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Empowering South African educators: Navigating the challenges of digital teaching and learning competencies

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Orientation: Public basic education institutions in South Africa are presently enduring new challenges about the implementation of digital teaching and learning in the absence of the digital competence required.

Research purpose: The purpose of the current study was to identify the digital competencies required by educators to effectively implement digital teaching and learning interventions in basic education institutions.

Motivation for the study: By identifying the digital competencies required by educators and exploring the gap in educators' digital competence, institutions can plan and implement digital learning interventions designed for effective teaching and learning.

Research approach/design and method: Semi structured interviews were conducted with a sample of 20 participants working in various positions at two secondary schools in Gauteng.

Main findings: The findings showed that while some training is offered, educators lack the necessary competencies to effectively enforce digital learning interventions. This may be because of limited training, the absence of digital resources and the insufficient digital competence of educators.

Practical/managerial implications: Ongoing training is mandatory to ensure that the digital competence of educators is in line with the dynamic world of work and to close the digital skills gap in teaching. Secondary school educators require assistance from the Department of Basic Education to enable the transition from traditional teaching and learning to digital praxis, through the provision of necessary digital intervention resources.

Contribution/value-add: The findings make a practical contribution by offering organisations practical information on the development of digital competencies in secondary education settings.

Keywords: digital learning; training and development; digital competence; digital learning interventions; educators competencies.

Introduction

Orientation

Multiple educational institutions throughout the world reformed their learning, teaching and assessment activities during the coronavirus disease 2019 (COVID-19) pandemic and associated restrictions (Eynon & Malmberg, 2021). However, this transition may have taken place in the absence of the necessary digital competencies, which had an impact on new methods and educational quality (Eynon & Malmberg, 2021). Because of the demand for digital learning interventions for teaching and learning, there may have been a notable repercussion for educators (Lucas et al., 2021). The above-mentioned transition may drive educators to broaden their digital competencies to implement digital learning interventions productively. Digital competencies can be expressed as a set of abilities and aptitudes necessary for an individual to learn and manoeuvre in a digitalised knowledge environment (Petterson, 2018). Portillo et al. (2020) stated that the educators' digital competence and therefore, their capability to effectively adopt and execute digital learning interventions are, in general, poorly developed. Therefore, creative solutions for educators' professional development may be necessary for the effective implementation of digital

learning interventions. The successful implementation of digital teaching and learning interventions in schools may be determined by the educators' competence to assimilate technology and operate in a digital environment (Portillo et al., 2020). This may revolve around how well educators and forthcoming educators can effectively implement and use digital interventions for teaching and learning. Some educators struggle with external challenges such as a shortage of resources, training and support, while others may experience challenges associated with overcoming intrinsic impediments such as their confidence, beliefs, attitudes and awareness about the significance of technology. According to Instefjord and Munthe (2017), educators carry on a leading role in creating an amiable and effective learning experience. Therefore, exploring issues associated with digital competence may contribute to enhancing current procedures and practices in digital learning interventions.

Research purpose and objectives

The purpose of the study was to determine the digital competencies required for educators to effectively implement digital learning interventions, considering the current training and development (T&D) opportunities and challenges.

The specific objectives of the study were to:

1. Explore the educators' current opportunities for digital competence development.
2. Ascertain the challenges educators face in implementing digital learning interventions.
3. Distinguish the practices through which educators learn, develop and experience digital integration in the workplace.
4. Determine the digital technology-enhanced teaching practices associated with educators' acquisition of digital competencies.

Literature review

Education and learning

The COVID-19 pandemic brought about the need for updated technology-based systems and support for educators and learners, including a heightened need for educators who are competent in utilising educational technology. South African schools have diverse levels of access to educational technology; however, teaching with technology allows for pedagogical creativity for transformational learning to transpire and be incorporated into students' learning experiences (Reimers, 2022). Brevik et al. (2019) discovered that South African educators have minimal opportunities to partake in educator professional development workshops that focus on digital integration. This may have a repercussion on learners' educational experiences and educators' self-efficacy in integrating digital learning interventions into their school settings (Brevik et al., 2019).

The role of digital learning in education

Digital learning can play a vital role in how students learn and how educators teach. Digital learning can improve accessibility, engagement, personalisation and collaboration. Educators thus have the opportunity to create dynamic and inclusive learning environments meeting the diverse needs of students.

However, the COVID-19 outbreak increased digital inequality in the learning environment as a result of forcing the implementation of digital learning as the central form of education for institutions of learning (Colao et al., 2020). Beyond the obvious advantages that digital learning brought to education during the outbreak, there were also identified deficiencies of digital learning in education, such as the challenge of implementing digital learning interventions. To overcome challenges associated with the implementation of digital learning interventions, it is imperative to develop competencies pertinent to problem-solving, structure-building and understanding procedures for professional performance (Amhag et al., 2019). The World Economic Forum (WEF, 2020) concurred with the study by Amhag et al. (2019), stating that the competencies continue to be relevant as per the initial report from 2016. Problem-solving is perceived as the most integral skill because these are skills that are acquired over a period in one's life; individuals are not able to undertake challenging tasks and think critically at the start of their careers. Educators are thus adapting to a more precarious and changing future, in which digital learning will be significant (WEF, 2020).

Digital learning interventions

Digital learning interventions can strengthen the classroom environment by establishing an engaging teaching and learning system (Aboobaker & Zakkariya, 2019). Incorporating digital learning interventions creates a simpler way of implementing classroom strategies that may reinforce learning, such as adapting the school curriculum to an electronic system and creating activities that allow educators to be compelling and engaging (Anthonysamy, 2020). The competence and proficiency of educators in implementing digital learning interventions as a reaction to technological advancement in digital learning can impact and increase learning prosperity (Fletcher & Griffiths, 2020).

Defining digital competence

The importance of technological modernisation to economic activity, which exists in the professional realm, requires the development of new competencies (Aboobaker & Zakkariya, 2020), which involves fostering pertinent abilities that educators and learners need (Alphonse & Mwantimwa, 2019). The development of digital competencies should be evaluated to establish the specification for digital abilities and qualities applicable in different departments (Alphonse & Mwantimwa, 2019). This is necessary for the establishment and implementation of digital learning interventions. Digital competence may therefore be defined as the decisive, critical, and competent adoption of and interaction with digital technology to learn in the organisation and the community (Park et al., 2021).

Developing digital competence for educators

Educators' digital competencies should be developed from their present standard. The successive levels of competence should be based on mastering digital skills as an essential part of subject teaching. The success of this is through education programme supervisors, and using seminars and training aimed at developing the educators' skills to incorporate digital learning within their organisation (Dlamini & Mbatha, 2018).

Blayone (2018) found that educators who possess a high standard of digital competence continuously use digital learning with learners in their classrooms, and digital learning is not frequently used by educators with a low standard of digital competence. Therefore, further research is fundamental because the strategies and concepts intended to develop educators' digital competencies may be poorly demonstrated during proposed training (Zimmer & Matthews, 2022).

Zimmer and Matthews (2022) further suggested integrating digital competencies into the educator training curriculum, which is expected to assist educators in developing digital competencies to prepare for future teaching practices. A study by Caena and Redecker (2019) emphasises the significance of digital competence among educators in introducing and using digital learning. Therefore, educators are encouraged to pursue these competencies including making it a habit to ask acute questions about the educational value of digital tools and resources. Furthermore, educators should incorporate digital tools and resources in different learning contexts to enhance learning outcomes and use digital resources to improve evaluation, feedback and class administration systems. Finding solutions to challenge the latest digital teaching and learning practices is another key competency. Another competence that was identified is the ability to distinguish between the roles of educators, learners and digital resources in digital learning. Engaging in professional learning communities on a global and local scale was also identified as a required competence. Educators should also be able to select relevant digital tools and resources when performing their roles. Lastly, they should be able to develop learners' global awareness and understanding by using digital communication and collaboration tools (DBE, 2019).

Thus, digital competence has evolved from being a technology-related element to being a significant teaching and learning element (Zhao et al., 2021). Educators need both vocational resources and to be trained to enhance their competencies to prevail in the digital environment (Zhao et al., 2021). The development of digital competencies in a digital environment requires training for educators to acquire the digital skills necessary for establishing effective teaching methods, administering online activities, understanding educational policies and facilitating subjects online (Ghomi & Redecker, 2019).

Training in digital competence

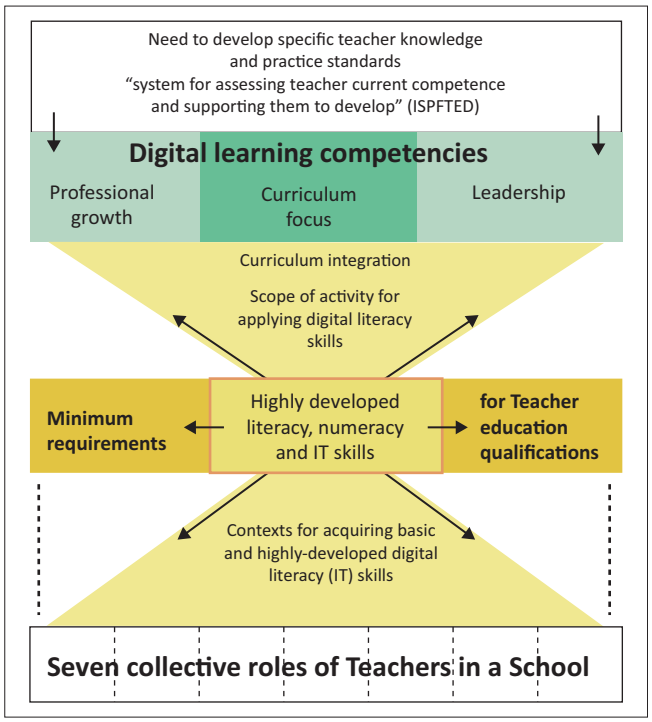
A study by Blayone (2018) found that owing to insufficient knowledge concerning the applicable digital competencies, educators who have taken on the challenge of using digital learning tools in teaching and learning are unable to detect the significance of the digital learning tools as a knowledge-generating tool in their area of work. However, this is not a new challenge, considering that an educator is unable to enhance the skills of learners if the educator is not digitally competent. There may also be a substantial gap to fill relating to the training procedure for digital competence (Zimmer & Matthews, 2022). A study by Caena and Redecker (2019) suggested that utilising a standardised approach which involves a set of rules, standards or guidelines to ensure consistency and compliance with established norms, can facilitate the development of digital skills for educators.

Cabero-Almenara et al. (2020) supported the implementation of educator competence frameworks to identify educator and educational outcomes, establish the recruitment and selection criteria for educators and determine professional development for educators. The educator competence frameworks may assist educators in understanding their role and enhance autonomy and professional development throughout their field of work. Such frameworks may assist in focussing on learning precedents and needs at multiple career phases by serving as evidence for elementary professional knowledge and skills, thereby promoting acceptable professional development at individual and organisational levels (Cabero-Almenara et al., 2020). The framework on the digital competencies for educators that this study utilised is the Professional Development Framework for Digital Learning (the PD Framework) established by the Department of Basic Education (DBE, 2019). The DBE developed a digital learning (DL) framework, as outlined in Figure 1, which may be used as a guideline for professional development for senior management, support staff and educators using digital learning to enhance their digital competencies.

The PD Framework (DBE, 2019) acts as a strategy for the professional development of educators and others with a vested interest in integrating content and digital resources. The framework aims to heighten the learning outcomes and enhance learner achievement in the curriculum. The PD Framework was adopted in this study as a point of reference for defining the digital competencies of educators because it pertains to the context of the South African education system. The PD Framework consists of 13 competencies which are related to three intents of the PD Framework, namely, professional growth and knowledge, leadership and curriculum focus. The PD framework table (see Table 1) illustrates how it contributes to educator acquisition of digital competencies and how these contribute to teaching and learning.

The role of human resource development in acquiring digital competencies

Human resource development (HRD) assimilates career development, training and development, and organisational development to enhance the accomplishments of the organisation, team or individual (Kareem, 2019). Human resource development can aid in dealing with the identified gaps in educators' digital competencies by developing training programmes focussing on the required



Source: Department of Basic Education. (2019). *Digital learning framework*. Retrieved from https://www.education.gov.za/Portals/0/Documents/Publications/Digital%20Learning%20Framework.pdf?ver=2018-07-09-101748-95

IT, information technology.

FIGURE 1: Digital learning competencies.

TABLE 1: Professional development framework table.

Professional learning initiatives	Key competencies	Impact on teaching and learning
Professional learning communities	Digital literacy	Enhanced learning outcomes
Workshops and online training	Digital content creation	Innovative teaching practices

Source: Department of Basic Education. (2019). *Digital learning framework*. Retrieved from https://www.education.gov.za/Portals/0/Documents/Publications/Digital%20Learning%20Framework.pdf?ver=2018-07-09-101748-95

digital competencies. Kareem's (2019) study suggested the use of an efficient conceptual model to develop digital competencies. The conceptual model may accelerate collaboration among stakeholders and be adopted to develop and establish guidelines that can support the development of educators' digital competence (Kareem, 2019). According to Yarrow (2022), HRD is intended to support an employee in developing a set of applicable competencies by providing them with common skills and abilities that are affiliated with those that are not relevant. Thus, developing a digital competence framework is of value to not just educators but also to HRD practitioners affiliated with institutions of basic education.

Research methodology

Research approach

This study adopted an exploratory qualitative approach to reveal an in-depth understanding of the research topic by analysing data collected during the interviews. The study adopted an interpretivist paradigm to comprehend the participants' perspectives on digital competencies (Alharahsheh & Pius, 2020).

Research strategy

A case study strategy was adopted, as the study prioritised institutions under the DBE. The case study strategy further provides perceptive information for establishing a framework for developing digital competencies. The research strategy aimed to contribute more knowledge to the poorly understood concept of educators' digital competencies (Saunders et al., 2019; Schoch, 2020). Verleye (2019) contended that the focus of the case study strategy is on a group of individuals who work together in different roles, and the objective is to better understand them as a group. The researcher focussed on the experiences of educators from two schools in Gauteng to analyse common aspects (Schoch, 2020). Furthermore, the study referred to the case study by Rwodzi (2018), conducted in Gauteng, which found that educator digital competencies in secondary schools are a critical issue owing to a lack of digital resources. Rwodzi's case study drew attention to the need to focus on individual educators who are in a similar setting or experiencing similar problems.

Research process

This step ensured that the study followed ethical guidelines, protecting participants' rights and well-being. The researcher reached out to the Gauteng Department of Education asking for permission to collect data from the two secondary schools, indicating the location of the schools, data collection method, number and title of participants and ethical considerations. The study used a qualitative method to provide an understanding of the topic. Participants were selected using convenience sampling focussing on the experiences of secondary school educators. Before the interview, the participants were informed that the information would be used for research purposes only and would, therefore, be confidential. Participants' real names were not used. Semi-structured interviews took place at the secondary schools, where the main researcher interviewed 20 participants at the school premises. The interviews were guided by an interview guide and involved face-to-face method. All interviews were conducted in English.

Entrée and establishing researcher roles

The main researcher wrote up the literature, conducted the data collection, analysed the data, and discussed the findings under the emerging themes. Permission was requested from the principals of each secondary school before interviews were conducted. Once permission was granted, the researcher scheduled interviews with the participants of each school.

Research participants and sampling methods

This study utilised convenience sampling to select 20 participants. Convenience sampling was adopted, because this method seeks to find participants who are available and, in a location, most convenient to the researcher. The researcher chose participants who were willing to participate in the study, which made the sampling procedure quick and efficient. Participants were from different educational

institutions and different geographical locations. The participants for this study consisted of educators, heads of departments (HODs), deputy principals and principals as they work together in different roles.

Data collection methods

Qualitative data collection methods, consisting of semi-structured interviews, were utilised. The researcher used an interview guide consisting of a list of questions. The questions on the interview guide were drafted in line with the research objectives.

Data recording

Permission was obtained from the participants to record and transcribe interviews. The interviews were recorded using a voice recorder and transcribed on Microsoft Word.

Strategies employed to ensure data quality and integrity

Several elements were employed to ensure credibility, transferability and confirmability (Creswell et al., 2007). To assure credibility, the researcher gathered data from different individuals to obtain rich and detailed explanations of the responses to the research objectives. Transferability of the study was attained by providing a description of the background behind the research paradigm, the research approach, the sampling technique, the data analysis and how these elements impacted the findings. Confirmability was achieved by ensuring that the study was conducted objectively and that the study was not influenced by the researcher's bias.

Data analysis

Thematic analysis of the semi-structured interview transcripts was executed manually to ensure transparency, neutrality and precision. Thematic analysis aided the researcher in identifying themes from the data. The analysis was carried out in four phases which included becoming familiar with the data, data coding, establishing themes providing clarity on the emergent themes and testing the identified themes to confirm the connection between the codes and themes (Saunders et al., 2019).

Reporting style

Seventeen themes emerged from the interview data. The data solicited in the interviews of the study were depicted in the 'Results' section of this article and were chronicled and validated along the lines of the existing literature. Some findings were seen to be supporting previous research, while others were seen to be contrary. These findings are further discussed later in the article.

Ethical considerations

Ethical clearance to conduct this study was obtained from the Department of IPPM Research Ethics Committee, University of Johannesburg (IPPM-2022-706[M]) and from the Department of Education (8/4/4/1/2). The principles of informed consent, confidentiality and academic integrity were strictly adhered to.

The participants signed a consent form which provided them with an overview of their rights, which included the right not to take part in the study and the right to withdraw from the study at any point should they feel uncomfortable or violated, without needing to explain to the researcher. The researcher obtained consent from each participant who took part in the study.

The participants were informed that the data collected would be kept confidential and used only for academic purposes. The researcher provided each participant with a copy of the transcript of their interview so that the participants could validate their statements. Participants were also informed that their participation was voluntary and based on their willingness to participate.

Results

Seventeen themes emerged from the thematic analysis of the participants' responses. The emerged themes included: the presence of T&D, competencies obtained during T&D, insufficient opportunities provided by the organisation, the benefits of T&D, measuring understanding and participation, inability to use digital learning tools, challenges experienced by the learners, a lack of resources, limited awareness of digital learning, integration of digital learning in the organisation, software used for digital integration, frequent use of digital learning interventions, computer literacy, digital content creation, information and data literacy, communication and overcoming student deficiencies, which are discussed in this section indicating how they address the specific objectives of the study. The first four themes identified addressed the first specific objective of the study which was to explore the opportunities educators have currently for digital competence development. Findings revealed that T&D was present, had several benefits and developed certain competencies. The findings also indicated the presence of T&D, its benefits, the competencies gained during T&D and insufficient opportunities provided by the organisation, aimed at answering. Thus, the first specific objective, which explored the educators' opportunities for digital competence development was addressed. The findings revealed that participants were exposed to T&D opportunities and that certain competencies are being informed through T&D. The findings also showed that participants were not aware of some of the compulsory competencies. The findings suggest that training may have an influence on employee competence development if it is adopted by the organisation as a long-term approach.

The next grouping of themes aimed to address the second specific objective of the study which was to identify the challenges that educators face in implementing digital learning interventions.

The findings revealed the challenge of measuring understanding and participation when using digital tools. Some participant quotes included:

> 'When using WhatsApp, the difficulties I face are managing the large number of learners in the learning groups I created for them. Secondly, keeping track of whether they understand the context clearly or should it be repeated in contact classes.' (P2, F, Educator)

The inability to use digital tools was another challenge identified. The findings revealed that participants were not well equipped with the necessary digital competencies. This is supported by the words of this participant in a senior leadership position: 'They are struggling in facilitating learning using digital resources; they prefer the "talk and chalk" method' (P15, M, Deputy Principal). The findings also revealed challenges that are experienced by learners when using digital tools, which indicated that learners do not have access to the digital tool that is widely utilised by the organisation. This is supported by the following participant quote: 'Not all learners are able to receive work due to not having the resources' (P11, F, Educator; P5, F, Deputy Principal; P3, M, Educator). A lack of resources was identified as another challenge; one of the participants stated that 'lack of classroom resources, no projector or smartboard' (P10, M, Educator) which provided an indication that the school does not have the required resources which meant that the implementation of digital tools is not feasible. The findings outline the challenges on a broader scale, not only those specific to educators. There are specific learner challenges, educator challenges and organisational challenges that prevail. The findings imply that these challenges are partly responsible for the unsuccessful implementation of digital learning interventions.

The third grouping of themes addressed the third specific objective which was to identify the practices through which educators learn, develop and experience digital integration in the workplace besides T&D. These themes included limited awareness of digital learning, integration of digital learning in the organisation, software used for digital learning and frequent use of digital learning. The findings revealed that through learning and T&D opportunities, educators have a limited understanding of the concept of digital learning. The findings also revealed that educators experience the integration of digital learning differently; this is supported by the following participant quote:

> 'I use digital learning interventions in my organisation through the implementation of digital learning materials, such as playing YouTube videos that has simpler explanations of contexts and keywords for learners, including PowerPoint presentation slides. All of these are facilitated through the smartboard.' (P2, F, Educator)

The findings under the theme of frequent use of digital learning revealed that some educators do not use digital learning at all and some use it on a daily basis. This is supported by the following participant quote:

> 'I use digital learning interventions most frequently because it enables the ability to track student progress closely and allows them to perform better in their studies. It also saves time and money.' (P6, M, Deputy principal)

This may suggest that one's purpose for using digital learning interventions influences the frequency of how constantly one uses them.

The last grouping of themes addressed the specific research objective, which was to determine the digital technology-enhanced teaching practices associated with educators' acquisition of digital competencies. Most of the participants indicated that the acquisition of relevant digital competencies such as computer literacy, information and data literacy, and communication can assist in the effective implementation of digital learning. This is supported by the following participant quote:

> 'A teacher should be proficient in digital learning. They should be able to communicate digitally, share resources, use digital resources [*and*] Internet resources to aid learning.' (P10, M, Educator)

Discussion

The findings revealed that while there are opportunities for training and development, educators are only trained in limited competencies because of which they experience several challenges including the inability to use digital tools and the inability to measure understanding and participation. Additionally, challenges include a lack of resources and challenges experienced by learners. While training is provided to use digital tools, educators who understand digital learning and use digital learning interventions frequently are the ones who are successful in digital integration in the workplace. Digital competencies including computer literacy, information and data literacy, digital content creation, communication and overcoming student deficiencies were identified to be required by the educators. It was found that sufficient training on the aforementioned digital competencies was not being provided to these educators.

Outline of findings

Research objective 1

The first objective of the study was to explore the current opportunities for digital competence development that educators had been exposed to during training. While the study indicated that educators are exposed to T&D opportunities, participants indicated that these opportunities are limited and only focus on specific competencies including computer literacy, communication, collaboration, problem-solving, information and data literacy, digital learning, digital content creation and technology implementation.

The participants suggested the requirement for continuous and customised training. While generic training can advance the digital competence of educators and enhance the employee's performance, development initiatives for educators need to be more customised than it is currently.

Failure to integrate customised T&D opportunities in the education sector may result in educators being unprepared for the changing world of work.

Some participants commented that opportunities may exist in the form of training programmes, but they were not exposed to them. This is supported by the following quote: 'Yes, but not enough, we need more training on ICT-related matter' (P5, F, Deputy Principal). Also, some participants were not aware of such programmes. It is therefore possible that a barrier of poor communication exists – a discrepancy between what is said and what is understood in the organisation. This suggests that the organisation has no training schedule communicating the scheduled training that educators are required to participate in.

As for competencies not addressed in the T&D opportunities provided to educators, findings indicate that important digital competencies have been excluded from current T&D opportunities. These include understanding the role of the teacher, the learner and the digital resources during digital learning; participating in local and global professional learning communities; transforming learning through the innovative use of digital tools and resources; enhancing class management, assessment and feedback processes using digital resources; and demonstrating commitment to the vision for digital learning in the province, district and school.

Additionally, findings indicate that senior managers are aware that these deficits exist but because of a lack of structural processes, the organisation might have placed the responsibility of competence development on its employees and overlooked its responsibility to provide training for its employees. Tiekam (2019) stated that senior management should identify performance gaps and implement training to ensure that the employees acquire the correct level of knowledge, skills and training to perform adequately in their roles. The findings suggest, however, that although T&D must be the responsibility of the organisation, employees should take action and use the provided opportunities to further their careers.

Research objective 2

The second objective of the study was to investigate the challenges that educators face in implementing digital learning interventions. The findings suggest that educators are not digitally competent to incorporate digital tools and therefore resort to utilising the traditional methods of teaching. Rao (2019) contended that traditional learning techniques have been utilised for a very long period; however, the traditional approach to teaching should be added to distinctive strategies of teaching.

Additionally, many tools utilised for digital teaching do not allow educators to assess understanding. For example, many educators utilise WhatsApp as the tool is accessible and familiar to all using it for learning purposes. However, WhatsApp is not effective for digital learning (Alenazi, 2018). Educators cannot track whether learners understand content shared on WhatsApp, forcing them to repeat such content in class, thus consuming time. Additionally, using electronic media to provide effective feedback takes more time, and thus costs more, than traditional (e.g. paper-based) assessments (Colao et al., 2020). Also, WhatsApp requires data and Internet access to function. The learners might not always have access to data and the Internet, which means that interaction and participation will be limited, as a result. A few participants indicated that although there is generally a lack of interaction and participation when the learners do indeed interact, the platform can become disruptive. Also, some learners share and ask for irrelevant information. Such inappropriate and poorly timed messages may be distracting and may interfere with the educators' personal lives if the messages are not managed (Mudau & Van den Berg, 2022). Providing educators and students with the purpose, rules and guidelines of the WhatsApp group when it is established may be helpful (Alyoussef, 2020). Alenazi (2018) added that the lack of knowledge and understanding among learners regarding online communication etiquette is also a challenge.

Familiarity with digital tools was also identified as a challenge. Insufficient use of digital tools results in ineffective technology integration. One may assume that educators resist utilising digital learning interventions because they are not equipped with the relevant competencies. Amhag et al. (2019) recommended that to overcome the drawbacks of digital learning and to ensure professional performance, the development of competencies like problem-solving, thinking, structure-building and process comprehension is required.

Another challenge in implementing digital learning interventions is the limited access and competence that learners have to necessary digital tools, suggesting the digital divide. Van Dijk (2020) described the digital divide as the gap between individuals who have access to contemporary information and communication technologies and those who do not. Not all learners have or use smartphones at home, and some do not have Internet access and data. This creates a challenge for educators if they provide tasks or homework using WhatsApp or any other digital tool, as this could result in learners not being able to complete the assigned activities. This challenge also affects educators because they cannot proceed with new content (Van Dijk, 2020). This is a clear indication that some learners are disadvantaged when advancing into digital learning and their opportunities to experience digital learning interventions are slim. Learners are unevenly challenged and may therefore need capacity-building on the use of newly adopted online learning software.

Another challenge identified in the study is that the organisations involved could not effectively implement digital learning interventions because of insufficient resources. This is supported by the following quotes:

> '… [*L*]ack of classroom resources, no projector or smartboard.' (P10, M, Educator)
>
> '… [*L*]ack of resources and unstable Wi-Fi connections.' (P1, F, Educator)
>
> 'The projector is not working.' (P17, F, Head of Department)

The organisations have not been provided with digital resources such as projectors or smartboards, despite the DBE's (2019) assertion that the implementation of digital learning interventions will necessitate appropriate resources. Without the proper resources, the organisation may not be able to successfully overcome the challenges that stand in the way of adopting technology in their teaching and learning (Haleem et al., 2022). This may hinder the integration of digital classroom technology in these organisations. Furthermore, educators may cite the deficiencies in the provision of educational technology resources in their organisations to cover for their lack of competence (Johnson et al., 2016).

Research objective 3

The third objective was to identify how educators learnt, developed and experienced digital integration in their workplaces. Findings suggest that while educators have some knowledge of digital learning, they may still need assistance in transitioning from traditional learning to digital learning. This can also imply that educators do not have the necessary competencies, in addition to the reality of having a shortage of resources that will aid in successfully incorporating digital learning and transitioning from traditional learning to digital learning. The study identified that educators hardly utilised digital learning interventions. A recommendation could be taken from Colao et al. (2020), who state that training becomes a requirement, especially for educators who are unfamiliar with computers or the Internet.

From the views provided by the participants, it is evident that they have limited knowledge of what digital learning is. Participants indicated that they have heard of it and acknowledge it but they also state that the little that they know is not sufficient for them to integrate digital learning into their workplaces. While educators may have learnt about the concept at workshops and online training, the subsequent requirement of incorporating digital learning has not been achieved. Educators need to use digital learning interventions frequently, so that they may develop and improve their ability to integrate digital learning interventions effectively.

Research objective 4

The fourth objective was to investigate the digital technology-enhanced teaching practices associated with educators' acquisition of digital competencies. The findings suggest that computer literacy forms a part of the fundamental competence of educators. This finding mirrors those discussed by several scholars in the field (Haleem, 2022; Henderson & Corry, 2021; Mandinach & Gummer, 2013) which emphasise the importance of this competence for effectively managing the complexities of digital integration within education.

However, these findings confirm that a gap exists between the identified competencies by educators and the commitment of educational organisations to effectively incorporate the digital competence framework established by the DBE within the organisation. This suggests a discrepancy between the established digital competencies and the practical steps taken by the organisations to foster and support these competencies among educators.

Furthermore, the findings suggest that having the required digital competencies in educational institutions held the potential to aid in defeating the aforementioned challenges. Educators with the required competencies may be better equipped to handle challenges and utilise digital technologies to enhance teaching and learning outcomes. This may suggest the importance of matching the required digital competencies of educators with the ever-changing digital education landscape.

Practical implications

The study highlights the necessity for senior management to recognise the potential need for additional training within their organisations, particularly when it comes to digital competencies. The study emphasises the responsibility of senior management to ensure that both educators and themselves are equipped with the required skills to navigate technological advancements effectively. As indicated in Masenya's (2021) study, cultivating these competencies not only impacts organisational culture but also enhances the integration of digital learning interventions. Consequently, senior management can utilise these findings to implement training programmes aimed at enhancing educators' capabilities, thus fostering a culture conducive to effective digital learning integration. Moreover, some participants suggested that ongoing mandatory training schedules, supplemented by workshops and online training, could be instrumental in developing educators' competencies.

Within the organisational context, the study underscores the critical need for educator training and competence development, particularly in areas such as data literacy and digital learning integration. Despite existing training opportunities, the study reveals a shortfall, indicating the necessity for additional interventions to bridge the gap effectively. Furthermore, the importance of effective digital learning integration is emphasised, citing educators' limited awareness as a hindrance. Recommendations include ensuring relevant objectives align with educators' roles and leveraging appropriate digital tools and resources. Additionally, implications for the DBE have been identified, highlighting deficiencies in infrastructure and HRD initiatives. It is suggested that investments in digital resources must be prioritised, and training programmes tailored to develop educators' competencies must be implemented while addressing factors such as pay, recognition and communication to enhance training effectiveness and retention of quality educators.

Limitations and recommendations

The findings of the study were based on subjective data which restricts the findings from being applicable to other environments. To address this limitation, the study

suggests a need for further research on the role played by T&D officials from the DBE in implementing T&D initiatives within educational organisations. This research could help gain a better understanding of how to tackle challenges and improve digital competencies in education.

Classroom observations could have provided a connection between what the participants said during interviews and what they were doing in their classrooms. Further research can involve T&D officials of the DBE, so that their function in implementing T&D initiatives in the organisations may be examined.

This study was conducted at two secondary schools. The participants may have withheld vital information in their responses, as they may have been concerned about how the researcher might interpret their responses. Additionally, the findings of the study were based on subjective data. This limits the findings from being applied to other contexts. The participating schools formed a small sample; however, the main research questions could be answered from the data obtained from the participants.

Conclusion

This study emphasised the significance of digital competencies and the importance of T&D strategies within the organisation. However, the educators' digital competencies are not developed because of the lack of training, which may negatively impact the integration of digital learning in the workplace. Thus, the findings of the study call on the organisation and DBE to standardise ongoing training to help develop employee competencies to ensure the effective implementation of digital learning interventions.

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Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

Authors' contributions

T.N. pioneered the study. R.M.J. served as the main supervisor, guiding the overall research, providing specific insights into the methodological structure, and reviewing and editing the article throughout its development.

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Data availability

Derived data supporting the findings of this study are available from the corresponding author, T.N., upon reasonable request.

Disclaimer

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