

Remote learning experiences shaping digital pedagogical identity among pre-service accounting teachers

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Abstract

This qualitative study explores perspectives of pre-service accounting teachers about their remote learning experiences and what this means for preparing them professionally. Using technological pedagogical Content Knowledge (TPCK), and the theory of Reflective Practice, this study seeks to address a gap in our knowledge base regarding how future educators, who are simultaneously learners and aspiring professionals, understand the transition to emergency remote teaching. Twenty students enrolled in a Bachelor of Education (Accounting) program at a South African university participated in the research, submitting reflective essay responses, participating in focus group interviews and were analysed using Interpretative Phenomenological Analysis. Findings revealed two competing realities. While remote learning provided flexibility and opportunities for the participants to pace themselves when mastering accounting concepts; participants lost many of the opportunities for spontaneous dialogue and immediate feedback they needed to develop procedural and professional judgment. More critically, participants functioned as reflective observers of instructional practices, identified a lack of congruence between available technologies and effective pedagogies and used this insight to develop a digital pedagogical mind-set. Participants articulated intentional strategies including content chunking and structured collaborative activities they would use in their future classrooms. Ultimately, the remote learning experience created a hybrid practitioner identity, positioning these future educators as analytical co-designers of learning rather than simply survivors of a crisis. Therefore, teacher education should intentionally include reflective, technology-enabled experiences so that they can produce confident, pedagogically competent accounting educators who can effectively integrate digital tools into meaningful social interactions in a variety of learning contexts.

INTRODUCTION

The use of digital technologies in education has rapidly changed the educational landscape since the beginning of the 21st century (Srivastava, 2023). Nevertheless, the COVID-19 pandemic served as an unprecedented trigger in shifting nearly all of the world's education systems away from the traditional face-to-face model to many forms of Remote learning (Aboagye, 2021). What was once a temporary reaction to an international health disaster quickly evolved into a massive, unplanned trial of online education that exposed both the tremendous opportunity for innovation and the numerous challenges associated with Remote learning (Frenk et al., 2022).

In addition to affecting virtually every area of education, the pedagogical disruptions caused by Remote learning presented unique challenges for courses based upon the acquisition of practical skills, such as accounting (Herbert et al., 2021; Dugal, 2025). Historically, accounting education has heavily emphasized interactive problem solving, immediate feedback, and cooperative examination of complex financial issues (Jabulisile & Nomsa, 2024). The rapid move to Remote learning disrupted each of these fundamental pedagogies, resulting in a sudden re-evaluation of how accounting knowledge and skills as a profession are taught and acquired. Therefore, it is critical to comprehend the effects of this disruption on the discipline of accounting.

The participants of this study were required to utilize new digital tools and formats such as video conferencing, online forums, and e-assessment platforms in order to adjust to their respective roles as both students and/or apprentices as teachers. Specifically for pre-service accounting teachers, this time frame was highly significant. In essence, they were not only acquiring accounting content remotely; they were concurrently witnessing and experiencing in real-time the instructional techniques they would eventually apply as their own teachers in the future (Shamsudin et al., 2023). As both students and future teachers, this positioning allows for a rare and as-yet relatively unexamined perspective on the feasibility and challenges of Remote learning in accounting. Although studies have assessed the opinions of students and lecturers, the dually experienced perspective of pre-service teachers has received limited attention (Mphuthi & Tshelane, 2022).

Therefore, this study seeks to fill this void by investigating the experiences and perceptions of pre-service accounting teachers related to their involvement in a curriculum that was provided entirely via Remote delivery (Kelly et al., 2023). Guided by the complementary lenses of technological pedagogical Content Knowledge (TPCK) (Handayani et al., 2023) and Reflective Practice (Tan et al., 2023), we aim to understand how these future educators conceptualize the efficacy, challenges and opportunities of Remote learning. The primary research question driving this investigation is: how do pre-service accounting teachers perceive and interpret their Remote learning experiences? What are the implications of these perspectives for their eventual teaching practice and the design of their accounting curricula? Through the examinations of their reflections, this study will transform their "lived-experiences" of the "curriculum-in-practice" (Mushelenga, 2025) into applied knowledge designed to enhance pre-service accounting teacher education programs and create more effective, durable and pedagogically sound blended and Online Learning environments for the future (Mphuthi et al., 2022; Kelly et al., 2023).

This study adds to literature that examines how pre-service accounting teachers translate their experiences with Remote learning into developing their technological pedagogical Content Knowledge and professional teaching identities; thus, expanding existing research on the covid era beyond descriptive accounts of learning experiences to explanations of professional learning and identity formation.

LITERATURE REVIEW

The paradigm shift to remote and online learning

Prior to 2020, higher education institutions across the globe were already increasingly incorporating online/blended learning models into their curricula primarily due to advances in technology and the growing demand for flexible learning opportunities (Ashour, 2024). Nonetheless, the changes brought about by the COVID-19 pandemic were unprecedented. Experts were quick to point out that there is a distinction between well-designed Online Learning versus emergency Remote teaching (ERT) employed by most colleges/universities during the crisis (Barri, 2022). Characteristics of ERT included its

unplanned/impromptu nature, often simply transforming in-classroom settings into digital classrooms without first designing high-quality online educational materials/programs.

The global experiment demonstrated a substantial digital divide, identifying barriers to equal access to technology and stable internet services (Wheatley, 2024). Additionally, differences in digital literacy among students and faculty members emerged as major impediments to effective teaching/learning (Choudhary & Bansal, 2022). Consequently, the abrupt switch to Online Learning resulted in greater isolation/anxiety/burnout among students (Barri, 2022). An understanding of this broader environmental context is necessary to grasp the environment in which pre-service teachers were studying as they too were impacted by systemic/personal challenges.

Unique challenges in accounting education

Accounting education is characterized by a hierarchical structure of knowledge development and places emphasis on discrete procedural steps while fostering important professional skills such as critical thinking/judgment/scepticisms. Thus, regardless of how accounting education is disseminated (e.g. Via classroom or digitally), accounting education presents unique challenges (Dugal, 2025). Accounting education historically emphasizes interactive problem solving; timely feedback; collaboration/teamwork to deconstruct complex financial cases/scenarios (Nasif, 2025). However, the transition to emergency Remote teaching disrupted each of these fundamental approaches to teaching/learning.

Studies assessing accounting during the pandemic identified several challenges. First, teaching technical skills such as creating financial statements/debits/credits became significantly more difficult when providing real-time guidance for students was no longer possible (Li & Wu, 2024). Second, replacing traditional in-classroom assessments with online assessments raised concerns about academic integrity and the effectiveness of evaluations. Consequently, alternatives such as open book case studies/projects were utilized (Sabrina et al., 2022).

Lastly, developing "soft skills" (teamwork/communication/professional ethics) normally developed through class discussion/group work declined in the Remote learning environment (Salarvand et al., 2023). Although these studies offer useful insight into some of the challenges faced by Remote teaching in accounting, they generally focused on the views/opinions of current students/faculty. A significant gap remains in understanding how those training to be teachers of accounting viewed/thought about these challenges.

Teacher education and the development of professional identity

To become a teacher involves more than just obtaining knowledge. It requires developing an identity. Individuals combine their personal beliefs/experiences as students/formal teacher education training into their professional identities (Ardi et al., 2025). Pre-service teachers develop their professional identities through reflection upon their learning experiences/instructional methods encountered during their preservice program (Mulyani et al., 2022). Because they are currently undergoing an apprenticeship

of observation (Lortie, 2020), pre-service teachers' observations/learnings from extended periods of Remote teaching will significantly shape their conceptions regarding what can/cannot be done feasibly/desirably/challengingly in teaching accounting. According to Phillips & Condy (2023) effective teacher preparation must include connections between theory/practice. The extended experience with Remote teaching represents a complex but valuable opportunity for this connection. The ways in which pre-service teachers reflect upon/understand this experience will greatly affect their developing knowledge/skills referred to as TPACK (Koehler & Mishra, 2009); and will similarly determine their strategies for handling future classroom challenges.

Although the academic community has provided a comprehensive overview of Emergency Remote Teaching (ERT) (Barri, 2020); identified specific challenges associated with accounting education (Ashour, 2024); and offered theoretical frameworks supporting teacher development (Dewi et al., 2021); there remains an important area that has gone unexplored at the intersection of these areas. This discussion has largely excluded an important perspective: pre-service accounting teachers who have a rich combination of experiences.

Pre-service accounting teachers experienced both the transition to Remote learning as students encountering challenging course material; as well as prospective teachers watching instructional methodologies employed during a crisis (Lortie, 2018). Although studies on accounting during the pandemic identified difficulties with teaching procedural knowledge and professional skills in accounting remotely (Huang et al., 2022); there continues to be a significant gap in understanding how pre-service teachers training to teach the subject conceived/views/conceptualized these challenges. Research on pre-service teachers typically takes a generalist approach. Similarly, research on technology integration tends to examine the technical skills of practicing teachers. There does not appear to be a complete framework that addresses the complexity of pre-service accounting teachers' experiences. This study posits that utilizing both technological pedagogical Content Knowledge (TPCK) and Reflective Practice is essential for addressing this gap (Handayani et al., 2023; tan et al., 2023). TPCK will allow researchers to analyse how technology; instructional methods; and accounting content converge in the learning experiences of pre-service accounting teachers; whereas Reflective Practice will assist them in comprehending/processsing these experiences to inform their evolving professional teaching identities.

This study focuses on both accounting content and Remote teaching requirements; examined through the lens of a future educator. By placing the reflective pre-service accounting teacher at the center of this study; it asserts that their unique viewpoint is not simply another viewpoint; but rather a critical resource for understanding. Their reflections represent an important link between the curriculum as it is delivered; and how it is experienced; providing important insights toward shaping a stronger and more effective future for accounting education.

THEORETICAL FRAMEWORK

Two theoretically connected frameworks support this study to better comprehend the experiences and viewpoints of prospective accounting teachers: Theoretical Framework 1, Technological Pedagogical Content Knowledge (TPCK) and Theoretical Framework 2 Reflective Practice Theory.

Technological Pedagogical Content Knowledge (TPCK)

Mishra and Koehler (2006) described the TPCK framework as indicating that effective technology-based integration requires an understanding of the dynamic interrelationship among the three major categories of knowledge: Accounting Content Knowledge (CK) in this case, accounting principles (Mokhampanyane & Vanneer, (2024); Pedagogical Knowledge (PK) general teaching methods (Shulman, 1987); and Technological Knowledge (TK) skills with digital tools. When combined, the three core domains create the necessary constructs for this study: Pedagogical Content Knowledge (PCK), or the knowledge of how to present accounting content in ways that facilitate learner comprehension (Shulman, 1987); Technological Content Knowledge (TCK), which includes the knowledge base of how technology can transform representations of accounting concepts; and Technological Pedagogical Knowledge (TPK), or the recognition of how teaching methods can be modified by the application of technology. Ultimately, the integration of all three in the middle represents the combination of the three: Technological Pedagogical Content Knowledge (TPCK), which represents the specialized knowledge required for accounting education using technology (Handayani et al., 2023; Mishra et al., 2006).

This framework is especially suitable for this research because the prospective teachers are currently developing their TPACK through their remote learning experience (Cengiz & Kaçar, 2024). While they are learning accounting (CK), they are also witnessing how their instructors are teaching it (PK) using a variety of digital platforms (TK). Thus, analysing their reflections from a TPACK perspective allows us to gain insight into how their current instructors are blending technology, pedagogy, and accounting content to deliver the course material successfully. Moreover, when a prospective teacher evaluates an instructor's attempt to teach complex journal entries online, they are evaluating both the instructor's effectiveness in integrating technology, pedagogy and accounting content to facilitate student learning. Analysing their reflections based upon a TPACK paradigm provides a means of going beyond general comments and identifying specifically which technological-pedagogical strategies were identified as being either effective or ineffective in facilitating accounting content delivery (Mokhampanyane et al., 2024).

Reflective Practice Theory

In conjunction with TPACK, Schon's (1987) theory of Reflective Practice provides a conceptual basis for understanding how prospective teachers reflect on their experiences. Schon distinguishes between two levels of reflection: reflection-in-action, where teachers develop thinking about their actions during a teaching/learning event; and reflection-on-action, where they evaluate their actions after the fact.

While as students' prospective teachers demonstrate reflection-in-action when adjusting their learning approaches while completing a difficult online accounting assignment, they demonstrate more

significant reflection-on-action when reflecting on those same assignments as future educators and asking themselves, "What would I do differently if I were responsible for designing this course?"

Thus, through the dual processes of reflection, relatively superficial student responses such as *"I didn't like the online forum"* become much more useful for informing instruction. In doing so, we analysed both the quantity and quality of their reflections as vital input for both teacher preparation programs and curriculum development.

Therefore, these frameworks indicate that prospective teachers are not simply passive recipients of a distant curriculum but are active participants who have experienced firsthand many of the problems associated with 21st century accounting education via distance education.

RESEARCH DESIGN AND METHODOLOGY

In order to effectively investigate the varied views of prospective accounting teachers, a qualitative research design was chosen. A qualitative research design was chosen because it emphasizes depth, context and meaning to account for complex human experiences and the underlying 'why' and 'how' associated with them (Christou, 2025).

Research paradigm and approach

An interpretivist research paradigm was used to conduct this study. As such, this research paradigm views reality as influenced by social interactions. Therefore, researchers attempted to understand what personal meanings participants assigned to their experiences (Pervin & Mokhtar, 2022). A phenomenological method was utilized to represent the commonalities of participants' experiences with remote learning in accounting education (Tetteh et al., 2023; Mphatsoane & Tshelane, 2023). Since the focus of this research was on a collective perspective representing the shared experiences of participants, phenomenology allowed for capturing the common elements among their experiences with remote learning in accounting education.

Research setting and sample selection

The setting for this research was within the Faculty of Education at a large public university. Pre-service teachers enrolled in a Bachelor of Education program and specializing in accounting comprised the population. The sample consisted of pre-service teachers who had completed at least one semester of professional coursework, which included methodology courses completed via required remote learning.

Participants were selected using a purposeful sampling strategy in order to obtain participants providing rich and relevant data to address the research question (Ahmad & Wilkins, 2025). A total of twenty participants were sampled in this research. Twenty participants provided enough data to reach data saturation within a phenomenological research design (Sarfo et al., 2021). Participants were recruited through an email invitation sent through program coordinators.

Data Collection

Interpretative Phenomenological Analysis (IPA) was used to analyze the data collected from this research. The goal of IPA is to immerse ourselves within participants' worlds and to understand how participants construct meaning around remote learning in terms of their role as future accounting educators.

We immersed ourselves into the participants' world by starting with an intense level of immersion. Each reflective essay and discussion transcript was read multiple times and attentively listened to in relation to the voice of each participant. We spent time lingering over their words, noting initial observations surrounding what each participant highlighted, what metaphors they employed, what recurring challenges they referenced and what moments of insight they expressed. This extensive immersion process formed the foundational process for our analysis.

Using this immersion process we began to identify what represented key themes amongst all participants. What was the fundamental message conveyed by Participant 7 concerning his dissatisfaction with "talking head" lectures? What personal philosophy was Participant 9 articulating when he stated, "You need to design for interaction"? From these preliminary themes we extracted the core idea for each participant.

When we examined these individual experiences collectively by laying them side by side and comparing them for similar patterns or threads we found that there were several commonalities that ran throughout all participant experiences. Where did their experiences intersect? Where did a powerful insight from one participant echo a tentative observation from another participant? It was through this comparison process that individual themes were clustered together into larger overarching themes representing the four superordinate themes you will see listed in the Findings section.

This was not a linear process but rather a cyclical one. We continuously went back-and-forth between the vivid quotes taken directly from a single participant and the developing thematic structure to ensure our interpretation remained anchored in participants' words.

Ultimately, we wove these validated themes together into a coherent story as told in this paper using TPACK and Reflective Practice as lenses to highlight its implications for teacher development. Similarly, we mirrored the reflective practices that our participants were employing through our analytical process.

Trustworthiness of study

To ensure that the results obtained were reliable and trustworthy, the researchers used credibility, dependability, confirmability and transferability as suggested by Lincoln & Guba (1985):

Credibility was increased through methodological triangulation by utilizing two complimentary sources of data: reflective essays and focus groups. Using multiple data sources permitted researchers to cross-compare and validate participants' accounts across differing contexts. Additionally, prolonged

engagement with the data occurred through multiple readings/re-readings of transcripts/reflection writings during the Interpretative Phenomenological Analysis process. Member checking was performed by providing selected participants with summaries of emergent themes to verify whether the interpretations captured their experiences/perspectives accurately.

Credibility was enhanced through methodological triangulation by drawing on two complementary sources of data, namely reflective essays and focus group discussions. The use of multiple data sources enabled the researchers to compare and corroborate participants' accounts across different contexts. In addition, prolonged engagement with the data was achieved through repeated reading and re-reading of transcripts and reflective writings during the Interpretative Phenomenological Analysis process. Member checking was also conducted by sharing summaries of the emerging themes with selected participants to verify whether the interpretations accurately reflected their experiences and perspectives.

Dependability was strengthened through the maintenance of a detailed audit trail documenting each stage of the research process, including participant recruitment, data collection procedures, coding decisions, theme development, and analytical reflections. The researchers followed a systematic and transparent analytical procedure, allowing the study process to be traced and evaluated. Peer debriefing among the authors further contributed to the consistency of the coding and interpretation process.

Confirmability was ensured by maintaining researcher reflexivity throughout the study. The researchers kept reflective notes and analytical memos to critically examine personal assumptions, values, and potential biases that could influence the interpretation of the data. Furthermore, all findings were grounded in participants' verbatim quotations and supported by evidence drawn directly from the reflective essays and focus group discussions, thereby ensuring that the interpretations emerged from the data rather than researcher predispositions.

Transferability was facilitated through the provision of rich, thick descriptions of the research context, participant characteristics, and study procedures. Detailed contextual information enables readers to determine the extent to which the findings may be applicable to other teacher education settings, particularly those involving pre-service teachers, accounting education, and digitally mediated learning environments.

To enhance analytical rigor, the authors engaged in iterative discussions throughout the coding process, revisiting the original data and emerging themes until consensus was reached regarding the interpretation of participants' experiences.

FINDINGS OF STUDY

Pedagogical paradox

Pedagogical paradox: flexibility and disconnection in remote learning

Participants' accounts revealed a clear pedagogical paradox embedded within their remote learning experiences. This paradox reflects broader discussions in contemporary educational technology literature, which suggest that digital technologies can simultaneously enhance and constrain teaching and learning processes (Zha et al., 2025; Alhur et al., 2025).

On the one hand, participants valued the accessibility and flexibility afforded by remote learning. The ability to pause, rewind, and revisit recorded lectures provided opportunities for self-paced engagement with complex accounting concepts. Several participants reported that recorded lectures enabled them to revisit difficult topics repeatedly until they achieved understanding. As one participant explained, *"I must have watched the video on consolidated financial statements five times. At my own pace, it finally made sense."* This flexibility allowed learners to exercise greater control over the timing, pace, and sequencing of their learning, thereby supporting deeper engagement with challenging accounting content.

On the other hand, participants described a persistent sense of pedagogical absence resulting from the lack of immediate interaction with lecturers and peers. Despite the benefits of technological access, they frequently experienced frustration when opportunities for clarification were delayed or lost altogether. Participant 12 reflected:

When the lecturer is doing a journal entry on the board in class, you can stop them and ask why immediately. Online, by the time you type the question into the chat, the moment is gone, and your confusion remains.

The narrative from these students indicated that while technology made instructional content accessible to them at greater levels than ever before, technology created fewer possibilities for impromptu conversation, real time feedback and cooperative thinking about the same topic. The findings were consistent with what is referred to as a technological paradox in an article written by Zha et al. (2025). According to their writing, technologies developed in schools to provide for more efficient learning can produce impediments to meaningful engagement and to effective instruction. Similarly, Alhur et al. (2025) have found that as more people become reliant on digital tools for accessing information, they develop forms of dependency and detachment from the person-to-person interactions that make up the fundamental experience of being taught or learning.

The pre-service accounting educators studied here experienced the paradox especially strongly; the development of conceptual understandings and professional judgments in accounting learning are primarily developed through immediately asking questions, receiving repeated cycles of feedback and working collaboratively on problems. Remote learning presented unprecedented flexibility and autonomy for the students, however the exchange of ideas between students and instructors, or among students themselves, which develops both procedural knowledge and judgmental knowledge, was significantly decreased. Therefore, the participants' experiences led to recognition that there needs to be a balance established between the convenience and ease of using technology and the interpersonal nature of teaching/learning. The participants felt that technology cannot simply allow more access to content but

should also be deliberately designed to promote engagement, dialogue and interaction within learning environments where students interact with each other and/or with technology.

TPACK disconnect

Beyond their roles as students, the participants encountered remote learning as novice educators, examining not only what was taught but also how it was taught through technology. A significant theme that emerged from their reflections included an ongoing gap between the types of technology provided by instructors/educators, the instructional methodologies employed using those technologies, and the interactivity required within accounting education. As opposed to utilizing technology to transform the way learning occurs, many participants noted that it was utilized primarily to transfer traditional lecture-based instruction to a digital platform.

One area of concern was the use of long, monologues video lectures that failed to take advantage of the interactive potentialities of virtual learning environments. Participant 7 articulated this point clearly:

...we watched a video lecture on ethics in auditing for three hours. All I got was a talking head. We could have taken advantage of all sorts of different mediums case study discussions, polls, etc., we could have even broken people out into small groups but we didn't utilize any of those things.

While participants offered these observations not strictly as criticism of their lecturers, instead as valuable professional learning experiences. When reflecting on the lecture, Participant 7 stated:

That experience gave me insight into what not to do when it comes to putting a lecture online it's not the same as teaching online.

These reflections are consistent with current TPACK literature (Karchmer-Klein & Konishi, 2023; Heath & Moore, 2024), which posits that the effective utilization of technology in education is about much more than integrating technology into existing educational practices. Meaningful technology integration requires purposefully combining content knowledge, pedagogical techniques, and technological capabilities. Participants' accounts indicate that technology has been viewed largely as a delivery method rather than as an engine for engaging in dynamic, conversational, and collaborative knowledge building processes.

Heath and Moore (2024) similarly argued that TPACK should be seen both as a practical application-oriented framework as well as an ethical and reflective practice that connects theoretical concepts and classroom realities. Through their own experiences, participants illustrated growth towards evaluating the applicability of their pedagogical decisions in various high-tech educational settings. They questioned whether digital tools were being applied to enhance learning or simply provide an alternative vehicle for transmitting traditional instructional methods.

Additionally, participant responses emphasize the need for consideration of affective-relational aspects of teaching (McLay and Reyes, 2024), which have traditionally been de-emphasized in standard TPACK

models. Although recorded lectures effectively transmitted information to students, participants viewed them as lacking sufficient social interaction, immediacy, and sense of community to facilitate meaningful learning. Their responses further suggest that successful technology-integration is dependent upon not only providing coordinated applications of technology, pedagogy and content but also facilitating engagement, conversation, and belongingness among learners.

Together, these narratives illustrate a growing pedagogically related awareness among prospective accounting teachers. Through critical analysis of the instructional practices they experienced, participants started developing their own conceptualizations of effective technology-enhanced teaching. The narratives represent examples of TPACK development occurring through learner-observer experiences, where future educators reflectively assessed relationships among technology, pedagogy, content and student engagement. Therefore, the perception of a disconnection between the technology available to instructors and the instructional practices they employ represents a stimulus for deeper professional self-reflection and for developing more deliberate approaches toward digital pedagogy.

Developing a digital pedagogical mind-set

Pre-service teachers reflected on their remote learning experiences in a way that was focused on creating solutions. While the participants were able to identify areas of weakness within their remote learning experiences, they also developed a pedagogically informed view of how they would develop and deliver lessons. In fact, their thoughts went from stating what had failed them in the process of delivering accounting in digitally mediated environments to conceptualizing new and student-centred models for teaching accounting in digitally mediated environments.

Critical to the emergence of this mindset was the pre-service teachers' focus on moving away from a didactic model of content delivery. Pre-service teachers consistently expressed the need to break down complex accounting concepts into smaller pieces of learnable material, so students could explore those concepts through multiple small exposures to that material. As such, participant 2 stated:

Instead of trying to teach three hours of cost-volume-profit analysis at one time, I would develop a series of video segments each segment would explain one graph or formula and then use our live sessions for problem solving and applying.

As such, this represents current views regarding digital pedagogy that focus on creating purposefully designed instruction rather than merely using educational technologies to digitize traditional instructional techniques (Padua, 2025; Aithal & Aithal, 2023). Moreover, the participants understood that educational technologies work best when they enable active engagement, critical thinking and meaningful learning not passive consumption of content.

Secondly, participants recognized that intentionally designing interaction is essential to creating high levels of engagement and collaboration in virtually based environments. Therefore, participants

envisioned using digital tools to provide opportunities for students to engage with course materials in interactive ways. For example, Participant 9 provided the following perspective:

To create opportunities for students to interact with me and with other students, I would utilize tools such as Mentimeter for anonymous questioning and/or create breakout groups where each group explores a different accounting problem. Through my own experience, I have learned that you must design for interaction; it will not occur without your direct involvement.

Additionally, these perspectives represent some of the recent research regarding digital culture and teacher empowerment, suggesting that successful technology integration is dependent upon educators making a paradigmatic shift from simply providing access to content to developing collaborative and participatory learning environments (Robandi et al., 2025; Padua, 2025).

Furthermore, the data indicate increased digital literacy and pedagogical agency among the participants. Participants developed greater self-awareness relative to their roles in designing inclusive and engaging digital learning spaces. Msimango (2025) posits that exposure to technology-integrated learning provides pre-service teachers with greater confidence and adaptability as professionals capable of meeting a variety of learner needs. Furthermore, participants demonstrated that digital pedagogy is more than just a technical competency; it is a professional orientation that involves purposefulness, adaptability and a commitment to learner engagement.

Together, participants' narratives illustrate a movement from seeing technology to convey content to perceiving technology as facilitating the potential for higher levels of interaction, collaboration and engagement in learning. Participants' experiences promoted a digitally mediated pedagogical mindset that emphasized thoughtful instructional planning, structured dialogue and active learner participation. Thus, while participants experienced many frustrations during remote learning, instead of being left frustrated, they used their experiences to inform practical pedagogical principles that they planned to employ in future accounting classes. Ultimately, participants' emerging mind-set affirms the call for teacher education programs to prepare educators capable of utilizing digital technologies in ways that enhance learners and deepen educational practice (Padua, 2025; Aithal & Aithal, 2023).

Identity change:

Participants demonstrated a significant development in their view of themselves and how they perceived their role within the learning environment. Participants moved from being recipients of information about an accounting course and becoming interpreters of that information while co-creating their own interpretations of the teaching practice. Participants transitioned from being students of accounting material, to simultaneously developing their identity as a future educator, critically thinking about teaching methods, instructional decisions, and learner engagement as they were experiencing it.

As indicated earlier, there is growing evidence that digital and technology mediated learning environments have the potential to transform pre-service teachers' perceptions of their professional

identities (Guan et al., 2025). The more participants used remote learning, the more they realized the connection between teaching methods and learner engagement. Therefore, the participants did not just acquire new knowledge, they also reflected on their views of successful teaching practices.

The dual role of participant as a current or future student and teacher created a dynamic that promoted further professional development. Through their experiences as learners, participants were able to use those experiences to evaluate their future teachers teaching methods and imagine alternative methods for their own future classrooms. Participant 16 illustrates the two lenses through which she viewed her experiences:

Although as a student I found the pre-recorded videos helpful for reviewing, as a future teacher I am concerned that they will be too isolating when attempting to build classroom community

Pokrivcakova's (2023) work supports the notion that pre-service teachers' exposure to new educational technologies leads them to rethink their professional roles, beliefs, and pedagogical assumptions. Instead of accepting teaching methods without question, participants began questioning the educational merit of various tools and techniques, and whether they truly enhanced the learning and engagement of the students.

Therefore, the comparative analyses conducted by participants between their learner and teacher identities provided a basis for transforming their personal experiences into broader pedagogical understandings. Participants analysed teaching methods through what could be described as a bifocal lens; simultaneously analysing the learner experience and the teacher's intent. As stated by Bernardi et al. (2025), increased use of innovative educational technologies enhances pre-service teachers' professional awareness and develops more refined pedagogical judgment. Furthermore, participants not only considered if a technological tool worked well, but whether it possessed educational merit, and ultimately whether it would support the desired learning objectives.

Finally, the results indicate the value of inquiry-based reflection in teacher training programs. Research has shown that reflective analysis based on research of practice is crucial for developing teachers who are responsive to changing educational landscapes (Van Katwijk, Jansen & Van Veen, 2023). Like this research, participants in this study conducted reflective analysis and strategic planning related to their experiences with remote learning.

Collectively, the participants underwent a marked transformation in terms of professional identity. Both as students and apprentice teachers, participants viewed their experiences through dual/complementary frames of reference. Through their reflections, participants illustrate the emergent formation of what could be termed a "hybrid practitioner" identity: An identity characterized by a capacity to combine innovation with the relational aspects of teaching such as dialogue, feedback, collaboration, inclusivity, and responsiveness to individual needs.

In this way, participants formed a unique identity because of their remote learning experience. While they emerged as individuals who had successfully navigated a period of disruption in their education, participants emerged as reflective future educators equipped with the capability to critically assess technology-enriched learning environments. Ultimately, participants were better positioned to contribute to shaping the future of accounting education through informed/reflective/pupil-centred pedagogy rather than simply adapting to change.

DISCUSSION

In this section we will interpret the raw stories presented in the findings through the framework of contemporary scholarship and literature.

Narratives presented by pre-school accounting teachers illustrate not only document historical changes in the field but offer critical examination of development of professional knowledge and identity within the Digital age.

Our analysis reveals that emergency remote teaching was not a passively received experience but rather an active if unintended curriculum in technological pedagogy.

The central tension present in participants' accounts regarding accessibility and dialogic deficit provides insight into core challenges identified in the technological pedagogical content knowledge (TPACK) framework.

Their account highlights that for subject matter like accounting where procedural knowledge and judgment are built through dialogue (Jabulisile & Nomsa, 2024), the Technological Knowledge (TK) of video platforms alone are insufficient for creating effective learning environments.

True TPACK requires designing pedagogical practices that encourage pedagogical content knowledge (PCK) of accounting specifically interactive problem-solving.

Their complaint about one-way lectures aligns with Handayani et al., (2023) assertion that effective integration requires technology to transform content delivery not simply digitize it.

Their narrative that in ERT TK was often prioritized over the crucial PCK-TK nexus creating the "dialogic deficit" they so strongly felt.

Most important however, is that participants did not remain merely observers/critics of their learning experiences. Their stories/evaluations/reflections evolved into blueprints for future practice "chunking" content designing for structured collaboration demonstrating reflection-on-action (Schön, 1987).

This transition from identifying a disconnect in their instructors TPK to articulating their own Digital pedagogical mindset validates Phillips and Condy's (2023) call for bridging theory and practice.

Furthermore, it shows how disruptive experience can become source for professional learning upon reflection.

Their proposed strategies move beyond the simple "translation" model of ERT identified by Ashour (2024) towards intentionally designed blended models for future accounting education (Kelly et al., 2023).

Ultimately, the above processes catalysed a profound identity change amongst the participants. Positioning themselves as both student and apprentice educator created a dual lens through which they metabolized their experience.

One participant stated, *"as a student I found the pre-recorded videos helpful for review but as a future teacher I worry they are too isolating."* This continued comparative reflection represented the development of a hybrid practitioner identity: an educator whose default mode is balancing technological tools with relational dimensions of teaching including dialogue, feedback and collaboration.

Contributions to literature on TPACK and Reflective Practice

This study offers contributions to current research on TPACK and Reflective Practice by going beyond description of emergent remote teaching to examine how pre-school accounting teachers develop professional knowledge and pedagogical reasoning through their own learning experiences.

While recent studies on TPACK emphasize dynamic and contextual nature of teachers' technological-pedagogical-content knowledge (Phillips et al., 2025; Chiu, 2025), limited attention has been given to how this knowledge develops through learners' experiences of pre-school teachers.

Therefore, this study addresses this gap by situating pre-school accounting teachers as both participants in and observers of digitally mediated teaching-learning experiences.

Firstly, the findings extend TPACK scholarship by demonstrating that technological pedagogical content knowledge can develop through critical evaluation of teaching practices not solely through formal programs of teacher preparation or classroom-based experiences.

Consistent with Phillips et al. (2025) who conceptualized TPACK as complex and evolving body of knowledge, participants evaluated alignment between accounting content, pedagogical approaches, and digital technologies.

Their reflections show that experiences as learners can function as catalyst for developing nuanced understandings of how best to integrate technologies effectively within subject-specific contexts.

Secondly the study extends growing body of literature on pedagogical reasoning within TPACK framework. Priyanda et al., (2025) argue that effective teaching depends on ability to reason pedagogically about relationship between content, technology/instructional goals.

Participants provided evidence of such reasoning through critical evaluation of strengths/limitations of remote instructional practices/development of guidelines for future teaching practice.

Rather than simply describing their experiences, participants made judgments about instructional design/learner engagement/feedback mechanisms/pedagogical utilization of technology.

Thirdly the findings extend emerging research on Digital pedagogy following pandemic era. Shi, Sin & Wang (2025) highlight importance of developing teachers' competence/self-efficacy/adaptive instructional abilities within increasingly technology-rich educational environments.

Participants' reflections indicate emergence of Digital pedagogical mindset characterized by intentional instructional design/structured interaction/collaborative learning/purposeful technology utilization.

Their experiences suggest that effective Digital pedagogy requires more than technical capability requires ability to design meaningful learning experiences that balance flexibility with engagement/human connection.

The study also contributed to recent debates surrounding evolutionary changes to TPACK frameworks in response to rapidly changing Digital environments.

Chiu's (2025) Intelligent-TPACK (i-TPACK) framework stress importance of integrating emerging technologies in ways that preserve pedagogical intentionality.

Similarly, participants recognized that technology alone does not guarantee effective learning outcomes. Instead, participants recognized importance of aligning technological tools with pedagogical goals/learner needs reinforcing view that successful Digital teaching depends on informed/reflective decision-making.

Finally, the study advanced Reflective Practice scholarship by showing how reflection on learning experiences can provide powerful mechanism for professional identity development.

Unlike traditional studies focused on teachers reflecting on their own instructional practices, participants reflected on pedagogical approaches they experienced as students and subsequently translated those reflections into guideline for future teaching practices.

Through this process participants developed what may be described as hybrid practitioner identity an educator capable balancing innovative uses of technology with relational dimensions of teaching including dialogue, feedback and professional judgment.

Overall, these contributions advance current understanding of TPACK/pedagogical reasoning/Digital pedagogy/and Reflective Practice by demonstrating how pre-school accounting teachers construct professional knowledge through critical examination of own learning experiences.

In doing so the study presents framework for understanding how future accounting educators can develop skills necessary to teach effectively in increasingly Digital post-pandemic educational contexts

CONCLUSION

Beyond documenting experiences of remote learning during the COVID-19 period, this study advances theory in both TPACK and Reflective Practice scholarship. It illustrates that pre-service teachers develop professional knowledge through critically observing and reflecting upon teaching approaches they experience as learners in addition to coursework and teaching practices. The study showcased how technological, pedagogical and content considerations are interpreted through reflective process which shape emerging teacher identities. In doing so, the study provides evidence of a hybrid practitioner identity (the future accounting educators) as a key outcome of their remote learning experiences extending current understandings of technology integration and professional formation within accountancy education.

This study has provided insight into the forged professional identity; the hybrid practitioner. These future educators did not view themselves as passive students but rather as analytical co designers of learning who metabolized their experiences by applying both their lens as a learner and teacher. They also learned an important lesson that transcends the pandemic context; effective teaching in the digital age is defined not by the tool used, but by the intentional design of human interaction through those tools.

Therefore, the ultimate implication for curriculum practice is clear. Teacher education must move beyond simply adding technology courses to its programmes. It must systematically create space for pre-service teachers to critically analyse, practise and reflect on the use of technology, pedagogy and content. By incorporating their hard-won wisdom gained from their experiential learning into the fabric of teacher training we can transform a moment of global crisis into a sustainable catalyst for preparing resilient, adaptable and pedagogically sound accounting educators for various learning landscape of the future

Declarations

Ethics Approval and Consent to Participate

Ethical approval for this study was obtained from the University of the Free State Faculty of Education Research Ethics Committee, South Africa (Ethics Clearance No. UFS-HSD2023/0329/23/5. The study was conducted in accordance with the ethical guidelines and regulations of the University of the Free State and the principles of the Declaration of Helsinki for research involving human participants. Written informed consent was obtained from all participants prior to their participation in the study. Participation was voluntary, and participants were assured of confidentiality, anonymity, and the right to withdraw from the study at any stage without penalty.

Consent for Publication

Not applicable.

Competing Interests

The authors declare no competing interests.

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Author Contribution

AW conceived the study, collected and analysed the data, interpreted the findings, and prepared the original manuscript draft. OAO contributed to the conceptualization and methodological development of the study, provided supervision, and critically reviewed and revised the manuscript. MRQM contributed to the conceptualization of the study, provided scholarly and methodological guidance, interpreted the findings, and critically reviewed and revised the manuscript. All authors read and approved the final manuscript and accept responsibility for its content.

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Data Availability

The datasets generated and/or analysed during the current study are not publicly available due to ethical and confidentiality considerations associated with protecting participant anonymity. Data may be available from the corresponding author upon reasonable request and subject to institutional ethical requirements.

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