

Enhancing access was also presented as a constraint to technology integration. Even teachers with existing access to more than one technology contend that additional technology resources are needed to ensure teacher and learner accessibility. The obligation to share devices currently curtails the availability of technology for teachers and learners. In some schools teachers and learners are allowed to use their personal technologies in the classroom, nonetheless teachers report that such disparities in access to technology contribute to increased confusion, as some students possess the technology resources while others do not. All the teachers selected in this study lack the technical skills to troubleshoot various technological devices, resulting in learners often exploiting the technology for inappropriate or non-academic purposes.

DISCUSSION OF THE FINDINGS

This qualitative study employed a phenomenological approach to acquire an in-depth comprehension of the participants' experiences related to teaching using technology and to elucidate the manner in which they encountered this mutual phenomenon (Khan,2014). All participants underwent analogous teaching circumstances (phenomenon), and the research aimed to discern the particular meaning-making of the individual and collective minds (Sundani and Mangaka, 2023) of the participants.

Teachers participating in the study had no experience integrating technologies in the initial stages of their professional trajectories, although they demonstrated a keen interest in technology, actively pursuing avenues for learning and subsequently incorporating it into their pedagogical practices, all the while maintaining a critical stance towards the subject matter. To the participants, the pervasiveness of technology in education is indisputable, and the advantages of its integration are substantial. This concurs with the findings from the study by Shambare and Simuja (2022) on the use of ICT by rural science secondary school teachers in South Africa. They found the employment of technology yielded enhanced learning outcomes and progress. The benefits delineated by Shambare and Simuja (2022) encompassed the changing nature of learners learning and problem-solving. Similarly, the teachers in this study identified touching aspects of technology utilization. These effective components encompass social interactions, excitement and fulfilment.

In addition, teachers stated that when technology was incorporated as a component of pedagogy, it served as a potent tool for facilitating efficacious learning in classrooms. The teachers appeared to value the availability of technology as a resource for augmenting education and rendering it more genuine for learners. For instance, teachers experienced the incorporation of technology as a process delineated practices for assimilating technology wherein their less technology knowledge and experiences played a role in the implementation. This finding corroborated findings by Chisango (2020), indicating that teachers who possess

technology knowledge and exhibit a positive attitude in their technology integration process tended to establish methods for seamlessly incorporating technology. Mishra and Koehler (2008) posited, as a potential rationale, that with the increasing prevalence of technology in most developed and developing countries, teachers are adopting widely utilized technologies and blending them with traditional teaching approaches.

The findings in this study confirm that a recent effort by the government in Eastern Cape province to train and equip teachers with technologies as a response to prepare learners for the demands of the 21st century has led to increased integration of technology in some schools and classrooms. The Department of Basic Education (DBE) and multiple Non-Governmental Organizations (NGOs) launched widespread campaigns to introduce diverse technological advancements into schools. In the rural schools located in the Eastern Cape province, the provincial government has extensively implemented various technologies, such as tablets and laptops for both learners and educators, as well as computer systems, television sets, and satellite infrastructure, to benefit schools within the region. Furthermore, academic researchers have emphasized the necessity for educators to include 21st century skills in their curriculum design (Chisango, 2020; Mahlangu and Makwasha, 2023). As a result of these initiatives, teachers in this study have responded by incorporating more technology tools into their daily instruction. Based on participant responses, incorporating technology is considered an expectation of every teacher. Furthermore, the educators indicated that they were enciuraged and backed by their school Principals and fellow teachers to adopt curricula emphasizing technology integration as a crucial aspect of enhancing learners' learning.

The teachers disclosed that their technology integration was more reflective, adaptable and continually revised in accordance with the extent of the breadth of use. However, it is important to note that technology is not merely an auxiliary component of the curriculum but is rather underpinned by it. Similarly, classroom technology is not a standalone feature but rather pervades the curriculum as a crucial element.

Regarding expectations from teachers, all the teachers in this study accrued more than twenty years of teaching experience and had minimal exposure to technology during their formative years. For these teachers, integrating technology into their classrooms was a gradual process of learning. A study by Prensky (2019) found that older teachers were more likely to perceive themselves as having lower proficiency in integrating digital technology. The participants in their study perceived learners as quick to adapt to and enthusiastic about new digital tools. Conversely, teachers in this study express feeling overwhelmed by new technologies and requiring more time than their students to learn how to use them.

The study revealed the difficulties the selected digital immigrants faced while integrating technology in teaching. While some teachers received no training in technology integration, others identified inadequate training as a major impediment. The teachers expressed that the training provided was often overly generalized, failing to address the specific requirements of individual teachers or content areas. Consequently, teachers had to undertake self-initiative efforts and research to incorporate technology into their curriculum. Moreover, some teachers noted that the training appeared to lack coherence, with successive sessions introducing new technologies that bore little relation to previous training. Al Rawashdeh (2021) stated that professional development opportunities should focus on

demonstrating novel and inventive ways to utilize existing technology, rather than imposing additional purchases or demanding teachers to surmount fresh learning curves.

Lin and Chen (2017) suggest that technology training should prioritize the fundamental skills required to utilize technology, while simultaneously incorporating curriculum-specific content and effective techniques for integrating technology into teaching practices. The study participants identified a requirement for follow-up training, with some teachers expressing apprehension towards technology use due to the significant time lapse between the training sessions and actual technology implementation. Furthermore, teachers expressed that the lack of readily available assistance for resolving issues and answering questions hindered effective and frequent technology use. This is analogous to Shambare and Simuja's (2022) assertion that learning transpires when information is relevant, connected to long-term memory, evokes an emotional response, and can be extrapolated to other domains. The teachers' remarks on insufficient training frequency, being too broad, and lack of subject specificity and support are consistent with the significance of frequency in developing long-term memory, as well as the necessity of information being specific enough to be pertinent and transferable to their classroom requirements.

CONCLUSION AND RECOMMENDATIONS

In the present-day workplace, learners are expected not only to be literate but also to possess technological skills that enable them to communicate, compute, analyze, and interpret massive amounts of data effectively to solve problems. The current generation is captivated by digital technology, and learners aspire to use these tools in the classroom. However, not all teachers share the same level of eagerness to adopt these tools, and this study does support the assertion that some old teachers are resistant to change. These teachers are classified as digital immigrants, having been raised and educated in an era that was considerably distinct from the current digital world. Despite the expectation for these educators to use technological tools in their teaching, they expressed their worries and lack of first-hand experience. This is credited to their limited exposure to technology during their formative years of education.

Within this context, a lack of familiarity with technology among digital immigrant teachers poses a challenge in integrating digital technology in some schools. To address this, it is necessary to modify the training approach for these teachers, the substance of the curriculum, and the delivery of curriculum time to include technology. These educators need to acquire technological pedagogical content knowledge and skills to cater to the modern learning needs of learners in schools. Nonetheless, in order to keep up with today's learners, digital immigrant teachers must transform their philosophies on teaching and learning to encourage learner participation, investigation, and interactive learning. As such, training should be implemented for digital immigrant instructors to augment their knowledge of technology in pedagogy, enabling them to cater to the learning methods of contemporary learners. Educational reforms that incorporate collaborative and learner-centred technology instructional strategies should also be put in place.

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