

# The state of Information and Communication Technology implementation in the Umlazi District: Evidence from the accounting classroom

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## Abstract

This paper aims to assess the implementation of Information and Communication Technology (ICT) in accounting. There has been a notable improvement in the delivery of ICT resources in schools, reflecting the government's initiative to increase ICT integration in teaching and learning. Although these upgrades have been reported in the media and existing literature, there is still no recent update on the current state of implementation; thus, this study was conducted. The Social Construction of Technology (SCOT) framework guided the study. In addition, a constructivist paradigm, qualitative approach, and phenomenological research design were employed to deepen the understanding of the research phenomenon. Four accounting lessons were observed, and four teachers were conveniently sampled to participate in interviews. Thematic analysis was used to examine the collected data. The results showed that in the Umlazi district, ICT implementation in some schools is now at a moderate level. Most teachers are using technological tools to present lessons, learning materials are mostly provided in digital formats, and assessments and grades have been digitalized. Considering these findings, the study recommends that the department and government provide more ICT tools in schools, offer additional professional development on ICT use, and update ICT policies. Overall, the findings indicate that increasing investments in ICT resources in KZN enhances the likelihood of achieving the department's objective of ensuring successful ICT implementation and fostering ICT capability among all learners and teachers.

**Keywords:** *ICT implementation, accounting, SCOT, moderate, professional training, updated ICT policy*

## Article History:

*Received:* April 2, 2025

*Accepted:* October 22, 2025

*Revised:* May 21, 2025

*Published online:* December 2, 2025

## Suggested Citation:

Sithole, N.V. (2025). The state of Information and Communication Technology implementation in the Umlazi District: Evidence from the accounting classroom. *International Journal of Educational Management and Development Studies*, 6(4), 185-206. <https://doi.org/10.53378/ijemds.353286>

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## 1. Introduction

The South African Department of Basic Education (DBE) is actively promoting Information and Communication Technology (ICT) implementation at all levels of education to support teaching and learning in classrooms (Hart & Laher, 2015). Several ICT programs are currently being implemented in schools across the nine provinces. To begin with, the Department of Education developed a White Paper on e-Education, outlining the goals and expectations for ICT implementation in South African schools (Department of Education, 2004). This policy guides and supports the innovative integration of ICT in instructional practice while ensuring that both teachers and learners are ICT competent and have access to educational networks and the Internet (DoE, 2004). Additionally, there has been notable delivery of ICT resources in schools across various provinces (DBE, 2022).

For instance, in the Western Cape, the government has introduced initiatives such as the e-Learning Game Changer and the Khanya Project, providing technology resources in classrooms, including laptops, smart boards, Internet access, data projectors, and other technological devices (Mahlo & Waghid, 2022). In KwaZulu-Natal, over 1,500 schools have ICT resources and infrastructure, such as projector combos, interactive whiteboards, laptops, desktop computers, netbooks, digital projectors, and tablets for teaching and learning (Government Communications, 2019). Moreover, the KZN Department of Education has collaborated with various network providers to deliver cost-effective, reliable, and affordable connectivity options for rural schools.

In Gauteng, the Minister of Basic Education initiated a teaching program using tablets rather than traditional textbooks and chalkboards, aiming to develop digital skills among teachers and learners (Msila, 2015). The Gauteng DoE also established computer laboratories with 25 workstations and Internet connectivity to enhance ICT use in classrooms (Mukhari, 2016). In the Eastern Cape, a contract worth hundreds of millions of rand was signed to lease 55,000 tablet devices for classroom use (Daily Dispatch, 2020). To date, 44,000 tablets have been delivered to learners to support online and distance learning, while laptops have been distributed to teachers (Skhephe & Matashu, 2021). The ITWeb (2019) reports that the Free State initiated the Closed-loop Learner Network (CLN) project, supplying digital education resources, including laptops and tablets, to no-fee schools. Mnisi et al. (2024) further note that ICT resources are being improved through the Department of Telecommunications and Postal Cable Service to ensure effective ICT usage.

Furthermore, DBE (2022) reports that the South Africa Connect Policy, SA's Broadband Policy, was adopted to ensure effective connectivity in public schools. The Department of Telecommunications and Postal Services collaborated with the DBE to provide ICT connectivity across all schools in South Africa. While these programs demonstrate the commitment to implementing ICT in schools, it remains essential to examine the actual state of ICT integration. Hence, this study was conducted to assess ICT implementation in teaching and learning following the delivery of ICT resources in KwaZulu-Natal. With visible improvements in the provision of technology tools in schools, it is crucial to determine the level of implementation. The equation must balance: once delivery reports are provided, corresponding implementation updates should also be available. The problem addressed in this study is the limited literature or progress updates on ICT implementation in classrooms following significant ICT roll-outs.

There is a scarcity of recent literature on ICT integration over the past three years, with most departmental investments occurring during the pandemic. Consequently, most studies focus on provision and associated challenges rather than on actual implementation. This study is unique in that it focuses on ICT implementation in instructional practice following notable improvements in resource provision. It is also set in the second-largest town in the province, with a large number of learners and schools, further adding to its distinctiveness. Another unique aspect is that the study draws on a theoretical framework from Science and Technology Studies. The research focuses specifically on accounting classrooms in Further Education and Training (FET). The study aims to provide updates on ICT implementation and contribute to the body of literature, while also encouraging the Department of Basic Education to continue investing in ICT tools and motivating teachers to embrace and implement ICT in their classrooms.

This paper begins with a review of literature related to the research topic, followed by a detailed outline of the research methodology, and concludes with the presentation of results, discussion, conclusions, and recommendations.

## **2. Literature Review**

This section provides a stark insight into the previous literature on ICT implementation.

### *2.1 ICT Policy and its Significance in South Africa*

The ICT policy, outlined in the White Paper on e-Education, provides a roadmap for various education stakeholders, particularly teachers. The policy framework also monitors ICT education development and ensures rigorous implementation in instructional practice (DoE, 2004; DBE, 2009b). According to Zeng (2022), an ICT implementation policy in basic education refers to the measures and standards designed by a government to manage and guide the process of ICT integration in schools to achieve educational goals. The global advancement of technology has motivated South Africa to adopt ICT in its education system. The policy framework aims to define ICT, formulate objectives, and guide teachers on implementation procedures. Similarly, Gibson et al. (2018) note that national ICT policies direct the adoption and use of technology by explicitly defining the goals a country seeks to achieve.

Vandeyar (2015) highlights that the Department of Education developed two key policies to guide ICT implementation: the White Paper on e-Education Draft Policy (2004) and the Guidelines for Teacher Training and Professional Development in ICT (2007). The White Paper aimed to direct quality teaching and learning through modern technological resources in schools (DoE, 2004). The Guidelines for Teacher Training and Professional Development in ICT were intended to ensure that teachers acquire the knowledge, skills, values, and attitudes necessary for effective curriculum implementation (Vandeyar, 2015).

The main goal of the White Paper on e-Education was to ensure that every school manager, teacher, and learner in South Africa was knowledgeable, competent, and confident in using ICT by 2013 (DoE, 2004). Additionally, the policy aimed to: provide opportunities for the younger generation to acquire digital skills and knowledge to compete globally, enhance educational practice across all subjects through digital skills, encourage ICT integration in the curriculum, and transform teaching and learning by promoting a learner-centred, activity-based approach (DoE, 2004).

The ICT policy framework has been essential in supporting the education system, including curriculum development, pedagogy, and assessment reforms, to enhance education through ICT-based resources. Recognising that the ICT policy does not cover connectivity services, the Department of Basic Education has collaborated with the Department of Telecommunications and Postal Services (DTPS) to provide secure school connectivity (Gina & Kubayi, 2016). Government Communications (2019) reports that this collaboration has

resulted in slight improvements in connectivity. Following these policy frameworks, it is necessary to examine previous insights into the levels of ICT implementation.

### ***2.2 Level of ICT Implementation in the South African Schools***

ICT implementation is crucial in the classroom to facilitate meaningful interaction between learners and teachers, particularly in the digital era (Adelabu et al., 2022). Additionally, the dissemination of knowledge to learners increasingly requires creativity and innovation, such as through ICT integration. Padayachee (2017) argues that ICT implementation enhances learning outcomes. However, the expectations of the DBE have not yet been fully realised, possibly due to discrepancies between government expectations and classroom realities (Mooketsi & Chigona, 2014). Literature indicates that in South Africa, many teachers have limited ICT skills and competencies to integrate technology into their instructional practices. Instead, they often focus on teaching learners about ICT resources rather than embedding them within teaching and learning activities (Gunzo, 2020; Msila, 2015). Furthermore, even teachers with basic technology skills frequently do not use ICT in their classrooms. Padayachee (2017) asserts that only a small proportion of South African teachers effectively integrate technology into their instructional practice.

### ***2.3 Programmes Introduced to Support the Implementation of ICT***

Despite the barriers to ICT integration, Madoda (2018) notes that several intervention programmes have been introduced to support teachers. These include SCOPE (Finnish Development Support), SchoolNet SA, and the South African Institute for Distance Education, which developed 11 Teacher Development Modules to facilitate the introduction of ICT in schools. SchoolNet SA offers online, mentor-based in-service training to help teachers integrate ICT into the curriculum and school management. Similarly, the INTEL “Teach to the Future” Teacher Development Programme provides training for teachers on incorporating ICT into teaching and learning (DoE, 2004). Additionally, the Connect initiative has been established to assist schools in accessing the Internet. The DoE (2015) further recommends four strategies to enhance ICT implementation in classrooms: linking ICT use to learning goals, understanding the various types of available technologies, collaborating with stakeholders to advance e-education, and analysing the current status of e-education initiatives alongside their intended outcomes.

### ***2.4 Barriers for ICT implementation***

Several studies have previously examined the state of ICT integration in South African schools. For example, Mathevula and Uwizeyimana (2014) reported that ICT resource projects, such as the Teacher Laptop Initiative (TLI) and the Thutong (Place of Learning) portal, have been launched to support teachers hindered by inadequate ICT access; however, implementation has been slow. Choung and Manamela (2018) found that inequality in ICT implementation persists due to limited access to ICT resources. Similarly, Gunzo (2020) highlighted that insufficient access to ICTs contributes to stagnation in integration efforts. Limited ICT infrastructure, such as Smart Classrooms and computer labs, further restricts effective ICT use (Onah et al., 2020).

Electricity supply and stable internet connectivity are also critical for successful ICT implementation. Mahlo (2020) notes that some deep rural areas in South Africa lack power, and ongoing load-shedding by Eskom has negatively affected ICT implementation in many schools. In addition, Gunzo (2020) asserts that many schools have limited or no internet access, resulting in low connectivity, slow progress, and unreliable access for teachers and learners. Mahlo and Waghid (2022) argue that, aside from infrastructural constraints, some teachers lack the necessary skills to integrate ICT effectively into their teaching. Mtshali et al. (2020) further highlight that limited funding for maintaining technology resources causes schools to fall behind in ICT implementation.

Although these studies provide valuable insights into ICT integration, most are over five years old, underscoring the need for more recent research. Few studies from the past three years focus on ICT implementation, particularly within the KwaZulu-Natal Department of Basic Education (KZN-DBE). This study was therefore conducted to address this gap and provide updated evidence on the current state of ICT integration.

### ***2.5 Theoretical Framework***

The Social Construction of Technology (SCOT) theory was chosen to frame this study. SCOT was first developed by Pinch and Bijker in 1984, and it argues that social groups collectively assign meanings to technological artefacts (Pinch & Bijker, 1984). The theory removes the artificial separation between science and technology by conceptualising both as socially constructed cultures, making it a suitable framework for this study. This study aims to examine ICT implementation in schools following the provision of resources, emphasising that

the meaning of ICT integration in teaching and learning must be socially shared for successful adoption. When teachers fully embrace technology, the wider teaching community participates in socially constructing its use.

SCOT is relevant to this study because it highlights that there should be no segregation between social construction and technology. The theory explains that technology evolves through social processes, rather than existing with fixed meanings, which aligns with the study's focus on ICT integration (Pinch & Bijker, 1984; Basu, 2023). Using SCOT, it is understood that newly delivered ICT resources may not immediately align with teachers' needs or the curriculum; successful implementation requires adaptation, evolution, and reform in teaching practices.

In the context of this study, the relevant social group comprises the teachers responsible for implementing ICT in teaching and learning. SCOT dismantles the traditional separation between technology and society, viewing both as co-constructed and mutually influential. This perspective is particularly useful for understanding ICT implementation in schools where resources are available, but integration depends on how teachers interpret and engage with the technology. SCOT provides a powerful lens to explain why ICT implementation relies not solely on resource availability but on the social processes through which teachers construct shared meanings, address challenges, and develop usage norms. As Basu (2023) notes, technologies evolve through continuous interaction among actors, including teacher collaboration, shared problem-solving, and evolving pedagogical strategies, all contributing to the social construction of ICT in education.

This study demonstrates that successful ICT implementation in accounting education emerges not from top-down mandates or technology deployment alone, but from collective sense-making, negotiation, and adaptation among teachers. Applying SCOT reveals that the trajectory of ICT integration depends on how the teaching community defines, shares, and ultimately stabilises its understanding of the role and value of technology in the classroom.

### **3. Methodology**

#### ***3.1 Research Paradigm***

This study was grounded in the constructivist paradigm, which holds that “entities exist only in the minds of the persons contemplating them” (Lincoln & Guba, 2013, p. 39). According to Guba and Lincoln (1989), this paradigm emphasises understanding the research

phenomenon more deeply by prioritising the world of human experience. Kivunja and Kuyini (2017) further explain that the constructivist paradigm seeks to enter the mind of the person being studied, aiming to understand and interpret how they perceive and make sense of the research phenomenon. Guided by these perspectives, the paradigm was pertinent for this study, as it enabled an understanding of the state of ICT in accounting teaching based on teachers' experiences. Through this worldview, it was possible to construct the perceived levels of ICT implementation from teachers' perspectives.

Creswell and Creswell (2017) maintain that the constructivist paradigm focuses on developing subjective meanings and understandings of one's experiences concerning specific topics, shaped by social and historical backgrounds. This viewpoint supported the idea that teachers' interpretations of ICT implementation, and their related experiences, may be influenced by their personal backgrounds and social contexts. Crotty (1998) asserts that individuals construct and interpret their own understanding of the world. In line with this, the study implies that to better understand the world of ICT implementation, interpretation must be carried out with the individuals who experience and are expected to implement ICT, in this case, the teachers.

### ***3.2 Research Design***

According to Kivunja and Kuyini (2017), most qualitative studies that employ a constructivist or interpretivist paradigm select a phenomenological research design to deepen the understanding of the topic being explored. Consequently, this study adopted a phenomenological research design because its central purpose is to thoroughly describe people's lived experiences (Creswell, 2021). Carpenter (2013) further notes that this design is appropriate when a researcher seeks to understand, describe, and interpret human behaviour and the meanings individuals assign to their experiences. Since this study aimed to explore the state of ICT implementation in township schools in the Umlazi District following the notable delivery of technological resources, a phenomenological design was suitable.

This design ensured that the research question was rigorously addressed and that teachers, who are responsible for implementing ICT in teaching and learning, could share their experiences. Furthermore, the design enabled deeper insights into the meanings and interpretations teachers attach to ICT implementation. Overall, this approach provided an

opportunity to capture a detailed understanding of the state of ICT implementation through comprehensive responses from the participants.

### ***3.3 Research Approach***

A qualitative approach was appropriate for understanding the state of ICT implementation in accounting teaching and learning. Creswell (2021) asserts that a qualitative approach provides comprehensive explanations of participants' experiences, situations, attitudes, and thoughts related to the research phenomenon. Through this approach, deeper insights were gained into why specific teaching strategies could be employed in accounting to teach financial statements. A qualitative approach also assists researchers in understanding the people, social conditions, and cultural contexts in which they live (Goundar, 2012). In addition, it ensures that the information generated about the cases studied is in-depth. This approach enabled a detailed examination of the research phenomenon in this study. Furthermore, it allowed the researcher to provide comprehensive explanations regarding the state of ICT implementation in schools, given the noted improvements in ICT resource roll-outs.

### ***3.4 Population and Sample***

According to Cohen et al. (2007), population refers to the target group from which a researcher intends to gather information, and it emerges from the research phenomenon. Consequently, the sample size is determined by the population. In this study, the population consisted of accounting teachers in Umlazi township schools. A convenience sampling strategy was used to select participants, resulting in a sample of four accounting teachers who were readily available to take part in the study. The small sample size was justified, as qualitative studies typically use smaller samples due to their focus on interpretation rather than quantification (Merriam & Tisdell, 2016). Qualitative research prioritises understanding individuals' experiences over the number of participants, allowing for an in-depth exploration of the topic. Thus, the perspectives and experiences of the four teachers were sufficient to provide meaningful insights into ICT integration in accounting.

Additionally, four lessons, one from each teacher, were selected for observation. The rationale for observing lessons from the same teachers interviewed was to validate and triangulate the data obtained during interviews. Johnson and Christensen (2024) explain that convenience sampling is suitable when researchers collect data from individuals who are easily

accessible. Although the teachers were located in different areas, they remained accessible to the researcher. Using a small sample in this study facilitated a deep, contextual understanding of the research problem, prioritising rich detail of participants' meanings, experiences, and perspectives rather than seeking statistical generalisation.

### ***3.5 Data Collection***

Two data collection instruments were used to guide the data collection process: observation and interview schedules. The observation schedule contained four questions to facilitate a smooth observation process and ensure accurate data capture. Similarly, the interview schedule included four questions to guide the researcher and ensure that the queries addressed the study's research question. Notes were recorded on both schedules.

According to Shanmugam (2020), observations play a pivotal role in research by allowing the researcher to verify and gain deeper insights into people's actions related to the research phenomenon. Johnson and Christensen (2024) note that observations enable researchers to examine behavioural patterns concerning a specific phenomenon to obtain meaningful information. In this study, observations provided a concrete and deeper understanding of ICT implementation. Classrooms were visited to observe the availability of technological resources and how teachers used them as part of ICT integration. During these observations, notes were taken, and photographs of digital tools were recorded in the observation schedule. Patten and Newhart (2018) emphasise that researchers should observe individuals within a context they understand and where the phenomenon naturally occurs. Shanmugam (2020) adds that observations allow researchers to capture information within the natural setting of social occurrences.

In addition, semi-structured interviews were conducted with four accounting teachers to complement and confirm the observations. Cohen et al. (2007) argue that interviews provide an interactive space for researchers to engage with the research phenomenon through social and interpersonal interaction. Semi-structured interviews allow the use of probes to elicit deeper insights. The interviews were conducted via Zoom and lasted approximately 45 minutes each. Both observation and interview schedules served as guides throughout the data collection process. The interviews were audio-recorded, after which the data were transcribed and analysed.

### ***3.6 Data Analysis***

Thematic analysis was employed to analyse the data, as it allowed the use of qualitative methods such as observations and interviews to draw conclusions regarding the research topic (Johnson & Christensen, 2024). First, notes from the observations and responses from the interviews were organised according to the questions asked. The next step involved familiarising oneself with the data through repeated reading, listening, transcribing, and reviewing the transcripts and notes. Codes were then developed by identifying recurring ideas and patterns within the data. For instance, two keywords were identified for each research question, and similar keywords were extracted from participants' responses. In the case of the first research question, three keywords, Resources, Provision, and Improvement, were identified, which were then combined into the code RPI. Cohen et al. (2007) note that coding helps qualitative researchers reduce data into manageable segments by assigning labels.

All text and data with similar interpretations were grouped, while differing views were categorised separately and assigned codes, such as MU for moderately used and PL for presenting a lesson. From these codes, themes were developed to represent responses to the research questions. The credibility of the data was enhanced by using a second method of data collection, interviews. Validity was further ensured through member checking, where participants reviewed the findings to confirm the accuracy of the analysis. Methodological triangulation was also employed by combining classroom observations with semi-structured interviews conducted with four accounting teachers. The interviews helped confirm, complement, and elaborate on the observations, thereby strengthening the interpretive depth and credibility of the findings. Triangulation was achieved by cross-referencing insights from both observation and interview data, validating the findings through convergence across methods.

### ***3.7 Ethical Consideration***

Ethical considerations were observed throughout this study. Permission to conduct the research was requested and granted by the University of KwaZulu-Natal Research Office under ethics number HSSREC/00004068/2022. Approval was also obtained from the Department of Education to conduct the study in Umlazi schools and involve the participating teachers. Key ethical procedures, including informed consent, confidentiality, anonymity, and voluntary participation, were explained to all participants and strictly adhered to throughout the study.

To ensure anonymity, participants were assigned pseudonyms, such as Accounting Teacher 1, Accounting Teacher 2, and so on.

#### **4. Findings and Discussion**

The central question of this study was: What is the state of ICT implementation in township schools in the Umlazi district? The results indicate that ICT implementation in some township schools is moderate, for four main reasons.

##### ***Theme 1: The state of ICT resources provision is improving.***

The first finding of this study is that ICT provision in schools has improved. The results indicate that the state of ICT implementation in some schools is moderate, largely due to government and Department of Basic Education initiatives to roll out technology resources in the KwaZulu-Natal province. The term moderate refers to the relatively better availability of whiteboards, overhead projectors, and laptops. For example, during classroom observations, teachers actively used these tools to deliver lessons. They also noted that in other subjects, ICT use is average, as resources are incorporated according to routine practices.

Participants acknowledged that following the COVID-19 pandemic, the provision of ICT resources has improved. Although the process is gradual, the government is making efforts to ensure that every school has at least some technology resources. The government is investing in devices such as laptops, whiteboards, and projectors. Participants reported that the limited number of available resources encourages them to incorporate ICT into their teaching. However, some participants highlighted that while a few resources have been delivered, no professional training has been provided, and teachers often support one another using basic ICT skills.

Observations confirmed that teachers in the Umlazi district are integrating ICT into their classrooms, although implementation remains at an early stage. During interviews, participants consistently affirmed that the availability of technology resources in schools has improved. One participant noted:

*“On my side, I can only comment that in our school, we are observing an upgrade in the provision of technology resources. COVID assisted because we recently received five laptops for each department and overhead projectors.”* Accounting teacher 1

Adding to Accounting teacher one was Accounting teacher 4:

*“From my observation, the ICT implementation has improved just because now we see some resources from the department, they encourage us to use them in our teaching.”*

The results indicate that the improved delivery of technology resources in Umlazi township schools has positively influenced ICT implementation in classrooms. These findings are supported by Mahlo and Waghid (2022), who argue that providing and ensuring access to ICT resources can free teachers from the constraints of inadequate materials, which often hinder effective ICT integration. Government Communications DBE (2019) concurs that the provision of ICT resources in KwaZulu-Natal has increased following concerns about limited access to technology tools. Similarly, Klement and Klementová (2016) note that rolling out ICT resources in schools addresses the low levels of ICT integration in these institutions.

Applying the Social Construction of Technology (SCOT) theory further clarifies this process. According to SCOT, social actors, in this case, accounting teachers, who have experience with ICT tools interpret and construct the meaning of these technologies. These teachers can then convey the significance and application of ICT implementation to other social groups, such as colleagues who have not yet adopted or fully embraced ICT in their classrooms. During classroom observations and interviews, participants highlighted that the COVID-19 pandemic prompted the provision of additional technology resources, which has facilitated the integration of ICT into teaching and learning practices.

***Theme 2: The majority of teachers are utilising technology tools to present lessons.***

The study results indicate that ICT implementation in Umlazi township schools is moderate, as teachers actively use technology tools to present lessons. Whiteboards, laptops, and overhead projectors were the primary tools employed by teachers during classroom instruction. Participants reported that their level of ICT implementation is gradually improving, as they increasingly integrate whiteboards and PowerPoint presentations into their lessons. Teachers noted that they prepare lessons both at home and at school using the school’s laptops.

The results also showed an increase in the number of teachers using digital tools to teach accounting lessons, with similar improvements observed in other subjects. Participants revealed that the availability of even a few technology resources has generated enthusiasm for

using ICT in their teaching. Classroom observations confirmed that teachers are incorporating PowerPoint presentations into lessons. One accounting teacher mentioned that their department has established a rule requiring teachers to deliver at least two technology-integrated lessons per week, which has contributed to noticeable improvements in ICT implementation. Participants also reported using demonstration videos to enhance teaching, although occasional internet connectivity issues sometimes hinder this practice.

Accounting teacher 3 had this to say:

*“I would say the state of ICT implementation is improving because my colleagues in my department always want to use the classrooms with digital tools to teach. We even sometimes argue about the turns to use the projectors, I guess we are now adjusting and enjoying the benefit of not using a chalkboard.”*

Two accounting teachers also commented:

*“From my observations, the number of resources has increased because the number of teachers presenting digitalised lessons in the classroom is increasing. Accounting teachers now project information; I noted this also in another extra class where teachers conducted commerce lessons using technology tools. It may differ with schools and locations, but for me, teachers are trying to improve ICT implementation, especially the young generation.”*

*“In our schools, the majority of teachers now use PowerPoint regularly and they type their work into soft copies, which shows better implementation of ICT,”*

Accounting teacher 4

*“Although each teacher does not have personal gadgets, we borrow from each other, and in commerce, I have observed that swift lesson presentation, whiteboards, and overhead projectors are used.”* Accounting Teacher 1

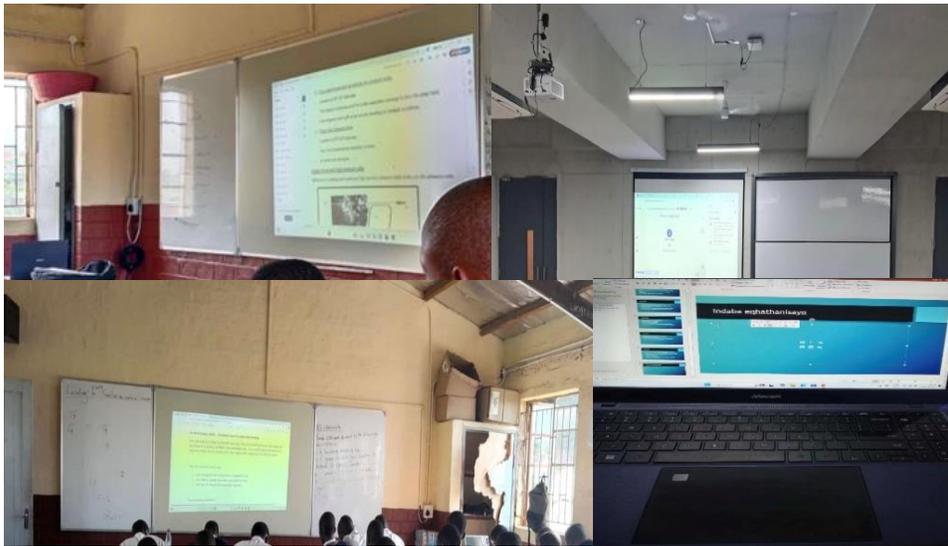
The results indicate that the number of teachers delivering digital lessons is steadily increasing. Accounting teachers, in particular, appear to be gaining interest in using ICT resources in their teaching. Post-pandemic, there has been a noticeable increase in efforts to implement ICT in accounting instruction. Participants noted that encouragement to adopt ICT practices intensified following the COVID-19 pandemic. These findings are supported by Ojo and Adu (2018), who observed a rise in the number of teachers integrating ICT into teaching and learning in Western Cape primary schools. Similarly, Mahlo and Waghid (2022) report

that in Gauteng, classroom adoption of ICT gradually increases following the delivery of technology resources to schools.

These findings suggest that teachers are gradually becoming more familiar with ICT implementation in the classroom. As more teachers adopt ICT, the overall state of integration is likely to improve. For example, during classroom observations, one teacher projected financial statements and questions while learners worked collaboratively with the teacher. In another lesson, the teacher played a video on manufacturing and subsequently conducted an activity using a laptop and an overhead projector. SCOT theory supports this result by emphasising that teaching and technology should not be separated; rather, ICT implementation is constructed collectively by social actors, in this study, accounting teachers. Figure 1 illustrates examples captured during classroom observations.

**Figure 1**

*Photographs of the accounting classrooms*



***Theme 3: Assessment and grades have now been digitalised in some schools.***

Accounting teachers have begun digitalising their assessments. Teachers now prepare and distribute typed assessments and record grades using Excel spreadsheets. Participants reported that most of their class activities, tests, assessments, and grading processes are no longer paper-based. The provision of technology tools has enabled accounting teachers to digitalise administrative reporting within their departments. Participants noted that each department is allocated laptops, which they use for teaching and administrative tasks. Some

teachers have also experimented with online multiple-choice assessments, using tools such as Kahoot for informal quizzes. During observations and interviews, participants confirmed that access to ICT resources has significantly improved the way they administer and maintain assessment records, making the process more efficient and organised.

Participants highlighted:

*“Since we have the resources now available, we try to type our assessment tasks, and after marking, all marks are captured on the laptops. We are trying to be paperless now.”* Accounting teacher 3

*“I have noted in commerce that the availability of resources has improved our assessment standard; I have done a multiple-choice test with my learners using the Kahoot gaming app.”* Accounting teacher 1.

The results indicate that accounting teachers’ assessment practices have improved since the introduction of ICT tools. This improvement is evident in the way teachers now design assessment tasks digitally, ensuring that assignments are typed and marks are recorded and stored electronically. Blundell (2021) supports these findings, noting that the availability of technology resources in schools enhances the efficiency of assessment practices, particularly in learning environments with diverse tools. Similarly, Eyal (2012) confirms that digital provision in schools has improved digital assessment practices, although further digital assessment literacy training for teachers is recommended.

Applying the SCOT theory provides insight into these developments. SCOT suggests that social contexts, human agency, and interpretive flexibility shape the development and use of technology. In Umlazi, teachers, as key social actors, are actively reshaping and redefining the use of ICT to meet their instructional needs. The increased use of digital tools illustrates that technology is not simply imposed but is meaningfully appropriated through teacher interaction, adaptation, and practice. The moderate level of ICT integration highlights the influence of contextual factors on successful implementation.

These developments align closely with national policy frameworks, notably the White Paper on e-Education (2004), which envisions all South African learners achieving ICT competency and becoming knowledge workers. The observed digitalisation of lesson delivery and assessments reflects progress toward this vision. Furthermore, the National Development Plan 2030 emphasises the importance of digital literacy and equitable access to ICT in improving educational outcomes and reducing inequality. While the study is limited by a small

sample size and its focus on a single district, the findings underscore a positive step forward and highlight the need for ongoing support to ensure consistent and equitable ICT implementation across schools.

## 5. Conclusion

The primary objective of this study was to investigate the state of ICT implementation in township schools of the Umlazi district, specifically in the accounting subject. This objective led to a central research question: What is the state of ICT implementation in accounting in Umlazi township schools? The results indicate that ICT implementation in some schools is currently moderate. Evidence for this includes the use of technology tools by teachers for lesson delivery, the predominance of soft-copy learning materials, and the digitalisation of assessments and grades. Microsoft Office tools, such as Excel, Word, and PowerPoint, are widely used: Excel for spreadsheets, calculations, and registers; PowerPoint for lesson presentations; and Word for creating handouts. Teachers also employ projectors, smartboards, and other presentation tools to display content. These findings suggest that improving the provision of ICT resources could enhance implementation across all schools, as effective digital transformation in education depends on adequate teacher support and resources.

The Social Construction of Technology (SCOT) theory further illuminates these findings. SCOT posits that when social groups interact with new technology, they adapt it to solve contextual problems. In this study, teachers were observed transitioning from traditional to more dynamic teaching methods. The use of soft-copy learning materials reduces reliance on printed textbooks, making resource distribution more flexible and cost-effective. The moderate level of ICT implementation indicates that while some schools are progressing, others lag behind, particularly when improvements are concentrated in better-resourced schools. Although some teachers effectively integrate ICT tools, sustaining and expanding this progress will require ongoing training and support.

Based on these findings, the study proposes short-term and long-term goals for enhancing ICT implementation. Short-term goals include providing training for accounting teachers on Microsoft Office and learning management systems, auditing existing ICT tools and providing technical support, encouraging teachers to create and share digital lesson plans and multimedia teaching materials within subject clusters or districts, and improving internet access. Long-term goals involve investing in ICT resources, developing accounting education

software, and forming partnerships with technology companies and NGOs to ensure sustainable ICT integration.

## **6. Recommendations**

The results indicate some improvement in ICT implementation in Umlazi township schools, largely due to the roll-out of technology resources in the province. Based on these findings, the study makes several recommendations. First, the government and the Department of Basic Education should invest further in ICT resources, including whiteboards, laptops, overhead projectors, and reliable internet connectivity. Second, school leaders should prioritise and promote proper ICT training for teachers, as the study revealed that many educators are currently relying on self-taught skills to integrate technology into teaching and learning. Third, although the Department of Education established the White Paper on e-Education in 2004, no significant updates have been made, especially following the COVID-19 pandemic, which highlighted the need for ICT integration in schools. Policymakers should urgently update the current ICT policy to reflect contemporary technological and educational needs.

Teachers are also encouraged to maintain a positive attitude and a willingness to learn and implement ICT in their classrooms. SCOT theory underscores that there is no strict separation between society and technology; therefore, teachers should be empowered to participate in the social construction of technology and collaboratively shape ICT use within the educational community. The urgently needed ICT tools for accounting education include functional computers, reliable internet connectivity, additional laptops, projectors, interactive whiteboards, and learning management systems (LMS) such as Blackboard. Teaching accounting often involves demonstrating complex processes, including journal entries and financial statement preparation, and visual tools help make these abstract concepts more concrete. Without these resources, teachers rely primarily on textbooks or board work, which can limit learners' understanding, engagement, and overall learning experience.

**Disclosure statement**

The author declares no conflict of interest.

**Funding**

No funding supported this work.

**Institutional Review Board Statement**

This study was granted clearances by the University of KwaZulu-Natal Research Office under ethics number HSSREC/00004068/2022.

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