Teaching accounting for the fourth industrial revolution: ICT integration in South African schools

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A R T I C L E   I N F O

A B S T R A C T

This study examines the integration of Information and Communication Technology (ICT) in the teaching of accounting in South African secondary schools, focusing on the ILembe District. In the context of the Fourth Industrial Revolution, ICT use is increasingly essential for enhancing pedagogical practices and developing learners' digital competence. Using a qualitative design, semi-structured interviews were conducted with ten accounting teachers, and the data were analysed thematically. The findings show that although teachers recognise ICT's value for improving learner engagement and understanding, its effective use is constrained by inadequate infrastructure, limited access to devices, insufficient professional development, and resistance to technological change. Teacher motivation, departmental support, and learner interest were identified as key enablers. To address the uneven integration of ICT across schools, the study recommends targeted and sustained professional development as a central intervention. In response to the identified needs, the study proposes an ICT-Driven Teachers' Professional Development Model (ICT DTPM) to guide future capacity-building efforts. The findings contribute to ongoing discussions on ICT in education and offer practical insights for strengthening accounting education in line with the demands of the Fourth Industrial Revolution.

INTRODUCTION

The Fourth Industrial Revolution (4IR) has accelerated the convergence of digital, biological, and physical technologies, reshaping how societies operate and how educational institutions prepare learners for a rapidly evolving world of work. Technologies such as artificial intelligence, robotics, big data analytics, and the Internet of Things have intensified global discussions on the role of education systems in cultivating digital competence, adaptability, and higher-order cognitive skills (Carrim, 2022; Sehlako et al., 2023). In South Africa, the integration of Information and Communication Technology (ICT) into schools is increasingly framed as a strategic imperative for social equity and economic competitiveness, with policy instruments emphasising digital skills development and improved school connectivity (Department of Communications & Digital Technologies, 2020).

Despite these policy commitments, research consistently highlights uneven ICT implementation across South African schools due to persistent infrastructural and socio-economic disparities. For example, digital divides in access to devices, connectivity, and technical support remain especially pronounced in rural and disadvantaged communities (Chisango & Marongwe, 2021). Educators in under-resourced settings often face challenges, including inadequate infrastructure, limited training opportunities, and insufficient technical support, resulting in inconsistent adoption of technology for teaching and learning (Muyambi & Ramorola, 2025; Mnisi et al., 2024). These constraints reveal that ICT integration is shaped not merely by access to digital tools but by contextual

conditions, teacher capacities, and school-level support structures.

The need for meaningful ICT use is particularly urgent in accounting education, where global digital transformation has reshaped professional practice. Accounting now relies heavily on digital systems, data-driven analytics, cloud-based platforms, and automated processes, making it essential for learners to develop the digital competence required for future study and employment (Siyaya et al., 2023; Ajani, 2022). At the secondary school level, accounting as a subject benefits from ICT-supported simulations, data management tools, spreadsheet modelling, interactive demonstrations, and multimedia explanations, all of which can deepen learners' conceptual understanding and improve engagement (Siyaya et al., 2023; Sithole, 2024). However, studies show that accounting teachers often rely on basic tools such as smartphones and messaging applications due to limited access to specialised software, insufficient training, and the absence of subject-specific ICT guidelines (Sithole, 2024; Ngwenya & Sithole, 2025). These limitations constrain the depth and quality of digital learning experiences in accounting classrooms.

Teacher competence is central to effective ICT integration. International frameworks, such as UNESCO's ICT Competency Framework for Teachers, emphasise the need for ongoing professional learning, pedagogical innovation, and curriculum alignment to realise the benefits of ICT-enhanced education (UNESCO, 2018). South African research similarly shows that even teachers who recognise the value of ICT often feel unprepared to use it confidently and pedagogically, due to limited professional development, inadequate technical support, and unclear implementation strategies (Muyambi & Ramorola, 2025; Padayachee, 2017). As a result, the digital divide persists not only as a matter of access, but also as a gap in teacher readiness and capacity.

Problem Statement. Although ICT integration is critical for aligning accounting education with 4IR demands, secondary school accounting teachers in South Africa, particularly in under-resourced districts, face systemic barriers that impede effective and sustained technology use. These include inadequate infrastructure, limited digital devices, insufficient professional development, and institutional resistance to change. Together, these challenges constrain the pedagogical benefits of ICT and exacerbate rural–urban inequalities in accounting education (Siyaya et al., 2023; Muyambi & Ramorola, 2025). The result is a misalignment between national digital skills policies and actual classroom practice.

Research Gap. While the global literature on ICT in education is extensive, empirical research on ICT integration in secondary school accounting is limited, particularly in South Africa. Existing studies frequently examine ICT use across subjects or in higher education, leaving a gap in understanding the classroom-level realities, challenges, and pedagogical needs of accounting teachers in specific local contexts such as the iLembe District (Sithole, 2024; Ngwenya & Sithole, 2025). Furthermore, little is known about how accounting teachers' lived experiences intersect with school-level constraints and national policy expectations. This study addresses this gap by providing a situated analysis of how ICT is adopted, understood, and enacted in accounting classrooms.

Informed by Rogers' Diffusion of Innovation Theory, which explains how innovations spread through perceived advantage, compatibility, and contextual readiness, and the Technological Pedagogical Content Knowledge (TPACK) framework, which highlights the interdependence of subject knowledge, pedagogy, and technology, this study examines the factors shaping ICT integration in accounting education (Rogers, 2003; Mishra & Koehler, 2006). By focusing on the iLembe District, the study seeks to illuminate the complex interplay of teacher capacity, infrastructural realities, school support, and pedagogical demands in the integration of ICT into secondary school accounting.

METHODS
Research Design

The researchers employed a qualitative research method that combined phenomenological methods to explore how secondary school accounting teachers experienced their work with ICT technologies in the iLembe District of KwaZulu-Natal, South Africa. The researchers used qualitative research methods to gain deep insight into participants' thinking, established beliefs, and execution methods in their actual school environments (Creswell, 2014; De Vos et al., 2011).

Study Area and Population

The study took place in the iLembe District of the KwaZulu-Natal province. The study targeted accounting teachers working at public secondary schools across the district who teach students in the Further Education and Training (FET) phase, which includes Grades 10 to 12.

Sampling Procedures

The researchers used purposive sampling to select participants with the necessary experience and knowledge to evaluate how educational institutions implement ICT in accounting instruction. The researchers selected 10 accounting teachers from 10 different secondary schools in the district to achieve balanced representation across urban and rural school environments and to reflect a range of educational experiences and instructional challenges.

Data Collection Instruments

The researchers utilised three main instruments to gather data:

1. Semi-structured interviews. These interviews enabled researchers to investigate participants' deep personal experiences through focused questioning, maintaining interview consistency throughout the study. The research team developed the interview guide based on the research objectives, including open-ended questions on ICT usage, barriers, enablers, and professional development requirements.

2. Classroom observations. Observers used structured observation templates to gather data on teachers' classroom activities, including their use of ICT resources and the creation of learning environments. The observers maintained a non-participant stance.

3. Document analysis. The researchers examined lesson plans, school ICT policies, and departmental guidelines to develop a contextual reference framework to support data validation through triangulation.

Data Collection Procedures

The researchers obtained ethical approval from the University of Zululand and received research permits from the KwaZulu-Natal Department of Basic Education, the iLembe District office, and the participating schools before starting their fieldwork. The participants signed consent forms authorising their participation. The researchers provided interview directions to participants who agreed to be recorded through audio devices. The teachers chose their interview time, which lasted 40-60 minutes.

The research team conducted classroom observations, prearranged to occur after the interview session ended, with each lasting 50-60 minutes. The researchers observed how teachers used ICT in their instructional practices. The research team conducted document analysis alongside observations and interviews to validate the data through triangulation, analysing both teachers' lesson plans and school documents on ICT.

Data Analysis

The researchers applied thematic analysis to analyse the collected qualitative data. The researchers coded the data by selecting patterns and themes that appeared repeatedly across the interview transcripts, observation notes, and documentary evidence. The analysis process included the following steps:

1. Familiarisation. The researcher read the transcripts and notes multiple times to get an overall understanding of the material.

2. Coding. The process involves selecting important statements that researchers link to specific data elements.

3. Theme development. The researchers created broader research themes from codes that they developed to achieve their study objectives.

4. Interpretation. The researcher established connections among themes, the existing literature, and theoretical frameworks (DOI and TPACK).

5. Triangulation. The researchers used multiple data sources from interviews and observations and documentary materials to verify their study findings.

Trustworthiness and Ethical Considerations

The researchers used data triangulation and member checking, which required participants to review transcripts and study findings, and an audit trail to establish the research decision-making processes and develop study credibility through three key trustworthiness criteria. The researchers maintained participant anonymity and confidentiality by using pseudonyms in all research documents.

RESULTS AND DISCUSSION
Factors Influencing Teachers' Adoption and Integration of ICT

Thematic analysis of the semi-structured interviews revealed several factors influencing the adoption and integration of ICT in accounting education among secondary school teachers in the ILembe District. These factors included teachers' ICT skills, availability of resources, school leadership support, and attitudes towards technology.

Table 1. Summary of Key Themes and Illustrative Quotes

Theme	Illustrative Quote (Teacher)
ICT Skills	"I do have ICT skills such as internet navigating skills, networking skills, database management…" (T7)
Resource Availability	"We do have all sorts of resources, such as interactive boards, and some of the learners do have laptops or computers, but they are not adequate." (T9)
Leadership and Support	"The Department of Education is not supporting schools sufficiently. The uneven distribution of resources in schools is a problem." (T6)
Attitude and Motivation	"Just the love of technology, the way things are happening around the world… motivates us." (T4)

These findings are consistent with previous studies, which have identified teacher competence, resource availability, and institutional support as critical determinants of ICT integration (Dlamini & Mbatha, 2018; Chisango & Lesame, 2019). The Diffusion of Innovation (DOI) theory (Rogers, 2003) further supports the notion that adoption is influenced by perceived advantages, compatibility, and complexity of the innovation.

Barriers to ICT Integration

Barriers identified by participants included inadequate infrastructure, unreliable electricity, lack of technical support, insufficient professional development, and socio-economic challenges such as poverty and digital illiteracy among learners.

Narrative Example: "No. 1 is insufficient technological resources in schools. When schools have insufficient ICT resources, it will be difficult to use them in teaching. Computer literacy is another barrier. If some of the educators in my schools are computer illiterates, it will be difficult for them to use ICT in teaching." (T3)

These barriers are echoed in the literature, which highlights infrastructural deficits and lack of training as major obstacles to ICT adoption in South African schools (Rambrij, 2018; Mutsure, 2019; Ogundile et al., 2019). The TPACK framework (Mishra & Koehler, 2006) also emphasises the need for teachers to possess technological, pedagogical, and content knowledge for effective ICT integration.

Enablers and Strategies for Effective ICT Integration

Despite the challenges, several enablers were identified, including teacher motivation, departmental support, and learner interest. Teachers suggested strategies such as targeted professional development, equitable resource distribution, and increased parental and community involvement.

Table 2. Suggested Strategies for Enhancing ICT Integration

Strategy	Frequency (Teachers Mentioning)
Professional development and training	8
Provision of ICT resources (laptops, projectors)	7
Departmental and community support	6
Learner-centred approaches and participation	5

These findings align with previous research, which advocates for continuous professional development and supportive school environments as key to successful ICT integration (Naidoo, Madida & Rugbeer, 2019).

Impact of ICT Integration on Teaching and Learning

Teachers who had access to ICT resources and training reported positive impacts on teaching effectiveness and learner engagement. ICT was seen to facilitate interactive lessons, improve learner

motivation, and enable the completion of the curriculum within the stipulated time.

Narrative Example: "The presence of ICT has helped my learning areas to improve, because most of my learners have improved. The use of ICT makes things easy, and its performance has improved since I have been using ICT." (T9). This is consistent with the literature, which suggests that ICT integration enhances learner outcomes and prepares students for the demands of the 4IR (Lage, Platt & Tregalia, 2000; McCourt, Larres & Radcliffe, 2000; Oke & Fernandes, 2020).

Comparison with Previous Research and Theoretical Implications

The findings of this study are consistent with scholarship showing that ICT adoption in schools is strongly shaped by teachers' competence, availability of infrastructure, and the quality of institutional support. In line with Dlamini and Mbatha (2018), the results reaffirm that teacher professional development remains a decisive lever for ICT uptake, particularly where teachers require structured opportunities to build confidence and practice pedagogically meaningful integration. The barriers identified in the ILembe District also mirror patterns reported in the South African literature, where inadequate infrastructure, uneven resource distribution, and limited technical support sustain a persistent digital divide between urban and rural schools (Chisango & Lesame, 2019; Naidoo et al., 2019). Furthermore, the present findings align with research indicating that even when devices are available, connectivity constraints and weak implementation support can prevent teachers from realising the instructional benefits of ICT (Graham et al., 2020; Naidoo, 2020).

From a theoretical perspective, the findings support Diffusion of Innovation theory, which explains technology adoption as a process influenced by perceived usefulness, compatibility with existing practices, and the organisational conditions that enable implementation (Rogers, 2003). The results also reinforce the relevance of the Technological Pedagogical Content Knowledge framework, which emphasises that effective ICT integration requires more than technical ability; it depends on teachers' capacity to combine technological knowledge with pedagogical strategies and content expertise (Mishra & Koehler, 2006). In this study, teachers who reported stronger ICT skills and greater pedagogical confidence were more likely to describe ICT as improving lesson delivery, learner engagement, and performance, a pattern consistent with broader evidence that integrated teacher knowledge and supportive school conditions predict meaningful classroom use of technology (Dlamini & Mbatha, 2018; Graham et al., 2020).

Overall, ICT integration in secondary school accounting in the ILembe District presents a multidimensional challenge, shaped by teacher capacity, resourcing, leadership support, and socio-economic context. This complexity echoes wider findings that ICT reforms often remain superficial when policy expectations exceed contextual readiness, resulting in compliance-oriented adoption rather than sustained pedagogical change (DiMaggio & Powell, 1983; 1991). Although significant constraints persist, the evidence suggests that targeted investments in professional development and equitable resource provision could strengthen ICT integration and reduce learning inequalities, particularly across rural and under-resourced schools (Adarkwah, 2021; UNESCO, 2013).

Practical Recommendations for Stakeholders

1. Department of Basic Education and District Offices

Implement sustained, subject-specific professional development for accounting teachers that goes beyond basic digital literacy to include curriculum-aligned pedagogical applications (e.g., using spreadsheets for accounting processes, multimedia demonstrations of concepts, and technology-supported formative assessment). Programmes should be continuous, include coaching and classroom follow-up, and prioritise application in real teaching contexts, as evidence indicates that one-off training does not reliably translate into classroom integration (Dlamini & Mbatha, 2018; Mishra & Koehler, 2006; UNESCO, 2013).

2. School Leadership (Principals and SMTs)

Strengthen school-level enabling conditions by establishing ICT support structures, including appointing ICT champions, organising peer mentoring for lesson design, and ensuring routine technical assistance for devices and connectivity. Since institutional support and leadership are repeatedly associated with teacher uptake and

sustained ICT use, these actions can reduce resistance to change and help normalise ICT-supported accounting pedagogy (Graham et al., 2020; Rogers, 2003).

3. Provincial Authorities and Resource Allocation Units

Prioritise equitable distribution of infrastructure and devices across schools, with particular attention to rural schools where shortages deepen learning disparities. Evidence from this study and related scholarship indicates that without reliable infrastructure, teachers cannot consistently apply their skills, regardless of their motivation (Chisango & Lesame, 2019; Naidoo et al., 2019; Adarkwah, 2021).

CONCLUSION

This study investigated ICT integration in the teaching of accounting in ILembe District secondary schools within the context of 4IR demands. The findings show that teachers largely recognise ICT as valuable for enhancing learner engagement and supporting more interactive accounting instruction, yet implementation remains uneven and constrained. The most persistent barriers were inadequate infrastructure, limited access to devices and connectivity, insufficient professional development, and socio-economic constraints that disproportionately affect rural schools, thereby reinforcing the digital divide across school contexts. At the same time, the study identified enabling conditions that can strengthen ICT uptake, including teacher motivation, learner interest, departmental support, and the presence of ICT champions at the school level.

The study contributes theoretically by demonstrating that teachers' ICT adoption is best explained by combining the Diffusion of Innovation and TPACK perspectives, which together emphasise the role of organisational readiness and the integration of technological, pedagogical, and content knowledge in shaping meaningful classroom practice. Practically, the findings imply that ICT integration in accounting should be treated as a systemic reform priority rather than an individual teacher task, and that interventions must focus on both capacity building and equitable resourcing. Accordingly, at least two stakeholder actions are recommended: first, district and provincial education authorities should implement sustained, subject-specific professional development for accounting teachers with coaching and follow-up support; second, school leadership should institutionalise school-based support through ICT champions, peer mentoring, and basic technical assistance while prioritising reliable access to infrastructure and devices, especially in rural schools. This study is limited by its small qualitative sample and single district focus; future research should extend to multi-district or multi-province designs, include learner perspectives and classroom evidence, and assess how specific professional development and infrastructure interventions influence ICT use and learner outcomes over time.

CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest regarding the publication of this paper.

REFERENCES

Abdo-Salloum, A. M., & Al-Mousawi, H. Y. (2025). Accounting students' technology readiness, perceptions, and digital competence toward artificial intelligence adoption in accounting curricula. *Journal of Accounting Education, 70*, Article 100951.

Adarkwah, M. A. (2021). "I'm not against online teaching, but what about us?": ICT in Ghana post-COVID-19. *Education and Information Technologies, 26*(2), 1665–1685.

Al-Hattami, H. M. (2025). Understanding how digital accounting education fosters innovation: The moderating roles of technological self-efficacy and digital literacy. *The International Journal of Management Education, 23*(2), Article 101131.

Amin, H. M. G., Hassan, R. S., Ghoneim, H., & Abdalla, A. S. (2025). A bibliometric analysis of accounting education literature in the digital era: Current status, implications, and agenda for future research. *Journal of Financial Reporting and Accounting, 23*(2), 742–768.

Anomah, S., Latif Frimpong, J., & Moaweni, F. (2025). From manual to digital: The evolution of accounting theory in the age of accounting information systems. *EDPACS, 70*(12), 1–28.

Apostolou, B., Dorminey, J. W., & Hassell, J. M. (2021). Accounting education literature review (2020). *Journal of Accounting Education, 55*(C), Article 100725.

Apostolou, B., Dorminey, J. W., & Hassell, J. M. (2022). Accounting education literature review (2021). *Journal of Accounting Education, 59*(C), Article 100781.

Aydin, M. K., & Gürol, M. (2019). A Systematic Review of Critical Factors Regarding ICT Use in Teaching and Learning. *International Journal of Progressive Education, 15*(4), 108–129.

Baharom, Z., & Abdullah, K. H. (2024). Trends and themes in accounting education research: A bibliometric analysis. *Multidisciplinary Reviews, 7*(12), Article 2024305.

Birt, J., Safari, M., & de Castro, V. B. (2023). Critical analysis of integration of ICT and data analytics into the accounting curriculum: A multidimensional perspective. *Accounting & Finance, 63*(4), 4037–4063.

Chisango, G., & Lesame, C. (2019). Exploring accessibility to information and communication technology (ICT) at disadvantaged secondary schools in Gauteng province, South Africa. *EDULEARN19 Proceedings 11th International Conference on Education and New Learning Technologies Palma, Spain. 1–3 July, 2019* (pp. 507–512). IATED Academy.

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Thousand Oaks, CA: Sage.

De Vos, A. S., Strydom, H., Fouché, C. B., & Delport, C. S. L. (2011). *Research at Grass Roots for Social Sciences and Human Services Professions* (4th ed.). Van Schaik.

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organisational fields. *American Sociological Review, 48*(2), 147–160.

DiMaggio, P. J., & Powell, W. W. (1991). *The new institutionalism in organisational analysis* (pp. 1–38). University of Chicago Press.

Dlamini, R., & Mbatha, K. (2018). The discourse on ICT teacher professional development needs: The case of a South African teachers'

union. *International Journal of Education and Development using ICT, 14*(2).

Dlamini, S., Meyer, I., Marais, M., & Ford, M. (2017, May). An implementation readiness framework for education systems: Integrating ICT into teaching and learning. *2017 IST-Africa Week Conference (IST-Africa)* (pp. 1–9). IEEE.

Gil, M. (2025). Barriers and facilitators of emancipatory accounting education: Comparative insights from two contexts. *Accounting Education*, 1–32.

Graham, M. A., Stols, G., & Kapp, R. (2020). Teacher Practice and Integration of ICT: Why Are or Aren't South African Teachers Using ICTs in Their Classrooms. *International Journal of Instruction, 13*(2), 749–766.

Gusxe, G. R., & Mangiuc, M. D. (2022). Digital transformation in Romanian accounting practice and education: Impact and perspectives. *The Amfiteatru Economic Journal, 24*(59), 252–267.

Handoyo, S. (2024). Evolving paradigms in accounting education: A bibliometric study on the impact of information technology. *The International Journal of Management Education, 22*(3), Article 100998.

Handoyo, S., & Anas, S. (2019). Accounting education challenges in the new millennium era. *Journal of Accounting Auditing and Business, 2*(1), 35–46.

Howieson, B. (2003). Accounting practice in the new millennium: Is accounting education ready to meet the challenge? *The British Accounting Review, 35*, 69–103.

Jackson, D., & Allen, C. (2023). Technology adoption in accounting: The role of staff perceptions and organisational context. *Journal of Accounting & Organizational Change, 20*(2), 205–227

Janvrin, D., & Weidenmier Watson, M. (2017). Big data: A new twist to accounting. *Journal of Accounting Education, 38*, 3–8.

Jebeile, S., & Abeysekera, I. (2010). The spread of ICT innovation in accounting education. *International Journal of Teaching and Learning in Higher Education, 22*(2), 158–168.

Krippendorff, K. (2018). *Content analysis: An introduction to its methodology* (4th ed.). Sage Publications.

Lage, M. J., Platt, G. J., & Tregalia, M. (2000). Inverting the classroom: A gateway to creating an inclusive learning environment. *The Journal of Economic Education, 31*(1), 30–43.

Madoda, P., & Chigona, A. (2019, March). Uptake and integration of ICTs for pedagogy in private high schools in Cape Town. In *Society for Information Technology & Teacher Education International Conference* (pp. 1216–1224). Association for the Advancement of Computing in Education (AACE).

McCourt Larres, P., & Radcliffe, G. (2000). Computer-based instruction in a professionally-accredited undergraduate tax course. *Accounting Education, 9*(3), 243–257.

Messina, L., & Tabone, S. (2015, June). Training kindergarten and primary education student teachers to plan learning units combining TPACK, LAT and multimodality. *1st International Conference on Higher Education Advances (HEAD'15)* (pp. 349–356). Editorial Universitat Politècnica de València.

Michael, O., Lesi, F. E., & Avurakoghene, O. (2018). The impact of ICT on accounting practice in Nigeria. *International Journal of Advanced Academic Research, 4*(2), 1–13.

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record, 108*(6), 1017–1054.

Muller, C. A. (2025). Is accounting education keeping pace with contemporary challenges? A comparative study of publications. *Studia Universitatis Babes-Bolyai Oeconomica, 70*(1), 1–32.

Mutsure, C. (2019). An investigation of the factors affecting adoption and integration of ICT as a pedagogical tool in the teaching and learning of Mathematics: a case of Bondamakara cluster (Doctoral dissertation, BUSE).

Naidoo, G. M. (2020). Digital Communication: Information Communication Technology (ICT) Usage for Teaching and Learning. *Handbook of Research on Digital Learning* (pp. 1–19). IGI Global.

Naidoo, G. M., Madida, M., & Rugbeer, H. (2019). A conceptual framework for ICT integration in rural secondary schools in South Africa. *Journal of Gender, Information and Development in Africa (JGIDA), 8*(3), 187–212.

Nanjundaswamy, A., Divyashree, M., Suraj, N., Kulal, A., Rahiman, H. U., & Kodikal, R. (2025). Adapting accounting education to evolving business paradigm: An Indian perspective. *Journal of Applied Research in Higher Education, 17*(5), 1914–1943.

Ogundile, O. P., Bishop, S. A., Okagbue, H. I., Ogunniyi, P. O., & Olanrewaju, A. M. (2019). Factors Influencing ICT Adoption in Some Selected Secondary Schools in Ogun State, Nigeria. *International Journal of Emerging Technologies in Learning, 14*(10).

Ojo, O. A., & Adu, E. O. (2018). The effectiveness of Information and Communication Technologies (ICTs) in teaching and learning in high schools in Eastern Cape Province. *South African Journal of Education, 38*(1).

Oke, A., & Fernandes, F. A. P. (2020). Innovations in teaching and learning: Exploring the perceptions of the education sector on the 4th industrial revolution (4IR). *Journal of Open Innovation: Technology, Market, and Complexity, 6*(2), 31.

Pan, G., & Seow, P. S. (2016). Preparing accounting graduates for digital revolution: A critical review of IT competencies and skills development. *Journal of Education for Business, 91*(3), 166–175.

Rambrij, N. (2018). The impact of information and communication technology (ICT) on teaching and learning: A case study of secondary schools in the Ugu District, KwaZulu-Natal (Doctoral dissertation, University of Zululand).

Rebele, J. E., & St Pierre, E. K. (2019). A commentary on learning objectives for accounting education programs: The importance of soft skills and technical knowledge. *Journal of Accounting Education, 48*(C), 71–79.

Rogers, E. M. (2003). *Diffusion of innovations* (4th ed.). New York, NY: Free Press.

Romero-Carazas, R., Dávila-Fernández, S. I., Vallejos-Tafur, J. B., Ochoa-Tataje, F. A., Samaniego-Montoya, C. M., Torres-Sánchez, J. A., & Espiritu-Martinez, A. P. (2023). Artificial intelligence in accounting education and its trends in Scopus: A bibliometric analysis. *Migration Letters, 20*(7), 343–357.

Ruxwana, N., & Msibi, M. (2018). A South African university's readiness assessment for bringing your own device for teaching and learning. *South African Journal of Information Management, 20*(1), 1–6.

Sangster, A., Stoner, G., & Flood, B. (2020). Insights into accounting education in a COVID-19 world. *Accounting Education, 29*(3), 431–562.

Strydom, T. M. (2015). Exploring the relationship between the leadership role of the school principal and ICT integration in instruction and learning (Doctoral dissertation, University of Pretoria).

Tsiligiris, V., & Bowyer, D. (2021). Exploring the impact of the Fourth Industrial Revolution on skills and personal qualities for future accountants: A proposed conceptual framework for university accounting education. *Accounting Education, 30*(6), 621–649.

UNESCO. (2013). *ICT in education: A curriculum for schools and programme of teacher development*. Paris: UNESCO.

Vadachalam, N., & Chimbo, B. (2017). Using Information and Communication Technologies to teach and learn mathematics in South African schools: A snapshot view of its impact. *Africa Education Review, 14*(1), 212–234.