

# ICT Enhanced Approaches for Student-Centred Learning: A Case of Accounting Education Pedagogy Implementation at a Selected University in South Africa



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## ABSTRACT

In this digital era, adopting Information and Communication Technology (ICT) for teaching and learning is essential in producing graduates who are life-long learners. University teachers should adopt student-centred approaches while engaging ICT in their pedagogies to be relevant in the 21<sup>st</sup> century. The purpose of the study was to explore how Accounting Education university teachers engaged in ICT-enhanced approaches to drive student-centred learning. Drawing on the conceptual framework designed by the selected university Teaching and Learning Directorate, Blended Learning for Student-centredness (BL4SC), a qualitative research design was adopted to explore how lecturers engaged ICT in their pedagogy to drive student-centred learning. Self-determination theory was employed to understand how Accounting Education students experienced the ICT approaches. In-depth interviews and semi-structured interviews (17 Accounting level three students and 4 Accounting university teachers) were conducted, and the data was analysed according to emergent themes. The findings revealed evidence of the need to increase the availability of course materials and resources online, reducing geographic barriers to education and the need to improve student engagement and participation in learning activities facilitated by ICT tools. Inadequate infrastructure, limited internet connectivity, technological literacy among students, and faculty readiness are the barriers to ICT-enhanced teaching approaches and therefore reduce opportunities for student-centred learning. The study recommends improving technological infrastructure to support the effective integration of ICT-enhanced teaching, continuous training, and support for both university teachers and students to enhance their proficiency in using ICT tools for student-centred learning to be foregrounded.

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## INTRODUCTION

Adopting successful Information and Communication Technology (ICT) is an important paradigm shift in enhancing teaching approaches that will bring education reform in the field of accounting

education.<sup>1</sup> Approaches in the teaching of Accounting concepts may differ even if Accounting university teachers are teaching similar topics, the approach employed by each may impact student learning either positively or negatively and the fast-paced emergency remote learning during the pandemic demanded ICT-enhanced approaches.<sup>2</sup> Many higher education institutions were pushed into unstructured and fast-paced emergency remote learning during the pandemic.<sup>3</sup> An understanding of how ICT-embedded teaching relates to the ICT-enhanced approach in the teaching of Accounting in higher education classrooms and how Accounting students adopt student centred learning with the approach employed by their lecturers when facilitating learning in such an unprecedented context is important.<sup>4</sup>

To articulate a university teacher's understanding of the ICT-enhanced approach, in one selected university, Accounting university teachers adopted blended learning for a student-centeredness framework (BL4SC). This was adopted to promote the use of various emerging technologies to enrich student experiences of learning. Capone, content that blended learning within a student-centred framework emphasizes the integration of both traditional face-to-face instruction and online learning components, aiming to empower students to take an active role in their education.<sup>5</sup> Combining blended learning with a student-centred approach, the focus is on tailoring the learning experience to meet individual student needs, preferences, and engagement levels.<sup>6</sup> In the researcher's view, choices in content consumption, assignments, or assessments to empower students to select paths aligned with their learning styles are key in 21<sup>st</sup>-century learning. Accounting Education Pedagogy refers to the methods, strategies, and approaches used to teach accounting concepts and principles.<sup>7</sup>

Given the strategy to develop multimedia tutorials, and online simulations, that engage students in practical accounting scenarios, encouraging active learning and understanding can better aid ICT-enhanced teaching and learning by leveraging technology to enhance teaching and learning experiences. The purpose of the study is to explore how Accounting Education lecturers engaged in ICT-enhanced approaches to drive student-centred learning. The study is guided by two research questions namely, How do Accounting Education university teachers engage ICT-enhanced approaches in the teaching and learning of Accounting Education? How do the ICT-enhanced approaches engaged by the Accounting Education university teachers drive student-centered learning?

## LITERATURE REVIEW

### Integration of ICT Tools for Student-centred Learning

Literature often discusses how accounting education lecturers integrate various ICT tools such as Learning Management Systems (LMS), accounting software, multimedia resources, and online platforms into their teaching methods. Annamalai et al., note that LMS platforms like Moodle, Canvas, or Blackboard are used to organize course materials, assignments, quizzes, and discussions in one centralized location accessible to students.<sup>8</sup> University teachers upload lecture notes, presentations, readings, and multimedia content, allowing students to access materials anytime and facilitating easy

<sup>1</sup> Benjamin Baiden et al., "Management Information Systems and Its Impact on Productivity in Higher Education: A Case of Colleges of Education in Ghana," *International Journal of Computer (IJC)* 45, no. 1 (2023): 136–50.

<sup>2</sup> Md Shahadat Hossain Khan and Lina Markauskaite, "Approaches to ICT-Enhanced Teaching in Technical and Vocational Education: A Phenomenographic Perspective," *Higher Education* 73 (2017): 691–707.

<sup>3</sup> Gabriella Oliveira et al., "An Exploratory Study on the Emergency Remote Education Experience of Higher Education Students and Teachers during the COVID-19 Pandemic," *British Journal of Educational Technology* 52, no. 4 (2021): 1357–76.

<sup>4</sup> Farooq Mubarak, Reima Suomi, and Satu-Päivi Kantola, "Confirming the Links between Socio-Economic Variables and Digitalization Worldwide: The Unsettled Debate on Digital Divide," *Journal of Information, Communication and Ethics in Society* 18, no. 3 (2020): 415–30.

<sup>5</sup> Roberto Capone, "Blended Learning and Student-Centered Active Learning Environment: A Case Study with STEM Undergraduate Students," *Canadian Journal of Science, Mathematics and Technology Education* 22, no. 1 (2022): 210–36.

<sup>6</sup> Nurassyl Kerimbayev et al., "A Student-Centered Approach Using Modern Technologies in Distance Learning: A Systematic Review of the Literature," *Smart Learning Environments* 10, no. 1 (2023): 61.

<sup>7</sup> Nicholas Renaldo and Tandy Sevendy, "Development of Intermediate Accounting Teaching Materials: Financial Accounting and Accounting Standards," *Reflection: Education and Pedagogical Insights* 1, no. 1 (2023): 1–12.

<sup>8</sup> Nagaletchimee Annamalai et al., "Investigating the Use of Learning Management System (Lms) for Distance Education in Malaysia: A Mixed-Method Approach," *Contemporary Educational Technology* 13, no. 3 (2021): ep313.

communication and submission of assignments. Ghatrifi, Amairi, and Thottoli, reflect that Integrating various ICT tools into teaching methods within accounting education offers numerous advantages.<sup>9</sup> ICT-enhanced approaches employed by Accounting Education lecturers can significantly drive student-centered learning by fostering an environment that prioritizes student engagement, autonomy, and personalized learning experiences.<sup>10</sup> ICT-enhanced approaches promote active student engagement through interactive activities, multimedia resources, and collaborative projects facilitated by online platforms.<sup>11</sup> Students collaborate, share ideas, and learn from peers, enhancing their understanding of accounting concepts.

### **ICT-enhanced Approaches in Accounting Education**

Dzinoreva, and Mavunga, conclude that ICT-enhanced approaches in accounting education enable lecturers to create a dynamic and inclusive learning environment where students are actively engaged, have personalized learning experiences, and take ownership of their learning process, aligning with the principles of student-centered learning.<sup>12</sup> In another study, Lee, Luco, and Tan observe that ICT tools enable prompt feedback mechanisms through online quizzes, assignments, or assessment tools.<sup>13</sup> In the researcher's view instant feedback allows students to gauge their understanding, identify areas for improvement, and take corrective actions.

Swerzenski, observes that platforms like Moodle, Canvas, or Blackboard offer various features suitable for course delivery, content management, and student engagement.<sup>14</sup> High-quality content tailored to the accounting curriculum that can include lecture notes, video lectures, interactive quizzes, assignments, case studies, and supplementary materials can curate resources from reputable sources to enrich learning experiences in accounting classrooms.<sup>15</sup> Goundar assumes that accessibility of platform and content across various devices (computers, tablets, smartphones) and having features for students with diverse learning needs and optimising the platform for slower internet connections common in rural areas is a major part of ICT enhanced teaching and learning.<sup>16</sup>

### **Adapt and Adopt New Technologies in Accounting Education Pedagogy**

In exploring the subject of resilience to adapt and adopt new technologies in Portuguese universities, numerous studies also indicate that the absence of technology readiness by departments and the transitioning disruption to online are seen as the main challenges in adopting technology for teaching.<sup>17</sup> Cutri, Mena, and Whiting point more to department or faculty readiness for online teaching transitioning; the argument was that such transition shifted the perceptions of preparation and readiness.<sup>18</sup> Online learning platforms are powerful tools that can revolutionize the teaching of

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<sup>9</sup> Maryam Omer Madhaffar Al Ghatrifi, Jawaher Salim Sultan Al Amairi, and Mohammed Muneerali Thottoli, "Surfing the Technology Wave: An International Perspective on Enhancing Teaching and Learning in Accounting," *Computers and Education: Artificial Intelligence* 4 (2023): 100144.

<sup>10</sup> Shawn Glen Eldot, "English as a Second Language Teachers' Lived Experience of Transitioning from Remote Learning to the Traditional Classroom Setting: A Phenomenological Study," 2023.

<sup>11</sup> Oluwatoyin Ayodele Ajani, "Challenges Mitigating against Effective Adoption and Usage of E-Learning in Curriculum Delivery in South African Universities," *International Journal of Innovative Technologies in Social Science*, no. 2 (38) (2023).

<sup>12</sup> Tendayi Dzinoreva and George Mavunga, "Integrating ICTs into the Zimbabwean Secondary School Pre-Service Teachers' Curriculum," *Journal of Education (University of KwaZulu-Natal)*, no. 88 (2022): 53–68.

<sup>13</sup> Alwyn Vwen Yen Lee, Andrés Carlos Luco, and Seng Chee Tan, "A Human-Centric Automated Essay Scoring and Feedback System for the Development of Ethical Reasoning," *Educational Technology & Society* 26, no. 1 (2023): 147–59.

<sup>14</sup> J D Swerzenski, "Critically Analyzing the Online Classroom: Blackboard, Moodle, Canvas, and the Pedagogy They Produce," *Journal of Communication Pedagogy* 4 (2021): 51–69.

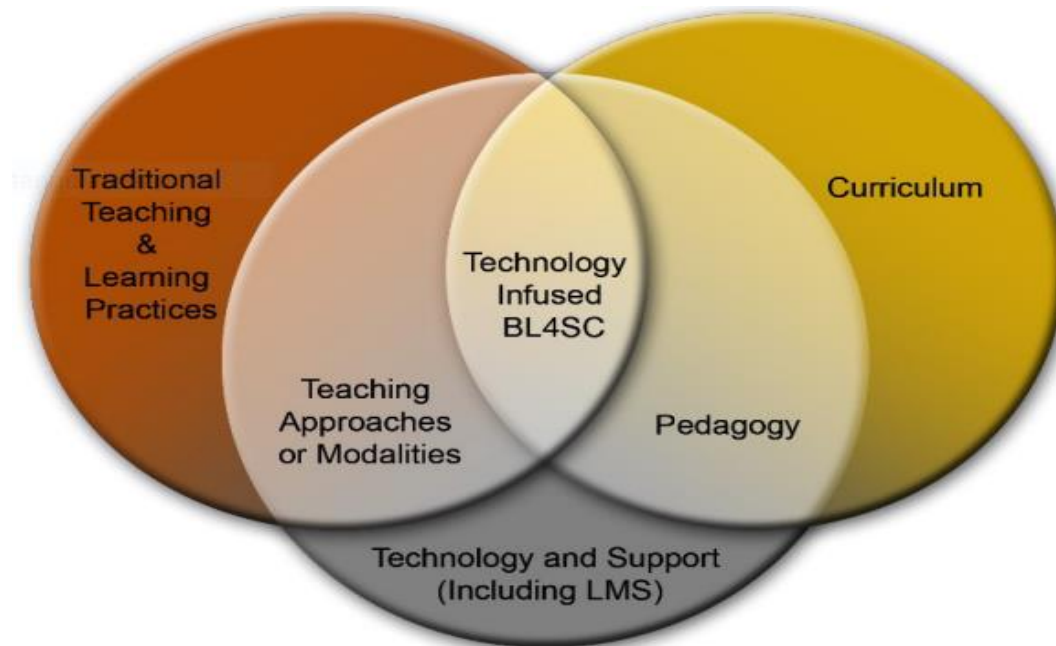
<sup>15</sup> Kevin Kelly and Todd D Zakrajsek, *Advancing Online Teaching: Creating Equity-Based Digital Learning Environments* (Taylor & Francis, 2023).

<sup>16</sup> Sam Goundar, "What Is the Potential Impact of Using Mobile Devices in Education?," 2011.

<sup>17</sup> Vahid Jafari-Sadeghi et al., "Exploring the Impact of Digital Transformation on Technology Entrepreneurship and Technological Market Expansion: The Role of Technology Readiness, Exploration and Exploitation," *Journal of Business Research* 124 (2021): 100–111.

<sup>18</sup> George W. Goethals and John W. M. Whiting, "Research Methods: The Cross-Cultural Method," *Review of Educational Research* 27, no. 5 (December 1957): 441, <https://doi.org/10.2307/1169162>.

accounting, especially in rural areas where access to traditional resources might be limited.<sup>19</sup> Studies suggest that ICT holds significant potential to enrich and expand practical activities.<sup>20</sup> According to Schirmacher, the current era is marked by the dominance of technology, with technology progressively becoming more prevalent across various communities.<sup>21</sup> The Ghanaian Government's initiative of revolutionizing ICT use in teaching and learning to ensure access to education for all faced significant challenges and criticisms.<sup>22</sup> This relates more to what happened in one rural university where limited teaching and learning took place during the COVID-19 pandemic regardless of the attempts to gain access to ICT facilities to ensure that each lecturer owns a laptop with a router.



*Figure 1. Illustration of the BLASC model*

Blended Learning which is illustrated in Figure 1.1 above is about innovative teaching and learning design in the Accounting classroom that combines the traditional face-to-face approach and the online approach in a way that helps students to learn more effectively through Accounting content facilitated to the student.<sup>23</sup> Kwarteng and Sappor suggest that Accounting educators must bridge the gap between conventional and technical methods of data processing by integrating modern technologies into the teaching and learning processes of Accounting across secondary schools and higher education institutions.<sup>24</sup> The researchers perceive that due to the continuous evolution of technological advancements in the Accounting field, the online teaching methods effective today may become obsolete beyond 2030, aligning with the shift toward the ICT-driven 5th industrial revolution. They highlight that educators and students in Accounting who resist technology-enhanced learning might risk falling behind. This implies that in higher education, the utilization of

<sup>19</sup> Lexis Alexander Tetteh et al., "Covid-19 Pandemic and Online Accounting Education: The Experience of Undergraduate Accounting Students in an Emerging Economy," *Journal of Accounting in Emerging Economies* 13, no. 4 (2023): 825–46.

<sup>20</sup> Stephen J Ball, *The Education Debate* (Policy Press, 2021).

<sup>21</sup> Robert H E Schirmacher, Daniel Rösch, and Franziska Thomas, "Hexafluoroisopropanol as Solvent and Promotor in the Paal-Knorr Synthesis of N-Substituted Diaryl Pyrroles," *Tetrahedron* 83 (2021); João Baptista et al., "Digital Work and Organisational Transformation: Emergent Digital/Human Work Configurations in Modern Organisations," *The Journal of Strategic Information Systems* 29, no. 2 (2020).

<sup>22</sup> Michael Agyemang Adarkwah, "'I'm Not against Online Teaching, but What about Us?': ICT in Ghana Post Covid-19," *Education and Information Technologies* 26, no. 2 (2021): 1665–85.

<sup>23</sup> Elizabeth M Dodson and Charles R Blinn, "Forest Operations Instructor and Student Perspectives on Rapid Transition from Face-to-Face to Online Learning in the US," *International Journal of Forest Engineering* 33, no. 1 (2022): 2–11.

<sup>24</sup> Joseph Tufuor Kwarteng and Peter Sappor, "Preservice Teachers' Self-Efficacy in Teaching Cost Accounting," *Education Research International* 2021 (2021): 1–11.

ICT will become obligatory rather than optional, as it increasingly becomes an integral component of Accounting education.

Xing and Marwala observe that a new era of technological transformation has commenced.<sup>25</sup> The researchers contend that the evolution of Accounting education involves employing diverse teaching methodologies that incorporate ICT usage in schools, responding to the requisites of the fourth industrial revolution (4IR). The progression of Accounting pedagogy is influenced by the advancements and innovations in information and communication technology (ICT), with the recent period of lockdown imposed by the South African government further strengthening the utilization of available ICT resources within educational settings.

Akhmetzyanova et al., put forward a variety of approaches to aid ICT-enhanced teaching.<sup>26</sup> An exploration of the experience of pedagogical activity in identifying pedagogical problems that arise in the process of e-education in rural universities plays a vital role in adopting ICT-enhanced pedagogies.<sup>27</sup> Category one of the problems in e-education is related to the organisation of the educational process and concepts of rural universities.<sup>28</sup> Category two is based on ensuring comprehensive harmonious development in e-education.<sup>29</sup> The widespread use of modern information technologies in the educational process is reflected as a tool for organising the educational activities of students which should be considered in the higher education landscape as a whole even in rural universities.<sup>30</sup> Adarkwah states that effective online learning in teaching and learning and barriers to online learning are important aspects.<sup>31</sup> In addition, how to successfully integrate ICT in rural activities for online learning, where students' educational careers are in jeopardy because they benefit less from online learning are issues of interest. Post-COVID-19 strategies to promote e-learning for education in higher education with the conceptual model of emergency transition in e-education are vital.<sup>32</sup>

Oliveira, Teixeira, and Morais express that the mediation of learning by technology in the early pandemic stages and how teachers and students reacted in the sudden can aid away in ensuring that ICT-enhanced pedagogies can stand even in similar future pandemics.<sup>33</sup> Adoption of remote education technologies with impacts on the education process of Accounting teaching and learning can be a positive factor in rural universities.<sup>34</sup> ICT platforms use both synchronous and asynchronous in the teaching of Accounting and personal adaptation of ICTs by individual lecturers can encourage student engagement in Accounting teaching and learning.<sup>35</sup> The emergency remote education context during the pandemic made no choice but adoption of ICT-enhanced pedagogies in the teaching of Accounting and the higher education landscape.<sup>36</sup>

<sup>25</sup> Bo Xing and Tshilidzi Marwala, *Smart Computing Applications in Crowdfunding* (CRC press, 2018).

<sup>26</sup> Guliya Akhmetzyanova et al., "Pedagogical Problems of E-Education," in *VIII International Scientific and Practical Conference 'Current Problems of Social and Labour Relations' (ISPC-CPSLR 2020)* (Atlantis Press, 2021), 34–37.

<sup>27</sup> Richa Goel et al., "An Impact of Digital Technology on Education Industry for Innovative Practices of Teaching and Learning Process: Emerging Needs and Challenges," in *2021 9th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO) (IEEE, 2021)*, 1–5.

<sup>28</sup> Kingston Pal Thamburaj, "E-Teaching in Teacher Education—a Conceptual Framework of Sultan Idris Education University," *Sino-US English Teaching* 18, no. 5 (2021): 107–11.

<sup>29</sup> Irina Borisovna Aleksandrova et al., "Influence of Digital Assistive Technologies Used in Higher Education on the Development of Individual Educational Strategies among Students with Disabilities," *International Journal of Early Childhood Special Education* 13, no. 2 (2021): 1146–53.

<sup>30</sup> Andrzej Szymkowiak et al., "Information Technology and Gen Z: The Role of Teachers, the Internet, and Technology in the Education of Young People," *Technology in Society* 65 (2021): 101565.

<sup>31</sup> Adarkwah, "I'm Not against Online Teaching, but What about Us?": ICT in Ghana Post Covid-19."

<sup>32</sup> Hakim Hsoonee Almayali and Azhar Mohammed Ridh Almusawy, "The Strategy of E-Learning Crisis Management and Effectiveness of Intelligent e-Education During Covid-19 for a Sustainable Education System," *Technology*, 2021.

<sup>33</sup> Oliveira et al., "An Exploratory Study on the Emergency Remote Education Experience of Higher Education Students and Teachers during the COVID-19 Pandemic."

<sup>34</sup> Christine Greenhow, Cathy Lewin, and K Bret Staudt Willet, "The Educational Response to Covid-19 across Two Countries: A Critical Examination of Initial Digital Pedagogy Adoption," *Technology, Pedagogy and Education* 30, no. 1 (2021): 7–25.

<sup>35</sup> Eirini Mouggiakou, Spyros Papadimitriou, and Maria Virvou, "Synchronous and Asynchronous Learning Methods under the Light of General Data Protection Regulation," in *2020 11th International Conference on Information, Intelligence, Systems and Applications (IISA) (IEEE, 2020)*, 1–7.

<sup>36</sup> Stefania Manca, Donatella Persico, and Juliana Elisa Raffaghelli, "Emergency Remote Education: Methodological, Technological, Organizational and Policy Issues," *Italian Journal of Educational Technology*, 2021, 29 (2), 2021.

**Self-determination theory student motivation to adopt ICTs in learning.**

Salesi asserts that self-determination theory is a valuable framework for comprehending how students engage and experience ICT-enhanced approaches in Accounting Education.<sup>37</sup> Intrinsic motivation, extrinsic motivation, and the need for autonomy, competence, and relatedness within the context of accounting learning are important elements.<sup>38</sup> The study explores how the integration of ICT tools and methods in accounting learning aligns with students' intrinsic interests in accounting, perceived competence in using technology for learning, and the extent to which these approaches support their autonomy in studying accounting concepts was a concern when adopting this theory. Figure 1.1 below visually simplifies the complex concepts of self-determination theory, ICT integration, and their impact on students' experiences in Accounting Education.

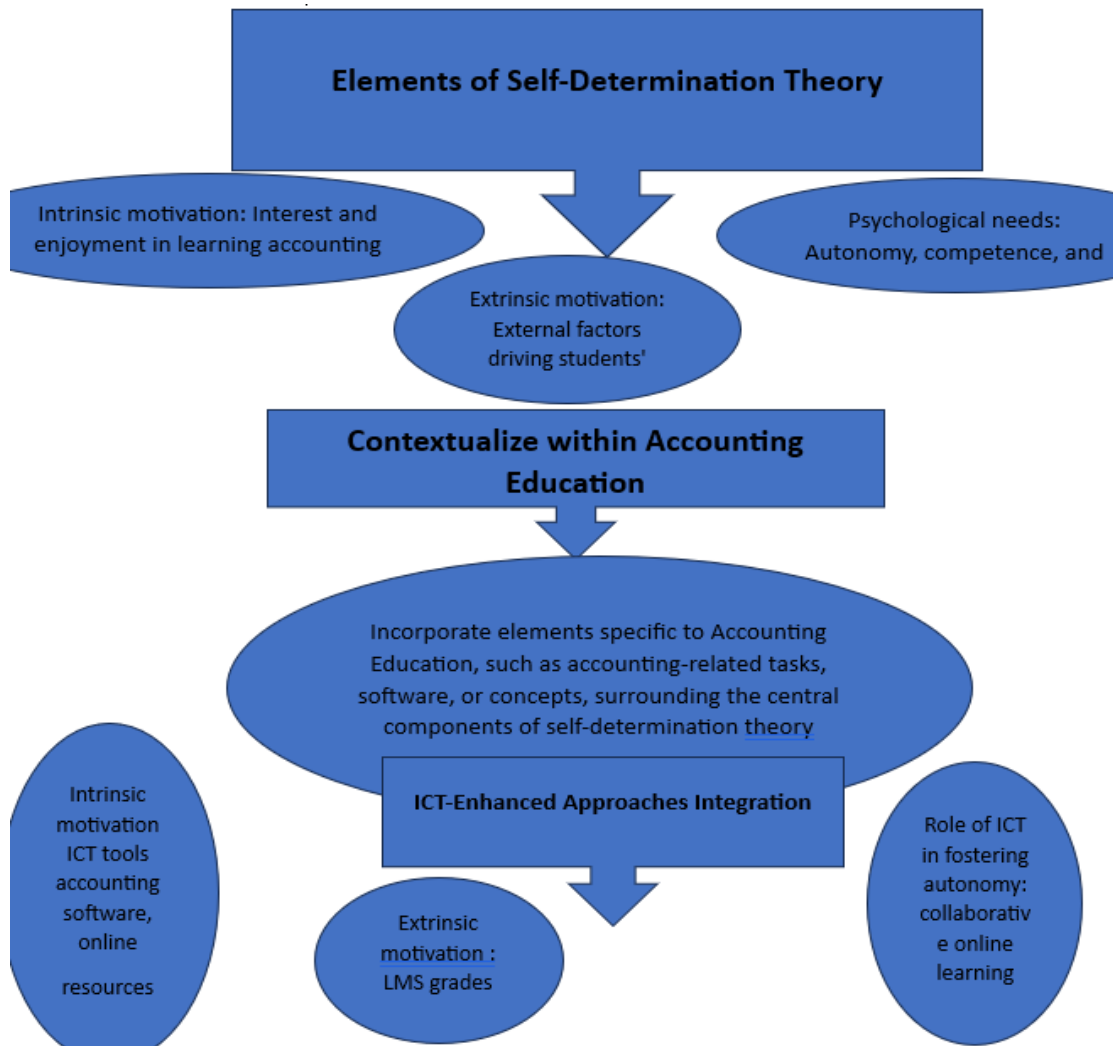


Figure 2. Graphic Illustration of Self-determination Theory within the Context of Accounting Education and ICT-enhanced approaches.

**METHODOLOGY**

The methodological design adopted by the study was a qualitative method employing a case study approach to examine ICT-enhanced approaches that lecturers adopt in the teaching of Accounting. Furthermore, the paper examined how the context of rurality intersects with the adoption of ICT-

<sup>37</sup> Elham Salesi, “Empowering Resettled Middle Eastern Refugees: Exploring Information and Communication Technology for Social Inclusion, Agency and Well-Being,” 2023.

<sup>38</sup> Zachary W Goldman, Alan K Goodboy, and Keith Weber, “College Students’ Psychological Needs and Intrinsic Motivation to Learn: An Examination of Self-Determination Theory,” *Communication Quarterly* 65, no. 2 (2017): 167–91.

enhanced approaches in teaching Accounting. The qualitative methodology is interpretative and constitutes an interactive dialogue. During the process of interaction between the researcher and the subject, the subject's world was discovered and interpreted by means of the qualitative method. The case study design was relevant for this study because the researcher was able to understand the participants as a whole group in relation to ICT-enhanced approaches that Accounting lecturers adopt in the teaching of Accounting.

### ***Population and Sampling***

All Accounting students and lecturers from one rural university formed the target population. A total of seventeen (17) Accounting students enrolled in rural universities and four (4) Accounting lecturers were interviewed, following a convenience sampling process. Accounting students were both female and male, aged between 18 and 25 years old with a Bachelor of Education degree. The Accounting lecturers comprised three (3) females aged between thirty-nine (39) and fifty-five (55) years one of them of which was a part-time lecturer and one (1) male part-time lecturer aged forty-two (42).

### ***Data Collection Procedure***

Accounting students enrolled in the selected rural university were recruited to find answers to the research questions. An introductory letter was sent to selected Accounting students explaining the purpose of the study and seeking their consent. An appointment with each of the participants to conduct the interview was scheduled by the researcher. All interviews were conducted in English using Google Forms which were availed to all interviewees prior to the interview appointment.

### ***Data Treatment and Analysis***

Qualitative data analysis is primarily an inductive process of organizing the data into categories and identifying patterns (relationships) among the categories. The inductive process of qualitative research means that the researcher develops theories from the information that has been gathered. The gathering of information involves selecting data, using techniques for data collection, and the transcriptions through conversations.<sup>39</sup> The researcher read and became familiar with the data and then identified the main themes from the data, examination of the data with the provision of detailed transcripts of the participants' words and responses followed, categorisation and coding the data and grouped into themes proceeded which was trailed by interpreting the organised data to draw conclusions. Considering the results of the thematic analysis, ICT-enhanced approaches in the teaching of Accounting can be broken down into three primary categories: (a) interaction between students and lecturers; (b) experiences with the ICT tools that mediate the teaching and learning process in the Accounting classroom; and (c) personal adaptation, which focuses on the adjustments to students' and teachers' practices and personal feelings.

## **PRESENTATION OF FINDINGS AND DISCUSSIONS**

### **ICT plays a vital role in the teaching and learning of Accounting: Explain how ICT can assist in the learning of taxation and revenue in Accounting**

With regards to the role ICT plays in the learning of taxation and revenue in Accounting, the findings were that ICT can help by making calculations easier or providing answers to possible questions, ICT can assist by using the exact tools used in Accounting, for example, using pastel Accounting to learn about taxation and revenue this is also emphasised by Oliveira, Grenha Teixeira, Torres; Morais (2021) as they replicate that fast-paced emergency remote learning provided answers to possible questions in the teaching and learning. Information Communication Technologies facilitate and increase reasoning, problem-solving, and learning how to learn and attain skills This also aligns with Dzinoreva, and Mavunga, who conclude that ICT-enhanced approaches in accounting education enable lecturers to create a dynamic and inclusive learning environment where students are actively engaged, have

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<sup>39</sup> James H McMillan and Sally Schumacher, *Research in Education: Evidence-Based Inquiry* (Pearson, 2010), 46.

personalized learning experiences, and take ownership of their learning process, aligning with the principles of student-centered learning.<sup>40</sup> ICT makes learning easier, it assists in learning revenue and taxation because it is an easy way to make people interact and it is much quicker, it assists by showing visual examples so that everybody can see how to make calculations in assessments given, it gives the light on how to answer those questions, it can complement, enrich and transform education for the better. ICT enhances the quality of education in various ways and increases learner motivation and engagement. Khan and Markauskaite also attest that the approach employed by each lecturer may impact student learning either positively or negatively and thus increase learner motivation and engagement.<sup>41</sup>

**Increase availability of course materials and resources online, reducing geographic barriers to education"**

The study findings agree with Capone who posits that increasing the availability of course materials and resources online not only expands educational access but also enhances the quality of learning by catering to diverse learner needs, fostering engagement, and promoting a more inclusive and flexible educational experience.<sup>42</sup>

Table 1.1 Illustration of advantages of increasing Online Availability

<b>Advantages of Increasing Online Availability</b>	<b>Description</b>
Enhanced Accessibility	- Provides 24/7 access to course materials, lectures, and resources, enabling students to learn at their convenience from any location with internet access.
Overcoming Geographic Barriers	- Reduces geographical constraints, allowing students in remote or distant locations to access quality education without the need for physical presence on campus.
Flexibility in Learning	- Offers flexibility for students to study at their own pace, accommodating diverse schedules, work commitments, or personal responsibilities,

ICT has emerged as a pivotal element contributing to efficient Accounting systems and enhanced organizational performance in recent times. *Its utility lies in streamlining tasks, offering convenience, and minimizing time consumption.* The observations corroborate these findings by highlighting the various ways ICT aids learning in Accounting.

Lee, Luco, and Tan note that ICT tools, such as Pastel Accounting, facilitate learning about taxation and revenue, enabling prompt feedback mechanisms through online quizzes, assignments, and assessment tools.<sup>43</sup> This technology not only supports the acquisition of fundamental skills but also enriches teacher training, thereby enhancing the overall learning process.

Similarly, Bhaskar and Kaye advocate for integrating computers into Accounting education, emphasizing its potential to enhance student learning while reducing instruction time and costs.<sup>44</sup> They

<sup>40</sup> Dzinoreva and Mavunga, "Integrating ICTs into the Zimbabwean Secondary School Pre-Service Teachers' Curriculum."

<sup>41</sup> Khan and Markauskaite, "Approaches to ICT-Enhanced Teaching in Technical and Vocational Education: A Phenomenographic Perspective."

<sup>42</sup> Capone, "Blended Learning and Student-Centered Active Learning Environment: A Case Study with STEM Undergraduate Students."

<sup>43</sup> Lee, Luco, and Tan, "A Human-Centric Automated Essay Scoring and Feedback System for the Development of Ethical Reasoning."

<sup>44</sup> Krish N Bhaskar and G Roland Kaye, "Computers and Accounting Courses: A Reply to Collins," *Accounting and Business Research* 15, no. 59 (1985): 239–40.

suggest that technology integration provides students with essential ICT competencies, aligning with the dynamic changes witnessed in the Accounting profession and business practices.<sup>45</sup>

Students at the campus utilize available ICT resources in various forms, such as writing online tests in computer labs, accessing electronic textbooks in the library, engaging in online sessions, group collaborations, presentations, sharing links, conducting research, and communicating with lecturers. These forms of ICT usage have been corroborated by students, highlighting the efficiency and versatility of ICT in supporting different facets of the learning process.

The benefits of employing ICT in learning Revenue and Taxation within Accounting are evident from student perspectives. ICT enables communication with lecturers, fosters deeper insights into revenue management and taxation principles, enhances computer proficiency, facilitates practical application of theoretical concepts from textbooks, and ultimately saves time. Moreover, it promotes collaboration, concentration, information accessibility, and easy retrieval of past question papers, eases learning processes, improves engagement, aids knowledge retention, and minimizes costs.

Students emphasize the invaluable role of ICT in acquiring additional computer skills, practically applying textbook knowledge, and optimizing time efficiency within the realm of Accounting education.

### Increased student engagement and participation in learning activities facilitated by ICT tools

Table 1.2 below outlines the advantages of increased student engagement and participation in learning activities facilitated by ICT (Information and Communication Technology) tools:

Advantages of Enhanced Student Engagement and Participation	Description
Active Learning Opportunities	- Facilitates active learning through interactive modules, simulations, and multimedia resources, encouraging students to engage directly with course materials, resulting in better retention and understanding of concepts.
Personalized Learning Experiences	- Allows for personalized learning pathways, accommodating different learning styles and preferences. Students can navigate through content at their own pace, accessing resources that align with their individual needs and enhancing their overall learning experiences.
Collaboration and Peer Interaction	- Encourages collaboration among students through online platforms, group projects, and discussion forums, fostering peer interaction regardless of geographical barriers, facilitating knowledge exchange, and providing opportunities for diverse perspectives.

The findings of Ling and Ahamad validate the significance of computing/ICT skills for the success of Accounting graduates.<sup>46</sup> These skills are instrumental in shaping individuals into knowledge workers and equipping them with the proficiency to compute taxation and revenue across various activities. *Access to information through ICT facilitates easy retrieval of past question papers, simplifying the teaching and learning processes.*

<sup>45</sup> Michael I Jordan et al., "An Introduction to Variational Methods for Graphical Models," *Machine Learning* 37 (1999): 183–233.

<sup>46</sup> Lai Ming Ling and Nurul Hidayah Ahamad Nawawi, "Integrating ICT Skills and Tax Software in Tax Education: A Survey of Malaysian Tax Practitioners' Perspectives," *Campus-Wide Information Systems* 27, no. 5 (2010): 303–17.

Regarding ICT availability on campus, both lecturers and learners are provided personal laptops for online learning and teaching. However, the availability of laptops is limited, potentially impacting students' access to ICT resources. Goundar underscores the importance of accessible platforms and content across diverse devices, addressing students' varying learning needs and optimizing platforms for areas with slower internet connections, common in rural regions.<sup>47</sup>

Students' perspectives highlighted the usage of laptops during lectures for presentations, assessments, research, and assignment submissions. While lecturers possess adequate laptops for their work, students face limitations due to the scarcity of available laptops, relying primarily on textbooks and instructors' notes for learning Accounting.

The disparity between rural and urban universities concerning ICT integration and availability was apparent in the findings. Rural areas face challenges like poor network infrastructure, inadequate maintenance of ICT gadgets, limited resources, fewer textbooks, and insufficient funding. This imbalance impacts the preparedness of rural university students to utilize ICT, where lecturers might not afford the same patience and support as those in urban settings.

Nevertheless, responses suggested that since the COVID-19 outbreak, government initiatives aimed at providing laptops to university students regardless of location, minimizing disparities. Moreover, despite the challenges, lecturers in rural settings have increasingly adopted ICTs for teaching and learning, shifting from a previously negative attitude to a more positive one.

Regarding the migration to online teaching due to the pandemic, some students benefited from supportive lecturers, while others experienced disruptions due to the university's decision to halt teaching until all students had access to laptops. Challenges arose due to the unfamiliarity of lecturers with online platforms, hindering the swift commencement of teaching activities.

Overall, while positive efforts were observed among some lecturers to adapt to the online teaching landscape, challenges persist, especially in balancing access to ICT resources and maintaining consistent communication with students, particularly in rural areas with limited connectivity and resources.

### **Inadequate infrastructure, limited internet connectivity, technological literacy among students, and faculty readiness are the barriers to ICT-enhanced teaching approaches**

Barriers related to inadequate infrastructure, limited internet connectivity, technological literacy among students, and faculty readiness can significantly impede the effective implementation of ICT-enhanced teaching approaches.

**Inadequate Infrastructure:** Lack of proper hardware, software, and physical infrastructure (such as computer labs, stable internet connection, and updated devices) can hinder the seamless integration of ICT tools into teaching methods.

*Lecturers have made concerted efforts to adapt to the measures necessitated by COVID-19, implementing rules and regulations to ensure accessibility to learning and teaching during these challenging times. Despite the disruptions caused by the pandemic, they remain committed to continuing education, enabling students to graduate, facilitating access to higher education, and sustaining work opportunities. Adapting to the evolving circumstances brought about by the pandemic has been crucial, including my personal experience of being on campus during a total shutdown period lasting 21 days.*

### **Summary of Findings**

The following are the outcomes of the study:

- ICT integration in Accounting lessons plays a vital role in the teaching of taxation and revenue.
- Through ICTs, Accounting students can connect to visual classrooms.

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<sup>47</sup> Goundar, "What Is the Potential Impact of Using Mobile Devices in Education?"

- While ICT implementation should be done by both lecturers and students in the university, some students are still reluctant to access uploaded lessons, hence the pressure of unattended tasks.
- Rural universities are less empowered as compared to universities in urban areas in terms of ICT integration and availability.
- Previously, some lecturers held unfavorable attitudes toward utilizing ICT for teaching taxation and revenue topics in Accounting, while others exhibited resistance, preferring traditional lecture methods.
- In addressing the resistance and reluctance of those implementing ICT integration within the university, urgent measures are necessary to alter the mindset and attitudes of these lecturers. This change is crucial if universities aim to cultivate competent and proficient ICT-skilled graduates in Accounting.
- Implications for Lecturers' Practices and Educational Policy emerge from the study's findings. To ensure effective teaching and learning of taxation and revenue in Accounting, Accounting lecturers must perceive ICT integration as a supportive tool for fostering graduates capable of utilizing ICT software extensively in their Accounting practices. Moreover, these lecturers should recognize the global landscape, acknowledging that ICTs play a pivotal role in education, preparing graduates to seamlessly integrate various ICT tools within Accounting firms, thereby aligning with the demands of the contemporary job market.

## RECOMMENDATIONS

Recommendations and proposed interventions stem from these observations. Firstly, to enhance the integration of ICT in teaching Revenue and Taxation within the university's Accounting curriculum, the researcher proposes organizing a specialized two-hour workshop involving Accounting experts. This workshop would engage both lecturers and students, with a focus on leveraging Accounting software and effectively incorporating ICTs into teaching tax-related topics.

Additionally, the collaboration between university management and Accounting lecturers is recommended to ensure comprehensive training for all students. This collaboration aims to educate students on utilizing ICTs for various purposes, including assignment submissions, communication, record-keeping, referencing, and information retrieval. Lecturers, in turn, are encouraged to utilize ICT tools to guide and equip Accounting students in developing critical thinking and analytical skills and fostering interpersonal competencies.

Moreover, there's a suggestion for the provision of modern ICT software and equipment in Accounting, which necessitates collaboration between the university and governmental bodies. This initiative includes ensuring access to relevant resources like laptops, internet connectivity, and the availability of Accounting experts at universities. This collaboration between the government and the Higher Education minister aims to empower students and enable the effective integration of ICT into Accounting lessons.

To facilitate this transition, the researcher suggests employing change management experts to conduct a comprehensive workshop involving all Accounting lecturers and students. This workshop intends to address any resistance observed among students or lecturers towards modern teaching methods. The goal is to emphasize the necessity of transitioning from traditional teaching methodologies to align with contemporary trends in Accounting education, ensuring successful ICT integration within the university's curriculum. Any signs of resistance identified during this process are to be effectively resolved by the change management experts.

**Improving Technological Infrastructure:** Upgrading technological infrastructure involves enhancing hardware, software, internet connectivity, and digital resources available within educational institutions. Improved infrastructure ensures reliable access to ICT tools, creating a conducive environment for effective teaching and learning. It helps overcome limitations caused by inadequate resources, thus fostering equitable access and participation among students and faculty.

**Continuous Training and Support for Teachers:** Continuous training programs provide educators with the necessary skills, knowledge, and confidence to effectively integrate ICT tools into their teaching methodologies. Empowered teachers can leverage ICT tools more effectively to enhance the quality of instruction, fostering interactive learning experiences, and accommodating diverse learning needs among students. By implementing these recommendations, educational institutions can create an environment that fosters effective integration of ICT-enhanced teaching, ensuring that both faculty and students have the necessary skills, resources, and support to leverage technology for improved learning outcomes and a more enriched educational experience.

## CONCLUSION

This research contributes to the broader discourse on educational practices in the digital age. The paper shared insights, best practices, and recommendations. This study aims to inform future initiatives in higher education space by promoting student-centered learning through the effective integration of ICT. As universities continue to adapt to the evolving landscape of education, embracing ICT-enhanced approaches will be essential in preparing students for success in the 21st century. By prioritizing student-centered pedagogies and harnessing the power of technology, universities can empower learners to become lifelong learners equipped with the skills and knowledge needed to thrive in an increasingly digital world.

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