





Technical Support for Integrating Information and Communication Technology in Secondary Schools in South Africa: Teachers' Perspective

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ABSTRACT

Effective technical support is an essential component of the ICT whole-school approach. Additionally, studies have demonstrated that teachers' usage of ICT in the classroom is influenced by the technical support that schools offer. The study's goal was to determine how teachers feel about technical assistance for integrating Information and Communication Technology (ICT) in secondary schools. A qualitative case study research methodology was used in the investigation. The Unified Theory for Acceptance and Use of Technology (UTAUT) model serves as the theoretical foundation for the research. This study covered three schools. Three (3) principals and twenty-seven (27) teachers took part in the study. The participants were given an open-ended questionnaire to get their opinions on the technical assistance for incorporating ICT into their schools. The study's data was subjected to a thematic analysis. According to the data, two out of three schools obtained technical support staff, whereas only one school did not. The findings also showed that schools' computers needed to be fixed by professionals. Thus, the study concluded that problems with technical support, improper upkeep of ICT resources, and a lack of subject-area computer programming hampered schools' attempts to incorporate ICT into teaching and learning. According to the result, it is recommended that schools should receive technical ICT support from the Department of Basic Education (DBE), and ICT resources should receive regular and sufficient maintenance. The study contributes to the literature by showing the importance of technical support in integrating ICT in the school for the maintenance of technological equipment.

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INTRODUCTION

In these contemporary times, incorporating Information and Communications Technology (ICT) in educational settings is crucial.¹ Furthermore, several countries have integrated ICT into classrooms, transforming learning routines and teachers' responsibilities in content delivery and learning facilitation. However, ICT integration in schools has not always positively impacted teaching and

¹ Beatriz Cabellos, Fazilat Siddiq, and Ronny Scherer, "The Moderating Role of School Facilitating Conditions and Attitudes towards ICT on Teachers' ICT Use and Emphasis on Developing Students' Digital Skills," *Computers in Human Behavior* 150 (2024): 107994, <https://doi.org/https://doi.org/10.1016/j.chb.2023.107994>.

learning.² Studies reveal that teachers are not proficient in using computers for instruction, and there is a dearth of access to ICT infrastructure and technical support, including Wi-Fi and the Internet. Furthermore, schools do not adequately train teachers in ICT.³

To promote teaching and learning, educators need resources that help them use ICT in the classroom. These resources include technical and pedagogical support that positively impacts teaching and learning within the school.⁴ According to Moses et al., technical support personnel in a school or organization are professionals with specific training who can help teachers integrate technology into the classroom.⁵ The use, management, and diagnosis of hardware, software, and network resources further define technical support. Internal helpdesks offered by the education ministry and providers of ICT infrastructure are examples of technical support. Schools, therefore, require ICT-skilled, trained supporters. For teachers to integrate technology into their pedagogical approaches and expand their understanding of Information and Communication Technologies (ICTs), they need a highly skilled technical workforce to maintain, repair, and set up the learning environment.⁶

Many factors influence ICT integration in schools, but little is known about the technology resources available to enable this integration. The purpose of this study is to ascertain how teachers feel about technical assistance for incorporating ICT in secondary education. Thus, the research question for this study is as follows:

- How do teachers perceive technical support for integrating information and communication in secondary schools?

LITERATURE REVIEW

Technology-related abilities are becoming increasingly crucial for progress in employment and education. The curriculum incorporates ICTs into the teaching and learning process, allowing learners to use modern technology to improve their learning. To utilize and maintain these technologies, teachers should acquire the essential skills and expertise.⁷ Furthermore, teachers require support to maximize the use of ICT tools in the classroom, especially in areas with limited resources.

ICT in South African Education

ICT is at the heart of the world's transformation. By the South Africa Act (2002), ICT was introduced in South Africa through the Department of Communications, Electronic Communications, and Transactions. Government agencies support ICT integration in education. Several provinces in the country, including the Northern Cape (Connectivity), Gauteng (Gauteng OnLine), and Western Cape (Khanya), have varying degrees of ICT integration in their educational systems. Computers were used for teaching and learning in many schools. Basic computer concepts and word processing abilities were taught in the classroom.⁸ In addition, more schools were using the Internet. However, there was little local content and insufficient technological and pedagogical support at the regional level, so there was little internet use for teaching and learning. As a result, teachers received training on how to obtain ICT technical support. Small, medium, and micro enterprises (SMMEs) are also trained and established to

² Cabellos, Siddiq, and Scherer, "The Moderating Role of School Facilitating Conditions and Attitudes towards ICT on Teachers' ICT Use and Emphasis on Developing Students' Digital Skills"; Zenda Rudairo and Rethabile Dlamini, "Examining Factors That Influence Teachers to Adopt Information and Communication Technology in Rural Secondary Schools: An Empirical Study," *Education and Information Technologies* 28, no. 1 (2023): 815–32.

³ Katherine McKnight et al., "Teaching in a Digital Age: How Educators Use Technology to Improve Student Learning," *Journal of Research on Technology in Education* 48, no. 3 (July 2, 2016): 194–211, <https://doi.org/10.1080/15391523.2016.1175856>; Rudairo and Dlamini, "Examining Factors That Influence Teachers to Adopt Information and Communication Technology in Rural Secondary Schools: An Empirical Study."

⁴ Cabellos, Siddiq, and Scherer, "The Moderating Role of School Facilitating Conditions and Attitudes towards ICT on Teachers' ICT Use and Emphasis on Developing Students' Digital Skills."

⁵ P., Moses et al., "ICT Infrastructure, Technical and Administrative Support as Correlates of Teachers' Laptop Use," *Procedia-Social and Behavioral Sciences* 59 (2012): 709–14.

⁶ Simiyu C. P., Mutsotso S., and Masibo E., "Influence of Technical Support on ICT Integration in Classroom Practices in Public Primary Schools in Bungoma County, Kenya," *International Journal of Science and Research*, 2019.

⁷ P.A. Ertemer and A.T. Ottenbreit-Leftwich, "Teacher Technology Change: How Knowledge, Confidence, Beliefs, and Culture Intersect," *Journal of Research on Technology in Education* 42, no. 3 (2013).

⁸ K. Asmal, "Transforming Learning and Teaching through ICT," *Department of Education. Draft White Paper on e-Education*, 2003.

offer technical assistance to educational institutions. Additionally, these SMMEs provide the schools with maintenance and technical assistance.⁹

Integrating ICT into teaching and learning

ICT integration in education refers to a technology-driven approach to teaching and learning directly linked to using educational technology in classrooms. Technology is now the main means of transferring knowledge in many nations.¹⁰ The way people think, work, and live has completely altered as a result of technological breakthroughs and societal transformation.¹¹ Secondary school teaching aims to prepare students for life in economic and cultural contexts where knowledge creation heavily relies on their ability to develop scientific and technological knowledge. As such, curricular integration with ICT should be taken into consideration. ICT integration in the classroom helps students get ready for the contemporary digital age. As a result, incorporating ICT into instruction creates a dynamic and proactive learning environment.¹² Backfisch, Lachner, Stürmer, and Scheiter state that many government-backed initiatives and specialized programs across several educational systems should be implemented when schools use ICT in teaching and learning.¹³ According to the researchers, teachers must take the initiative to replace, amplify, and transform when integrating ICT into teaching and learning.¹⁴ As a result, educators need to learn how to substitute ICT-based methods for conventional ones. Educators must use more effective ICT teaching strategies to support conventional teaching techniques.¹⁵ Teachers must also use ICT integration to change their teaching and learning methods.

The quality, accessibility, and cost-effectiveness of teaching and learning are all enhanced when students receive ICT instruction. Students' academic performance is enhanced, and their effectiveness and efficiency as teachers and learners increase when ICT is integrated into the classroom.¹⁶ Teachers must consciously redesign and reevaluate their teaching strategies when implementing ICT in the classroom for the first time. In this way, teacher motivation is seen as a necessary condition for ICT integration and can have an impact.¹⁷ Teachers could integrate ICT into their teaching by building, maintaining, and supporting training environments.¹⁸ According to Valverde-Berrocso, Fernández-Sánchez, Revuelta Dominguez, and Sosa-Díaz, teachers need to incorporate ICT's creative and interpretive potential in the classroom even though they possess the basic ICT skills needed to prepare to integrate ICT in the school.¹⁹ All the stakeholders, including teachers, principals, student teachers, and support staff, should participate in successfully integrating ICT into the schools.

⁹ Asmal, "Transforming Learning and Teaching through ICT."

¹⁰ S. S. Shah, "Teaching and Learning with Technology: Effectiveness of ICT Integration in Schools," *Indonesian Journal of Educational Research and Technology* 2, no. 2 (2022): 133–40.

¹¹ S. Ghavifekr and W. A. W. Rosdy, "Teaching and Learning with Technology: Effectiveness of ICT Integration in Schools," *International Journal of Research in Education and Science* 1, no. 2 (2015): 175–91; Shah, "Teaching and Learning with Technology: Effectiveness of ICT Integration in Schools."

¹² Ghavifekr and Rosdy, "Teaching and Learning with Technology: Effectiveness of ICT Integration in Schools"; P. Jadhav, H. Gaikwad, and K. S. Patil, "Teaching and Learning with Technology: Effectiveness of ICT Integration in Schools," *ASEAN Journal for Science Education* 1, no. 1 (2022): 33–40; R. Rachmawati, "Utilization and Quality of Information System for Administration Services Based on ICT In Patehan, Kraton, Yogyakarta," *Indonesian Journal of Science and Technology* 4, no. 1 (2019): 55–63; Shah, "Teaching and Learning with Technology: Effectiveness of ICT Integration in Schools."

¹³ Iris, Backfisch et al., "Variability of Teachers' Technology Integration in the Classroom: A Matter of Utility!," *Computers & Education* 166 (2021): 104159.

¹⁴ Backfisch et al., "Variability of Teachers' Technology Integration in the Classroom: A Matter of Utility!"

¹⁵ Backfisch et al., "Variability of Teachers' Technology Integration in the Classroom: A Matter of Utility!"

¹⁶ O K Kilag et al., "Optimizing Education: Building Blended Learning Curricula with LMS," *Excellencia: International Multi-Disciplinary Journal of Education (2994-9521)* 1, no. 4 (2023): 238–50; T. Kucuk, "Technology Integrated Teaching and Its Positive and Negative Impacts on Education," *International Journal of Social Sciences & Educational Studies* 10, no. 1 (2023): 46–55.

¹⁷ Backfisch et al., "Variability of Teachers' Technology Integration in the Classroom: A Matter of Utility!"

¹⁸ Rudairo and Dlamini, "Examining Factors That Influence Teachers to Adopt Information and Communication Technology in Rural Secondary Schools: An Empirical Study."

¹⁹ J. Valverde-Berrocso et al., "The Educational Integration of Digital Technologies PreCovid-19: Lessons for Teacher Education," *PloS One* 16, no. 8 (2021): e0256283.

Impediments to incorporating ICT into education

Several problems hinder the incorporation of ICTs into regular teaching and learning. These challenges for teachers include limited time, a lack of technological support, and limited resources.²⁰ Teachers cannot integrate ICT into their classrooms because they lack the desire to use it, and many do not trust in the ability and self-belief to use technology. Moreover, some secondary schools fail to link their technical and administrative assistance and ICT infrastructure to their technical staff and teachers.²¹ The lack of support and motivation from teachers to include ICT in their lectures is one of the main barriers to its acceptance in education, according to Timotheou et al.²² According to Dzansi and Amedzo, the lack of trained ICT personnel to provide technical support is one of the main barriers impeding the smooth integration of ICT into South African schools, especially in rural areas, Mathevula and Uwizeyimana state that another common obstacle to the successful integration of ICT in South African schools is a lack of technical support.²³

Jadhav et al. revealed that there were no sufficient preparations for technology-based teaching and learning from the outset and no proper implementation and support from the school's management.²⁴ Technology integration in schools has not been appropriately implemented from the start. Furthermore, there was inadequate continual maintenance of ICT tools and integration in schools. As a result, neither learners nor teachers will benefit. This is because the ICT tools offered in schools are in poor condition, and teachers do not receive enough training and professional development. Additionally, computer labs in schools do not have well-functioning tools or facilities. These are the obstacles to integrating ICT into teaching and learning.²⁵

According to Akram et al., slow internet speeds, load shedding, a lack of infrastructure, online teaching experience, and training were identified as the primary barriers to teachers' effective integration of ICT into their teaching methods.²⁶ Therefore, teachers cannot be expected to overcome the barriers stopping them from utilizing ICT without adequate technical support in the classroom and resources available to the entire school.²⁷ Adequate technological solutions must be made available to drive ICT initiatives. The application of these technological solutions must guarantee that they are subject-specific and tailored to local needs and circumstances. Mukhari further noted that among the various reasons that prevent successful ICT integration in schools is the lack of ICT leadership, funding, and technical assistance.²⁸

Irregularity in computer services and maintenance is also a barrier to integrating ICT into school teaching and learning. According to Hakimi et al., technical support and regular equipment maintenance are required to run ICT integration in the classroom smoothly.²⁹ Kennedy found that the maintenance and specialization difficulties are among the most important obstacles preventing schools

²⁰ Henry Tran and Douglas A. Smith, "Designing an Employee Experience Approach to Teacher Retention in Hard-to-Staff Schools," *NASSP Bulletin* 104, no. 2 (June 15, 2020): 85–109, <https://doi.org/10.1177/0192636520927092>.

²¹ V. Prasad, P. Lalitha, and N.V. Srika, N.V. Srika, "Barriers to the Use of Information and Communication Technology (ICT) in Secondary Schools: Teacher's Perspective," *Journal of Management Research* 7, no. 2 (2015).

²² Stella Timotheou et al., "Impacts of Digital Technologies on Education and Factors Influencing Schools' Digital Capacity and Transformation: A Literature Review," *Education and Information Technologies* 28, no. 6 (June 21, 2023): 6695–6726, <https://doi.org/10.1007/s10639-022-11431-8>.

²³ D. Y. Dzansi and K. Amedzo, "Integrating ICT into Rural South African Schools: Possible Solutions for Challenges," *International Journal of Educational Sciences* 6, no. 2 (2014): 341–48; M. D., Mathevula and D. E. Uwizeyimana, "The Challenges Facing the Integration of ICT in Teaching and Learning Activities in South African Rural Secondary Schools," *Mediterranean Journal of Social Sciences* 5, no. 20 (2014): 1087–97.

²⁴ Jadhav, Gaikwad, and Patil, "Teaching and Learning with Technology: Effectiveness of ICT Integration in Schools."

²⁵ Jadhav, Gaikwad, and Patil, "Teaching and Learning with Technology: Effectiveness of ICT Integration in Schools"; Jescah Tuiyo, "Challenges Facing Integration of Information Communication Technology (ICT) in Public Technical and Vocational Colleges: A Case Study of Moiben Technical and Vocational College," *Journal of Technology & Socio-Economic Development* 11, no. 1 (2023): 29–45.

²⁶ Huma Akram et al., "Teachers' Perceptions of Technology Integration in Teaching-Learning Practices: A Systematic Review," *Frontiers in Psychology* 13 (June 6, 2022), <https://doi.org/10.3389/fpsyg.2022.920317>.

²⁷ S., Ghavifekr et al., "Teaching and Learning with ICT Tools: Issues and Challenges from Teachers' Perceptions.," *Malysian Online Journal of Educational Technology* 4, no. 2 (2016).

²⁸ Shirley Sympathonia Mukhari, "Teachers' Experience of Information and Communication Technology Use for Teaching and Learning in Urban Schools" (University of South Africa, 2016).

²⁹ M. Hakimi et al., "Empirical Assessment of ICT Impact on Teaching and Learning in High Schools: A Study in the Context of Balkh, Afghanistan," *EIKI Journal of Effective Teaching Methods* 2, no. 1 (2024).

from effectively integrating ICT into teaching and learning.³⁰ Moreover, the ICT resource provider oversees the maintenance, management, and updating of the resources so schools can easily access and exchange data via PCs, mobile phones, laptops, handheld computers, the Internet, and other ICT devices in the classroom.³¹ According to Ramorola, cited by Nwosu et al., teachers' proficiency with ICT integration, maintenance, and technical difficulties were the most significant barriers to integrating ICT in classrooms.³²

According to Francom, time, teachers' beliefs, accessibility, technical and training assistance, administrative support, and administrative support are the first-order impediments to incorporating ICT in education.³³ The study found that lack of access to ICT tools and resources is one of the main barriers to ICT integration. Insufficient physical devices are sometimes available to the instructor and pupils. Lack of high-quality training for ICT integration and technical support is an additional barrier to adopting ICT in the classroom. Since they set the direction and provide chances for professional development in ICT integration, school administrators also significantly impact teachers' acceptance and use of ICT for teaching and learning.

Another significant obstacle to using ICT in schools is the lack of time to prepare innovative ICT learning activities. A teacher's values may also be incompatible with successfully integrating ICT, which could hinder its usage in the classroom.³⁴ In addition, teachers perceive inadequate preparation for utilizing ICT and believe that promoting new methodological approaches is insufficient for integrating ICT in the classroom.³⁵

Benefits of integrating ICT into teaching and learning

Students are inspired and motivated to make the connection between what they learn in the classroom and what they achieve in the workplace when ICT is incorporated into teaching and learning. Students also participate in interactive exercises and gain knowledge from a variety of sources. Teachers teach more effectively and efficiently in different situations when adopting ICT strategies in the classrooms. The state and federal governments have acknowledged this and are making significant efforts to increase ICT usage in secondary schools through the ICT in School program. The South African government has pushed for using ICT to promote economic development and growth while keeping South Africa competitive in the global market. A favourable policy environment supports ICT use and development.³⁶ According to Usman, the success of any school depends on, among other things, efficient school administration that includes strong leadership, efficient time management within the educational system, frequent training and retraining of school employees, excellent community relations, and creative use of the resources at the school's disposal.³⁷ Support for ICT infrastructure, teacher motivation, and self-belief in using ICT for teaching and learning all influence ICT use in

³⁰ Gabriel M. Kennedy, "Challenges of ICT Integration in Teachers' Education: A Case Study of the College of Education, University of Liberia," *International Journal of Social Science and Education Research Studies* 03, no. 05 (May 13, 2023): 860–70, <https://doi.org/10.55677/ijssers/V03I5Y2023-15>.

³¹ Chang Wang and Di Wang, "Managing the Integration of Teaching Resources for College Physical Education Using Intelligent Edge-Cloud Computing," *Journal of Cloud Computing* 12, no. 1 (May 25, 2023): 82, <https://doi.org/10.1186/s13677-023-00455-1>.

³² M.Z. Ramorola, "A Study of Effective Technology Integration into Teaching and Learning: A Case Study," 2010, http://uir.unisa.ac.za/bitstream/handle/10500/3573/dissertation_ramorola_mz.pdf?sequence=6&isAllowed=y; Lilian Ifunanya Nwosu et al., "Fourth Industrial Revolution Tools to Enhance the Growth and Development of Teaching and Learning in Higher Education Institutions: A Systematic Literature Review in South Africa," *Research in Social Sciences and Technology* 8, no. 1 (April 25, 2023): 51–62, <https://doi.org/10.46303/ressat.2023.4>.

³³ Gregory M. Francom, "Barriers to Technology Integration: A Time-Series Survey Study," *Journal of Research on Technology in Education* 52, no. 1 (January 2, 2020): 1–16, <https://doi.org/10.1080/15391523.2019.1679055>.

³⁴ Francom, "Barriers to Technology Integration: A Time-Series Survey Study"; T. W. Makki et al., "When First-Order Barriers Are High: A Comparison of Second- and Third-Order Barriers to Classroom Computing Integration," *Computers & Education* 120 (2018): 90–97; Rhonda Christensen et al., "Supporting Learning Leaders for the Effective Integration of Technology into Schools," *Technology, Knowledge and Learning* 23, no. 3 (October 6, 2018): 457–72, <https://doi.org/10.1007/s10758-018-9385-9>; L. B. Carver, "Teacher Perception of Barriers and Benefits in K-12 Technology Usage," *Turkish Online Journal of Educational Technology-TOJET* 15, no. 1 (2016): 110–16.

³⁵ Valverde-Berrocoso et al., "The Educational Integration of Digital Technologies PreCovid-19: Lessons for Teacher Education."

³⁶ Prasad, Lalitha, and Srika, "Barriers to the Use of Information and Communication Technology (ICT) in Secondary Schools: Teacher's Perspective."

³⁷ Y. D. Usman, "Educational Resources: An Integral Component for Effective School Administration in Nigeria," *Online Submission* 6, no. 13 (2016): 27–37.

secondary schools. It is feasible to assist educators in overcoming these difficulties by examining the challenges of using ICT in education.³⁸ ICT resources, including software and hardware, good professional development, adequate time, and technical support, must be made available to teachers, and all of these components boost the prospect of outstanding ICT integration in learning and teaching.³⁹ According to Lin, regularly updating and maintaining ICT resources helps create a more reliable teaching and learning environment and fosters communication and engagement between teachers and students.⁴⁰ Learners benefit from ongoing maintenance and updating of ICT resources when integrating ICT in the classroom, such as network speed and video transmission optimization.⁴¹

The benefits of schools that receive technical support when integrating ICT are that they can advance the integration to a higher degree by setting up computers, internet access, and e-learning centers—all of which can be utilized to give teaching. The designated technical support staff would keep an eye on the development of the students; this helps the schools transition from traditional teaching and learning methods to ICT-based teaching and learning settings.⁴²

Technical support for integrating ICT into classrooms

Timotheou et al. state that efficient technical support is a key component of the ICT whole-school strategy.⁴³ Teachers' use of ICT in the classroom has also been demonstrated to be impacted by technical support provided by the school system. Therefore, providing support reduces time and effort as well as cognitive constraints, which could cause limited ICT integration in school lessons by teachers.⁴⁴

Esfijani and Zamani reported that teachers mentioned the availability of sufficient tools and technical support as motivators for integrating ICT into their lessons.⁴⁵ Additionally, Zheng et al. found that the infrastructure and technical support provided to instructors enabled the implementation of one-on-one laptop programs, which enhanced teaching and learning.⁴⁶ Additionally, improving teaching and learning and removing obstacles to ICT integration are achieved through providing technical and motivational support.⁴⁷

According to Mukhari, if technical support is provided to maintain the ICT tools, teachers will employ them in their teaching and learning activities.⁴⁸ According to Thompson, administrators and instructional technology staff in the Faculty Teaching and Technology Support (FTTS), Student Services and Technology Infrastructure (SSTI), and Online Learning Access and Administration (OLAA) programs concurred that their organizations offer the institutional and technical support required for online learning.⁴⁹ Ferri, Grifoni, and Guzzo found that the lack of technological devices for many students and the unreliability of Internet connections when thousands of workers and students are connected at the same time are technical challenges that need to be addressed by creating dependable network infrastructure and reasonably priced devices.⁵⁰

³⁸ Usman, "Educational Resources: An Integral Component for Effective School Administration in Nigeria."

³⁹ Tuiyo, "Challenges Facing Integration of Information Communication Technology (ICT) in Public Technical and Vocational Colleges: A Case Study of Moiben Technical and Vocational College."

⁴⁰ Y. Lin, "Application and Challenges of Computer Networks in Distance Education," *Computing, Performance and Communication Systems* 8, no. 1 (2024): 17–24.

⁴¹ Lin, "Application and Challenges of Computer Networks in Distance Education."

⁴² M. A. 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.

⁴³ Timotheou et al., "Impacts of Digital Technologies on Education and Factors Influencing Schools' Digital Capacity and Transformation: A Literature Review."

⁴⁴ Maya, Escueta et al., "Education Technology: An Evidence-Based Review," 2017.

⁴⁵ Azam Esfijani and Bibi Eshrat Zamani, "Factors Influencing Teachers' Utilisation of ICT: The Role of in-Service Training Courses and Access," *Research in Learning Technology* 28 (2020), <https://doi.org/http://dx.doi.org/10.25304/rlt.v28.2313>.

⁴⁶ B. Zheng et al., "Learning in One-to-One Laptop Environments: A Meta-Analysis and Research Synthesis," *Review of Educational Research* 86, no. 4 (2016): 1052–84.

⁴⁷ Timotheou et al., "Impacts of Digital Technologies on Education and Factors Influencing Schools' Digital Capacity and Transformation: A Literature Review."

⁴⁸ Mukhari, "Teachers' Experience of Information and Communication Technology Use for Teaching and Learning in Urban Schools."

⁴⁹ M.G. Thompson, "Administrator and Faculty Perceptions of Institutional Support for Online Education in Florida's College System," 2017, <https://scholarcommons.usf.edu/cgi/viewcontent.cgi?article=7864&context=etd&httpsredir=1&referer=>.

⁵⁰ F. Ferri, P. Grifoni, and T. Guzzo, "Online Learning and Emergency Remote Teaching: Opportunities and Challenges in Emergency Situations," 2020, <http://en-unesco.org/Covid-19>.

THEORETICAL FRAMEWORK

The Unified Theory for Acceptance and Use of Technology (UTAUT) model is the theoretical foundation for this investigation. In 2003, Viswanath Venkatesh created the model. The four components of UTAUT—performance expectancy, social influence, effort expectancy, and facilitating conditions—all directly impact intention or use in models integrated inside the UTAUT framework. Furthermore, Venkatesh et al., UTAUT incorporates four intermediate individual variation variables—gender, age, experience, and voluntariness of use—that forecast the correlation between primary determinants and behavioural intention and use behaviour.⁵¹ An individual's idea that utilizing the system will enhance their job performance is known as performance expectancy. In both voluntary and mandatory contexts, the performance expectancy constructs in each model are the most powerful predictor of intention and maintain their significance across all measurement points.⁵² "The degree of ease associated with the use of the system" is what Venkatesh et al. refer to as effort expectation.⁵³ After prolonged use of technology, the concept's impact becomes negligible.⁵⁴ "The degree to which an individual perceives that important others believe he or she should use the new system" is what Venkatesh et al. define as social influence. Social influence significantly impacts legislation pertaining to technology. Instead of using technology for personal reasons, people in the needed setting may do it for compliance. "The extent to which an individual feels that an organization's technical infrastructure exists to support the use of the system" is a facilitating condition.⁵⁵ The intention to use is directly influenced by facilitating settings, but the impact is negligible after the initial use. Consequently, the model suggests enabling circumstances directly influence user behavior.⁵⁶ The facilitating conditions factor guided this investigation. Facilitating Conditions (FC) are the resources and assistance required to use ICT effectively. In ICT integration contexts, FC emphasizes infrastructure provision, training, and the availability of organizational structure and technical support to support ICT adoption in the classroom. Teachers receive support and training from the FC to help them defend their use of ICT in the classroom and performance goals.

METHODOLOGY

This study employed a case study qualitative research method to answer the research question on the teacher's perspective on technical ICT integration in secondary schools. The instrument used to collect data was an open-ended questionnaire for secondary school teachers. The qualitative research method was a descriptive approach to the secondary school teacher's perspective on integrating ICT in school. Thirty participants participated in the study; twenty-seven (27) secondary school teachers and three (3) principals from three secondary schools in OR Tambo Inland district in Eastern Cape Province in South Africa participated. The institution's Ethics Committee approved the study; Ethical Clearance Number: EREC62-09-19. Consequently, a formal informed consent form granting permission to participate in the study was signed by each participant. Concerns about secrecy and anonymity were addressed to gain the participants' trust. The open-ended questionnaire was administered to the participants to gather their views about the technical support for integrating ICT into their schools. The questionnaire was collected from the participants after two weeks. The trustworthiness of the questionnaire was established. The responses to the questionnaires were analyzed using thematic data analysis.

⁵¹ Viswanath Venkatesh, Michael Morris, and Fred Davis, "User Acceptance of Information Technology: Toward a Unified View," *MIS Quarterly* 27, no. 3 (2003): 425–78, <https://doi.org/10.2307/30036540>.

⁵² Venkatesh, Morris, and Davis, "User Acceptance of Information Technology: Toward a Unified View."

⁵³ Venkatesh, Morris, and Davis, "User Acceptance of Information Technology: Toward a Unified View."

⁵⁴ Davit Marikyan and Savvas Papagiannidis, *Unified Theory of Acceptance and Use of Technology*, ed. Savvas Papagiannidis, *TheoryHub Book* (TheoryHub Book, 2025).

⁵⁵ Venkatesh, Morris, and Davis, "User Acceptance of Information Technology: Toward a Unified View."

⁵⁶ Venkatesh, Morris, and Davis, "User Acceptance of Information Technology: Toward a Unified View"; Marikyan and Papagiannidis, *Unified Theory of Acceptance and Use of Technology*.

PRESENTATION OF FINDINGS

The findings of the open-ended questionnaire described technical support for integrating ICT into secondary schools. The responses of the teachers were presented thematically. The secondary school teacher is denoted as SST, and the school principal is denoted as SP.

The findings of the study are categorized into three parts:

- Secondary teachers' perspective of no technical support for integrating ICT in the school
- Secondary teachers' view of the availability of technical support for integrating ICT in the school
- Secondary teachers' perception of hindrances to integrate ICT in the school

Secondary teachers' perspective of no technical support for integrating ICT into the school

Eighteen out of twenty-seven teachers and 2 principals indicated no technical support personnel in their schools. Therefore, integrating ICT into teaching and learning was difficult for them. These are some of their responses:

SP1: *"No technical support to update software and install antiviruses".*

SST19: *"There is no technical support for proper maintenance of computer equipment in our school".*

SST21: *"No technical personnel available".*

SST17: *"... there are no technical support personnel or technicians to fix faulty computers".*

SP3: *"...the school needs ICT services and technical support".*

The participants' responses from two schools reveal that no technical support personnel can assist them in integrating ICT into their teaching and learning. There are no technical support personnel to fix faulty computers. This finding indicates that these two schools could not integrate ICT into teaching and learning due to a lack of technical personnel as a barrier.

Secondary teachers' view of the availability of technical support for integrating ICT in the school

Nine secondary teachers and one principal acknowledged that technical support is available to integrate ICT into the school. These are some of their responses:

SP2: *"Yes, we do get technical support because the education department sends us IT specialists all the time."*

SST5: *"Yes we get technical support".*

SST7: *"We get technicians to help us".*

SST1: *"Yes, we do get technical support"*

SST2: *"Yes, we get technical support ...but not every day"*

The responses from the participants indicate that the school receives technical support and technicians from the Department of Basic Education (DBE). The findings indicate that the school receives technical support personnel to integrate ICT into teaching and learning. Therefore, the teachers in the school integrated ICT into teaching and learning; however, it was not always the case.

Secondary teachers' perception of hindrances to integrate ICT in the school

The participants responded that apart from the lack of technical support personnel to integrate ICT into teaching and learning. Other hindrances that are barriers to integrating ICT in the school were mentioned. These are some of their responses:

SP 3: *"These ICT resources need maintenance".*

SST6: *"Our computers must be repaired routinely".*

SST11: *"The ICT tools and other resources need maintenance"*

SST12: *"Regular computer services and maintenance are required."*

SST13: *"Our school requires excellent upkeep and high-quality supplies of ICT tools".*

SST4: *"High-quality supplies and upkeep are required for our institution".*

SP2: *"Inconsistency in computer services and maintenance prevents the school from effectively integrating ICT".*

SST20: *"It is necessary to do routine computer services and maintenance".*

SST22: “Our school has computers, but there are no technicians to service malfunctioning equipment”.

SST25: “Computers related to our subject areas must have programs installed”.

SST30: “The best possible governance of ICT services is required, including providing technical support”.

Other hindrances that are barriers to the integration of ICT in the schools were mentioned by the participants. The participants indicated that inconsistency in computer services and maintenance prevents the school from effectively integrating ICT; the subject areas should be programmed and installed in their computers for effective integration into teaching and learning. The findings indicate that schools encounter different challenges in integrating ICT into teaching and learning.

The secondary school teachers and principals acknowledge that technical support personnel were available in one school and no technical support personnel in two schools. The participants also acknowledged that the technical support personnel are not always available. They do not usually come, which hinders the consistency of the integration of ICT into teaching and learning. The participants mentioned other barriers, such as no proper maintenance for the ICT tools, no installed program packages that match their subject areas in the computer, and no high quality and maintenance of the ICT resources.

DISCUSSION

The study aims to ascertain how secondary school instructors feel about technical assistance for integrating ICT. There are two sections to the study's findings. According to the first section of the study's findings, two of the three schools examined in this study did not receive any technical assistance to incorporate ICT into teaching and learning. In comparison, only one out of the three schools received technical support personnel, which is not always the case. This means that most schools in the province or the nation are not receiving technical support. Therefore, many schools in the province are not integrating ICT into teaching and learning. The results of this study concur with those of other researchers, including Tuiyo, Timotheou et al., Jadhav et al., and Tran et al., who find that technical support staff play a crucial role in integrating ICT into teaching and learning.⁵⁷ However, without technical staff, schools will not be able to do so and only be able to teach their subjects using the traditional method.

The findings of the study also concur with Esfijani and Zamani, Escueta et al., and Usman, whom they found that technical support is significant when integrating ICT into teaching and learning.⁵⁸ The integration of ICT into teaching and learning enhances the understanding of both teachers and learners to learn.

The second part of the findings of the study is that results revealed that apart from technical support, inconsistencies could hinder the integration of ICT into teaching and learning in the maintenance of ICT tools and resources, no installed program packages that match subject areas in the computer, and no high quality and maintenance of the ICT resources. That is, schools that have computers could not integrate ICT due to maintenance. These findings are consistent with Hakimi et al., Kennedy, Wang and Wang, and Nwosu et al., whom they found that maintenance is important if the integration of ICT into teaching and learning would be effective in the schools.⁵⁹

⁵⁷ Tuiyo, “Challenges Facing Integration of Information Communication Technology (ICT) in Public Technical and Vocational Colleges: A Case Study of Moiben Technical and Vocational College”; Timotheou et al., “Impacts of Digital Technologies on Education and Factors Influencing Schools’ Digital Capacity and Transformation: A Literature Review”; Jadhav, Gaikwad, and Patil, “Teaching and Learning with Technology: Effectiveness of ICT Integration in Schools”; T. Tran et al., “ICT Integration in Developing Competence for Pre-Service Mathematics Teachers: A Case Study from Six Universities in Vietnam,” *International Journal of Emerging Technologies in Learning (IJET)* 15, no. 14 (2020): 19–34.

⁵⁸ Esfijani and Zamani, “Factors Influencing Teachers’ Utilisation of ICT: The Role of in-Service Training Courses and Access”; Escueta et al., “Education Technology: An Evidence-Based Review”; Usman, “Educational Resources: An Integral Component for Effective School Administration in Nigeria.”

⁵⁹ Hakimi et al., “Empirical Assessment of ICT Impact on Teaching and Learning in High Schools: A Study in the Context of Balkh, Afghanistan”; Kennedy, “Challenges of ICT Integration in Teachers’ Education: A Case Study of the College of Education, University of Liberia”; Wang and Wang, “Managing the Integration of Teaching Resources for College Physical Education Using

School-facilitated technical support and maintenance conditions impact ICT integration in teaching and learning. This information suggests how technical support and resource maintenance affect ICT integration in the classroom.⁶⁰ Buraimoh, Boor, and Aladesusi claim that having enough resources and support services available in schools might have an impact on the decision made by educators to include ICT in the classroom.⁶¹ The researchers concluded that behavioural intentions to incorporate ICT for education were influenced by the enabling conditions in schools. Competent technical support is required to troubleshoot internet connectivity in schools. The access point schools must be staffed by qualified, capable personnel with the required technical support group.⁶²

In summary, the study revealed that schools are not integrating ICT into teaching and learning because of technical support challenges, lack of proper maintenance of ICT resources, and lack of programming installed on the computer for subject areas. The findings showed that teachers might be willing to integrate ICT, but there are barriers to implementing the task. These findings imply that schools still use traditional teaching and learning methods. There will be no collaboration among the teachers and the students. The teachers will not be confident enough to use ICT in the classroom. There will be a slow in preparation and delivery of teaching. The students will also be unable to compete with their peers in using ICT to learn. There will be low performance. The limitation of the study is that it took place in one of the rural areas in the province. Therefore, it can be deduced that schools in rural environments could not benefit from ICT integration.

RECOMMENDATIONS

The study recommends that the Department of Education (DBE) should distribute technical ICT support to the schools lacking in this area. The DBE should provide adequate and routine maintenance of the ICT resources. There should be a high-quality supply of ICT resources. The schools should organize routine professional development programs and workshops for the instructors, emphasizing using ICTs to enhance instruction and learning. Teachers should incorporate ICT into their classrooms, and schools should be open to using it in teaching and learning. In addition, students should be willing and able to learn through ICT.

CONCLUSION

In conclusion, the consideration of technical support in integrating ICT in the school for the maintenance of technological equipment is very important. Technical and training support with high-quality training is necessary to overcome the first-order barriers to integrating ICT in education. To assist the school in making the shift from conventional teaching and learning techniques to ICT-based teaching and learning environments, the assigned technical support staff would monitor the students' progress. The study's findings can be generalized, though it was a case study. Nations around the globe could face the same challenges where resources are not distributed to some parts of the nation. This study is an addition to the pool of literature

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