



Technology Enhanced Teaching and Professional Staff Development: Minding the Ethical Gap

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Keywords

Online teaching and learning, ethics in higher education, academic staff development, academic digital literacy, quality scholarship, academic voices.

Abstract

Academic digital competence in this age of technology is one of the most important considerations for higher education institutions globally. Overall, as higher education institutions increasingly pivot to online learning, academics must keep up with the new trends and developments as new tools and systems reshape their classroom. However, a critical challenge emerging in the literature is the limited support provided to academics to make this transition. This paper canvases the ethical responsibility of higher education institutions to ensure that staff are adequately trained where online teaching is the approved model for learning.

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1. Introduction

The COVID-19 pandemic had a catalysing impact on most higher education institutions (HEIs), forcing them to rapidly transition to online learning (so-called *emergency remote learning*). In this milieu, institutions attempted to adapt as best as possible without the standard preparatory planning processes for the new teaching model and change management. At the end of the pandemic, faculty reported feeling underprepared and often overwhelmed as the lack of training materially affected their ability to present high-quality teaching.

Post-pandemic, many HEIs continued with online delivery of classes, and the reasons varied. Some suggested reasons are that staff and students have become accustomed to the online approach to learning and prefer the flexibility it presents, that online learning responded to the emerging technology-enhanced teaching and learning ethos, and that it enables student access and institutional growth. However, the critical obligation to address staff development for online teaching and learning was missed in the discussions. Old policies and structures remained in place, and a quality teaching performance was expected, but online teaching is not the same as classroom teaching. Also, note Mohr and Shelton (2017: 124):

“ faculty members often teach as they were taught, and many distance educators did not take online courses as students, which leaves them without a benchmark model for online teaching.

Many lecturers also believe they can teach in the same way online as face-to-face (Mohr & Shelton, 2017).

The simple reality is that online teaching and learning is growing rapidly, and professional staff development has not kept pace. This begs a fundamental question about today's ethical realities of online teaching and learning. Firstly, the emphasis on equitable access showcases the importance of designing online learning environments that are inclusive and accessible to all students. However, this can only be achieved if staff are trained in appropriate design for online learning practices and know how to

accommodate and support diverse learners in the online environment (Anderson and Simpson, 2007).

Further responding to diversity challenges, Aldosemani (2020: 79) reminds us that online pedagogy also requires cognisance of how interactions across individuals “promote relationality, criticality, and responsibility.” Thus, stress Zembylas and Vrasidas faculty and students both have an ethical responsibility towards the ‘other’s’ diverse and complex identities as they “consider how they should respond to each other.” (2005: 77).

The ethical conundrum arises when institutions do not provide the appropriate training, exacerbating existing inequalities, particularly for students who may already face barriers in accessing education. Citing South Africa as a case in point, Modise (2023: 1) states:

“ In South Africa, as in many developing countries, most of those entering higher education are unfamiliar with online learning. They are not adept at finding their way around the internet. They struggle to navigate university learning management systems. The situation is made worse when lecturers don’t have the skills needed to facilitate classes and tutorials online. This dearth of skills on the lecturer’s part can negatively affect students’ performance and achievement.

Post-pandemic, many HEIs simply continued with online delivery of classes, and the reasons varied. Some reasons suggested are the argument that staff and students had become accustomed to the online approach to learning and preferred the flexibility it presented, online learning responded to the emerging technology-enhanced teaching and learning ethos, and that it enables student access and institutional growth. However, what was still missed was the critical obligation to address staff development for online teaching and learning. Old policies and structures remained in place, and a quality teaching performance was expected. However, online teaching is not the same as classroom teaching, which begs a fundamental question about the ethical realities of online teaching and learning today.

Firstly, equitable access showcases the importance of designing online learning environments that are inclusive and accessible to all students. However, this can only be achieved if staff are trained in appropriate design for online learning practices and know how to accommodate and support diverse learners in the online environment. The ethical issues arise when institutions do not provide this training. This can exacerbate existing inequalities, particularly for students facing barriers to access.

Secondly, higher education institutions must ensure that faculty members are qualified and competent in their subject area and in delivering the content. Requiring lecturers to teach online without providing them with the necessary training raises significant ethical concerns. The skillset required for teaching online is different from traditional in-person teaching. Lecturers who have not been trained may lack the necessary digital literacy, understanding of online pedagogy, and familiarity with educational technology tools, and even where training has been instituted, “most professional staff development opportunities. Ethically, professionals are too limited for faculty who are learning to teach online because they focus more on technology and not pedagogy” (Mohr & Shelton, 2017: 125). Professionals are always expected to perform their duties to the best of their ability. By expecting lecturers to teach online without adequate preparation, HEIs may be placing them in an ethically and professionally invidious position where they cannot uphold this standard, potentially leading to student dissatisfaction.

Thirdly, HEIs also have a duty of care to their employees, which includes ensuring that they are adequately prepared to meet the demands of their roles. Omitting to provide the necessary training undermines this responsibility and may lead to increased stress and job dissatisfaction among staff. This is especially concerning when staff are evaluated on their performance online without being given the tools to succeed. Reflecting on the challenges of increasing mental health among academics and academic stress, Tus (2020: 29) describes it as “anything that poses a challenge or threat to the well-being of a person.” Critically, the self-perpetuating nature of academic stress is highlighted by Kotter et al. (2017), who argue that while stress negatively affects academic performance, stress also becomes a vicious circle of continually building on itself and concomitantly reducing performance.

Fourthly, poorly executed online teaching can lead to student dissatisfaction, lower retention rates, and negative perceptions of the institution. In the medium term, this may affect the institution’s ability to attract and retain both students and staff.

Summarising the issue, Anderson and Simpson (2007: 129) state:

“ online teaching and learning environments amplify the ethical issues faced by instructors and students.

Reflecting on the developments in the sector, there is no gainsaying that academic digital competence in this age of technology has become one of the most important considerations for higher education institutions (Rapanta et al., 2020; Albraham, 2020). As institutions increasingly pivot to online learning in the era after the COVID-19 pandemic, academics are expected to keep up with the new trends and developments as new tools and systems reshape their classrooms. However, the reality is often quite different. A lamentable truth emerging in the literature is the limited support provided to academics to make this transition. Until this challenge is confronted and addressed, institutions risk presenting a teaching and learning experience not of the ubiquitous quality promised.

Acknowledging that (i) knowing the status quo, (ii) planning for, and (iii) investing in (because the latter are two very different commitments) enhancing the digital competence of academic staff is essential for fostering innovative teaching methods, improving student engagement, and maintaining the relevance of higher education institutions in a rapidly evolving digital world, the researchers instituted a staff voice (SV) survey on *Technology: Understanding and Use* at their institution to investigate the technological capabilities of academic staff members. The research interrogates the pillars of technological competence to enable quality teaching and learning in the digital era, including academic proficiency, technological competence, and digital literacy. The survey findings and good practices shared in the available literature were then applied to inform a responsive academic staff development plan, which was aimed at developing competence, confidence, and comfort with technology use and deployment. The goal of the development plan is to facilitate the effective integration of

technology into scholarship and identify institutional contributions that are key to ensuring the success of the intervention.

The researchers are satisfied that the SV study is a valid means to understand staff members' contexts and if they are adequately empowered for the tech-supported teaching and learning model the institution prescribes. The institution is cognisant of the impact of technology on teaching and learning in the 21st century and, against this backdrop, aims to use the SV survey to build its staff development framework, responding to the identified shortcomings and building on the identified strengths for optimal teaching performance. The study aligns with the institutional commitment to its students to provide them with a quality higher education experience and to its staff to facilitate continuous professional development and ensure relevance.

2. Methodology

This study utilised a mixed methods approach (convergent parallel design) that integrated quantitative and qualitative data, allowed consolidation of interrelated findings, and compared the statistical findings with qualitative information for validation purposes (Shoonenboom & Johnson, 2017). The blended approach also enabled a more holistic understanding of the issues, facilitating better quality and more effective recommendations.

The study used a survey questionnaire and open-ended questions to collect feedback from respondents. The questionnaire component consisted of two sections: (i) gathering information through closed-ended questions and (ii) dealing with biographical data.

The study received the necessary ethics clearance, and distribution of the survey was completed online. An email invitation was sent to all academic staff members at STADIO Higher Education, and participation was indicated as voluntary, confidential, and anonymous. The survey period was 30 days, and 115 members of the lecturing team responded. Participation was voluntary, and responses were downloaded, cleaned, and stored for analysis. The following section presents the descriptive analysis of the outcomes of the staff voice (SV) study.

The quality of the data was measured using three diagnostic analysis tools:

Reliability analyses were used to determine the internal consistency level of the survey data. This is an important measure indicating whether the data is sufficiently reliable to enable credible conclusions. Reliability testing was done using Cronbach’s Alpha test. Using this test, the data consistency (reliability) level can be determined on a scale from ‘0’ to 1, where 0 indicates complete inconsistency and ‘1’ of complete consistency. Alpha = 0.878 was obtained, indicating a high level of data consistency; therefore, the data obtained through the Staff Voice survey is reliable.

Validity analyses were applied to ascertain whether the survey measured what it was supposed to measure and confirm that valid conclusions could be drawn from the data. Validity testing was done using Principal Component Analysis (PCA), which assessed whether the variables in the Staff Voice survey could validly measure aspects of digital financial literacy. Component loadings ranging between 0.562 and 0.949 were obtained using the PCA test. Given that ‘1’ is an indication of perfect validity, the obtained component loadings are indicative of valid survey results.

Structural integrity analyses to determine whether the survey dataset forms a logical whole and if expected relationships between variables were found. Suppose there is little or no structural integrity of the dataset, then it will not be wise to apply any inferential statistics in which the strength of interrelationships between variables is being investigated. Structural integrity testing was done using Neural Network analyses, which determined that about 41.0% of the relationships in the underlying data structure of the information could be successfully identified, which indicates an acceptable level of structural integrity. This finding implies an underlying logical structure to the survey data, making higher-order inferential analyses and data modelling possible.

3. Literature review

The term digital competence appeared in the European discussion as early as 2000 when prerequisites for life-long learning started to be formulated. The term was spread further when introduced as one of the eight competencies in the EU recommendations 2006 (Kack & Mannikko Barbutiu, 2019).

The European Commission (2021) defines digital competence as the ability to utilize Information and Communication Technology (ICT) effectively. However, this definition extends beyond basic ICT skills when applied to teaching. The Commission asserts that while digital competence involves the effective use of technology, teaching necessitates a deeper level of digital literacy. Educators must integrate technology into their pedagogical practices, promote critical thinking about digital information, ensure online safety, and foster creativity and collaboration through digital tools. Thus, although ICT proficiency provides a foundational skill set, a comprehensive digital literacy framework for teaching must also include these broader aspects to fully empower educators and students in the digital age.

The European Commission (2021:33) recognises that technology has wrought significant social changes, and learning institutions have not been exempt. It emphasizes the role of teaching professionals in this rapidly transforming environment, noting specifically that:

“ teaching professionals in all sectors of education, from early years to adult learning, are at the forefront of this change, and need to be equipped with the confidence and competence to use technology effectively.

Similarly, the United Nations Educational, Scientific and Cultural Organization (UNESCO) (2018) framework underscores that digital competence is not just about using technology but about integrating it thoughtfully and effectively into teaching practices. It calls for a holistic approach that includes technical skills, pedagogical strategies, ethical considerations, and continuous professional growth. The Australian Council for Educational Research (ACER) Report (2020) underscores that digital

literacy is fundamental to modern education and that educators play a pivotal role in fostering these skills. Educators can enhance their teaching practices by developing strong digital competencies, supporting students in navigating the digital world, and contributing to a more equitable and effective educational environment. The Report calls for targeted strategies, continuous professional development, and collaborative efforts to address the evolving demands of digital literacy in education. The World Economic Forum (2020) also highlights the increasing importance of digital skills across all sectors, focusing on education. As technological advancements continue to reshape the workforce, educators and professionals must develop their digital competencies continuously. The WEF Report calls for strategic actions, including tailored professional development, investment in training, and collaboration with various stakeholders, to ensure individuals are well-equipped to thrive in a digital future.

There is no gainsaying that the development of digital competencies amongst higher education academics is essential, both for leading technology transformation at the more general level as educators positively influence the digital competencies of their students, but also specifically for more responsive and effective teaching and learning. In the student journey, academics are responsible for helping students incorporate these competencies into the scientific knowledge required for their respective professions as they gear them to become more workplace-ready (Dias-Trindade et al., 2023). The development of digital competencies is thus essential for academics to leverage the opportunities presented by technological advancements and to devise strategies for their professional growth. Additionally, it enables academics to enhance the digital competencies of their students. Digital competence is undergirded by more than merely understanding concepts, being familiar with current research, and knowing which digital technologies are available. Practical skills are equally necessary, such as being able to use these technologies effectively, meeting students at their level, and providing the specific support they need to progress. Digital competence is an essential skill for academics in the 21st-century classroom, supporting them in managing several technological, curricular, and pedagogical aspects (Punya, Mishra & Koehler, 2008).

An academic with strong digital competence can guide students toward achieving their expected learning outcomes, comprehend how this process operates, and understand how it aligns with regulatory principles.

A survey of the available research discussing the lacunae that must be addressed as learning facilitators embrace technology in the classroom highlights a complex mix of factors competing for attention. Discussing the transformative impact of the COVID-19 pandemic, specifically on higher education, Motala and Menon (2020) examine the swift transition to online learning that universities had to navigate, exploring both the immediate adaptations and the lasting effects on teaching and learning strategies. Significant in their reflections is the stark contrast between the potential of digital learning and the harsh realities of its implementation. The research demonstrates that the transition was far from smooth despite an apparent enthusiasm for online education. Many students and educators struggled with the sudden move to digital platforms, primarily due to poor internet access, lack of digital literacy, and inadequate support systems.

Nwosu et al. (2023) reiterated these realities and challenges, underscoring the unevenness of how fourth industrial revolution (4IR) tools are being integrated into South African higher education institutions. They emphasise that while some institutions are making significant progress, others appear to be “struggling” due to a lack of resources, exacerbating the already present digital divide that characterises South Africa (Nwosu et al., 2023). Both infrastructure challenges, including outdated hardware and poor internet access, are identified as material contributory factors hindering the full implementation of advanced technologies in the affected institutions. Further, they concur with the findings of Motala and Menon (2020), who highlight a significant gap in digital skills among educators and students at institutions facing technology challenges, which hinders the effective use of technological tools. The persistent digital divide, particularly affecting students from disadvantaged backgrounds, exacerbates the identified problem with uptake. Motala and Menon (2020) point out that while some students thrived online, others, particularly those from disadvantaged backgrounds, found themselves even more marginalized. This disparity has

sparked ongoing debates about access to education and technology's role in bridging or widening the gap.

In addition to infrastructure and resources, Motala and Menon (2020) also emphasise the emotional and psychological impact of the shift to technology, noting that both students and faculty faced significant stress, not just because of the new technology but also due to the broader uncertainties brought on by the pandemic. This added layer of complexity made it difficult for everyone to adjust to what the authors term the "new normal." In this context, acknowledging that “using 4IR tools promotes the growth and development of teaching and learning at HEIs” (Nwosu et al., 2023: 58), Nwosu et al. (2023) recommend providing training for academics who face challenges in using technology. In addition, they highlight the institutional barriers that hinder tech-readiness, notably the lack of comprehensive policies and support from university management, which results in inconsistent and sporadic adoption of 4IR tools (Nwosu et al, 2023).

Two key drivers of digital competence in the higher education sector that require in-depth attention are (i) access to technology and (ii) academic attitudes to technology for teaching and learning. If these constraints and challenges are not mitigated and balanced, they will impact the successful implementation of the technology-led pedagogic solutions offered by higher education institutions.

Access to Technology

South Africa is one of the most economically polarised countries, with the world's highest Gini Coefficient (<https://worldpopulationreview.com/country-rankings/gini-coefficient-by-country>). In this environment, teachers are not protected from the challenges of the digital divide, and it is not uncommon for many lecturers to not have sufficient access to technology or the appropriate technology infrastructure for consistent bandwidth and network required for teaching (The International Society for Technology in Education (ISTE) 2020). The high data cost in South Africa presents a significant barrier to digital parity and competence among academic staff. The cost of data disproportionately impacts educators

from disadvantaged backgrounds, leading to disparities in education quality. Those with limited access struggle to utilise digital technology effectively, hindering their ability to engage with modern pedagogical tools and methods (Ralejoe et al., 2021). Consequently, the potential for effective teaching with technology is constrained, affecting the overall quality of education they can provide, especially in a milieu where higher education institutions drive technology-enhanced teaching and learning. Ralejoe et al (2021) confirm that the expense of data significantly limits academic staff's access to essential online resources, including the latest research, educational tools, and digital content necessary for effective teaching. This financial barrier also affects virtual professional development opportunities, which are increasingly important but remain out of reach for many due to prohibitive data costs. Additionally, the shift to online learning during the COVID-19 pandemic has underscored the importance of reliable and affordable internet access, which remains a challenge for many educators post-pandemic. Addressing these barriers is crucial for supporting academic staff and enhancing teaching practices. Identifying opportunities to reduce data costs for academic staff (and for teaching and learning generally), as well as improving access to affordable internet, should be a key commitment for higher education institutions focussed on technology solutions to enhance teaching and learning.

Staff Attitude

The conclusion by Modise (2023) linking professional development, attitude, and online teaching is material for this discussion. Modise (2023) reflects on staff attitudes to online learning prior to institutionalised training and their approach upon the conclusion of the development programme. He reports:

“ I found that most lecturers lacked the knowledge and digital skills necessary for open distance e-learning before the training. This had a significant negative impact on their attitudes to using technology in their teaching.... However, the capacity building programme they completed greatly improved their digital literacy. It also positively shifted their perspectives (at 2).

Underscoring the point, Mohr and Shelton (2017) stress that faculty members may find it challenging to be placed in the student role and make mistakes in a place where one cannot lose face. This uncertainty undergirds resistance to change rather than resistance to new technology.

Research indicates that attitude plays a crucial role as an indicator of success, particularly in how individuals approach challenges and adapt to new environments. A positive attitude towards learning and adapting to new technologies, for example, can significantly influence an individual's success in the rapidly evolving digital education landscape. A proactive and positive attitude towards challenges is often linked with greater resilience and success. Individuals who approach tasks with a growth mindset - believing that they can improve through effort and learning - tend to persevere through difficulties and ultimately achieve better outcomes (Morris et al, 2003; Rogers, 2003; Venkatesh et al, 2008).

Teachers who maintain a positive attitude towards integrating technology into their classrooms are more likely to adapt successfully and enhance their teaching practices. Confirming this view, From (2017) emphasises that the right attitude is an important driver when developing pedagogical digital competence. Maintaining a positive attitude toward teaching practice over time leads to enhanced practical knowledge in using ICT for learning support, notes From (2017). Using the Indian example, Das and Arundhathi (2024) describe how India's rapid technological advancement made integrating digital technology into education both a necessity and an opportunity to transform the educational landscape. With the digital revolution driven by liberalization, privatization, and globalization, there was a growing demand for educators to develop digital competencies to meet evolving educational priorities and manage information effectively. Digitalization in education, which included using digital tools for assessment, teaching, learning, and administration, made education more accessible and efficient. In this environment, they found that self-directed learning (SDL) was a key driver for enhancing digital teaching competencies among higher education academics, emphasising the advantages of a positive attitude.

With self-directed learning (SDL), educators take charge of their professional growth by identifying learning needs, setting goals, and independently utilizing resources. SDL fostered autonomy and motivation, aligning with lifelong learning principles essential for adapting to technological advancements and modern educational demands. By engaging in SDL, teachers continuously updated their digital skills, creating dynamic and personalized learning environments that improved student outcomes. Teachers who embraced SDL enhanced their digital skills, designed personalized learning paths, and created engaging digital classrooms, all of which supported students in achieving better outcomes.

Their findings suggest that improving digital teaching skills among higher education academics is closely connected to attitude and a willingness to learn. To enhance teaching and adapt to digital environments, institutions should support ongoing SDL and provide resources for professional development. Modern education relies on both SDL and digital teaching capabilities. Prioritizing their learning helps teachers engage students, meet diverse needs, and grow professionally, reflecting Das and Arundhathi (2024). In their assessment, digital teaching competencies are vital for effective education. While institutions must create an enabling environment, the academic staff has an equal onus to embrace the professional development opportunities presented.

However, points out Hyndman (2018) not all teachers believe that technology is good for teaching and learning. Discussing the detrimental effect of technology on job satisfaction among teachers, Berges-Puyo (2024) notes that many educators consider the overwhelming use of technology a source of stress, leading some to resign from their positions. This stress is often compounded by technical issues like software malfunctions and unreliable internet connections, which disrupt lessons and hinder learning (Johnson et al., 2016). Moreover, academics frequently struggle with adapting to new technologies, especially when they are not technologically inclined. The time and effort required to learn new digital tools can be overwhelming, leading to frustration and burnout (Smith, 2018). Thompson (2020) further elaborates on the concept of digital fatigue, which stems from the extensive screen time associated with online teaching. This fatigue has been identified as a

significant contributor to both mental and physical exhaustion among educators.

While a positive attitude is a key indicator of success, the research also suggests that external factors, such as technological challenges and the resulting frustration, can negatively influence attitudes and outcomes. Educators overwhelmed by the demands of technology integration may struggle to maintain the positive mindset necessary for success, underscoring the importance of providing adequate support and resources to help them navigate these challenges. Thus, as institutions roll out their technology strategy, it is essential that there is academic buy-in and a common vision about the role of ICT in teaching and learning must be embraced by all.

“ [C]reating a shared community of practice is important [because] ... if teachers don't believe in using digital technologies they will fail to transform classes, align with learning goals and integrate technology into curricular content (Hyndman 2018: 42).

Staff Development

Ajani and Govender (2023) conducted a systematic review to evaluate the impact of ICT-driven teacher professional development (TPD) programs in South Africa and how such initiatives influenced classroom practices and the overall effectiveness of teaching. The effectiveness of these programs was assessed based on their impact on student engagement and performance. Similar challenges were identified in earlier research, including inadequate infrastructure, resistance to change, and varying levels of digital competence among teachers. Highlighting the need for more structured staff development, they also emphasised the need for (a) sustained support for teachers, (b) context-specific training, and (c) supportive policies.

Hyndman (2018) also confirmed earlier the importance of providing academic staff with improvements, developing the capabilities for teaching enabled by technology, and keeping them abreast of continuous technological advances. However, this must be a regular, scaffolded, and sustainable process, yet we find that the “allocation of professional learning of resources

has been reported as sporadic in scope and quality. ... [M]uch of it has been limited to one-shot or ‘one solution for all’ strategies.” (Hyndman 2018)

Training programs for academic staff must be nuanced and focussed on specifically identified development areas. The struggles of academics are different, and the layers of learning are quite varied. The one-size-fits-all approach will not be effective. With the rise of ICT in education, professional development must shift to specifically include training on integrating technology into teaching (Ajani, 2020b), taking cognisance of the bespoke needs of staff.

Chuvgunova (2019) conducted a study that explored how university lecturers advanced their information and communication technology (ICT) skills. The research assessed their current level of ICT competence, examined students’ perceptions of ICT’s role in education, and investigated the link between ICT skills and communicative abilities. The aim was to enhance ICT use in higher education by identifying necessary skills and addressing the challenges lecturers faced with technology. The research carried out through surveys with questionnaires aligned with UNESCO’s recommendations, involved 102 lecturers and 198 students from St. Petersburg State University. The study evaluated the lecturers’ ICT competence using quantitative methods and statistical analysis. The findings were quite revealing:

“...while most lecturers were proficient in basic and technological ICT skills, aiding their communication and specific teaching tasks, only 22.2% had fully developed practical ICT skills for creating and implementing new educational tools like electronic resources and online courses. About 53.1% had these skills to a partial extent, indicating some limitations in their ability to use ICT creatively in teaching.

Student feedback revealed a strong appreciation for ICT in education, mainly when it addressed individual needs and balanced virtual and face-to-face interactions. Students valued their lecturers’ technical skills but emphasized the need for flexibility and responsiveness in using ICT across various teaching scenarios. A significant study finding was the positive correlation

between ICT competence and communicative competence among lecturers. This suggested that effective communicators also tended to have better ICT skills and confidence. It underscored the connection between technical and interpersonal skills in effectively integrating ICT into education. The study also highlighted that many lecturers were developing their ICT skills independently through online resources, literature, and advanced training courses. However, the lack of a clear improvement plan and the inadequacy of traditional training methods, which failed to keep pace with rapid technological advancements, led to uneven and unsystematic professional development.

The study proposed "concomitant" training to address this shortcoming, combining ICT skill development with discipline-specific professional growth. This approach offered lecturers ongoing support and access to experienced colleagues or tutors to enhance their ICT use. The research advocated for a shift in how lecturers viewed ICT—not just as a technical tool but to elevate educational quality and foster student creativity. Instead of seeing ICT as an add-on, lecturers were encouraged to consider it crucial in developing students' critical thinking and creative skills. Universities were advised to focus on structured, ongoing professional development programs that catered to individual lecturer needs and adapted to the evolving ICT landscape. Tailored training with the support of experienced tutors, integrated with subject-specific development, was deemed essential for improving ICT competence among lecturers. Overall, the study provided valuable insights into ICT competence among university lecturers and emphasized the need for targeted, continuous professional development to effectively incorporate ICT into teaching practices.

Professional staff development for teachers has been repeatedly acknowledged in the research as one of the most critical factors driving positive transformation, competence, and quality teaching and learning (Barakabitze et al., 2019; Maisiri et al., 2019; Lembani et al., 2020; Ifinedo et al., 2020; and Makhananesa and Sepeng 2023). While Govender et al. (2023) and Dube (2020) point out that professional staff development appears to have gained more traction in developed countries such as Canada, the UK, and the USA underpinned by a complimentary policy environment and new

policies to promote ICT adoption and various teacher training activities (Barakabitze et al., 2019), Mohr and Shelton (2017: 124) make the point that:

“ Unfortunately, most professional development for faculty has been ineffective and wasteful more times than not because it has often been ad hoc, discontinuous, and unconnected to any plan for change.

There is no gainsaying the need for academics to be proficient in using various digital tools and platforms. Summing up the demand Mohr and Shelton (2017: 124) state:

“ [H]igher education institutions need to prepare faculty throughout their teaching career for learning theory, technical expertise, and pedagogical shifts before and as they teach in the online environment.

“ Institutions need to create professional development opportunities that support faculty transitioning into online teaching to help ensure quality.

This includes inter alia understanding how to use the learning management system (LMS), virtual classroom software, and digital collaboration tools. It also means staying up-to-date and relevant with evolving technologies and effectively integrating them into the teaching and learning processes. Furthermore, as higher education institutions increasingly rely on digital tools, protecting student privacy and maintaining cybersecurity becomes increasingly important. Academics must be familiar with best cybersecurity practices, including password security, recognising phishing attempts, and managing digital files securely (Mertler, 2016). Digital competency presents various complex challenges for academics, and these difficulties must be considered when planning and executing technological initiatives. A digital strategy will never be complete or adequate if staff development is not integrated into the final model. Higher education institutions must understand the challenges and the importance of providing extensive support in this constantly changing milieu. Implementing a robust staff development plan to help academics navigate new technologies is a strategic imperative and

critical success factor for any higher education institution committing to technology-enhanced teaching and learning.

4. Survey results and discussion

In seeking to make contextually relevant and institutionally informed decisions on the type and nature of professional staff development required to support its technology strategy, STADIO Higher Education, a registered private higher education institution in South Africa, instituted a study to investigate the use and competence of academic staff vis-à-vis technology for teaching and learning.

The respondent sample - 115 academic lecturing staff members in permanent employment with the institution - included participants from all the Schools and across both contact and distance learning modes of delivery. 95% of the lecturing staff had postgraduate qualifications (Honours, Masters and Doctorates). 15% of the respondents were younger than 30 years of age, 30.3% of the lecturing staff were over the age of 50 years, and most of the respondent sample (38.5%) fell into the 30-39 years old category. 84% of the sample described themselves as residents in an urban area, while the remainder (except for one staff member) described their home environment as semi-urban.

Overall, the demographic data displayed a good spread of the STADIO lecturing staff population, with a response rate of 58%, allowing for generalizations regarding staff's capabilities for teaching/facilitating learning using technology. The representative sample allows the institution to make more informed decisions in its staff development strategy to enhance lecturers' technological capabilities aligned with the institutional teaching and learning strategy.

Access to and Use of Technology

Most academics indicated that they had access to consistently available internet service (99.1%), a smartphone (93.9%), and a laptop computer (98.3%). 57.4% had mobile data on contract, and 39.1% had pay-as-you-go

mobile connectivity, which enabled them to work online. The survey did not interrogate the amount spent by respondents annually to maintain dependable internet connectivity, nor did it explicitly question how staff with mobile data on contract dealt with the challenge of their data being depleted within the month. This is an identified shortcoming of the survey because anecdotal evidence gathered is that lecturing staff do not use their cameras when presenting online classes and often opt to come to campus every day and sometimes on Saturdays or remain after hours to present class, especially for the distance learning students. Notwithstanding the overall statistical reliability of the data gathered, these specific indicators need to be further interrogated.

Regarding access to technology for remote online work, 93% of the respondents indicated *good to excellent* access to technology, with an additional 5% indicating *acceptable* access to technology for work purposes. The average rating of the respondents’ overall access to technology for remote online work was 5.17 (where a rating of 1 indicates *extremely poor* and a rating of 6 is *excellent*). That said, and while insignificant for the overall results of this study, the data nevertheless flagged two academic staff members with poor and extremely poor overall access to technology. This highlights the need for a more focused inquiry into the extent of the challenge across the institution, especially as STADIO continues to embed a commitment to technology-enhanced teaching and learning.

The use of technology tools for online learning was quite positive, supporting the statement that academic staff did not experience difficulties accessing technology tools to facilitate learning.

Table 1: *Use of Technology Resources*

| Technology resources and tools | Respondents | |
|--------------------------------|--------------|------------|
| | Used Monthly | Used Daily |
| Desktop computer | 29.57% | 15.65% |
| Laptop computer | 98.26% | 96.52% |

| | | |
|---|--------|--------|
| Smartphone | 93.91% | 85.22% |
| Tablet | 22.61% | 12.17% |
| Internet | 99.13% | 98.26% |
| Webcam | 86.96% | 60.87% |
| Virtual learning environments (i.e., Canvas, Moodle) | 97.39% | 92.17% |
| Cloud computing | 76.52% | 64.35% |
| Social networks (i.e., wikis, blogs, Twitter, Facebook) | 82.61% | 61.74% |
| Email | 99.13% | 99.13% |
| WhatsApp | 97.39% | 93.91% |
| SMS | 67.83% | 36.52% |
| Zoom / Teams | 98.26% | 88.70% |

Laptops (93% of respondents indicated using it more than once a day) and smartphones (77.4% of respondents indicated using it more than once a day) were the most frequently used tools for remote online work. 12.2% of the respondents used a desktop computer more than once daily. Of considerable interest from the individualised data - especially as STADIO offers blended contact and distance learning supported by technology - is the response from 13% (or 15 staff members) that they do not ever use a webcam. Also warranting further inquiry is the indication from 3 respondents that they *do not use Zoom or Teams at all, or only once a month at most for purposes of their teaching and facilitation of learning*. This is a significant concern for academic management as the Institution’s approved teaching model includes weekly online consultation sessions for DL and synchronous online classes for CL students. The responses reveal a significant teaching gap as it appears that pockets of faculty do not even comply with the minimum academic standards for technology-enhanced teaching and learning prescribed by the institution.

In summary, respondents did not highlight personal challenges with the use of technology, and the highest-rated factors were all extrinsic:

Table 2: Technology Challenges

| Technology challenges | Academic (Lecturing) | |
|--|----------------------|--------|
| | n | % |
| Difficulty to use | 5 | 4.30% |
| Lack of skill | 13 | 11.30% |
| Quality of connectivity remotely | 18 | 15.70% |
| Proper digital devices | 24 | 20.90% |
| User authentication via required Multi Factor Authentication | 33 | 28.70% |
| Availability/stability of electricity | 34 | 29.60% |
| Access to desired third-party apps | 36 | 31.30% |
| Quality of connectivity on Campus | 45 | 39.10% |

An overwhelming majority of the respondents *agreed* (30.4%) and *strongly agreed* (63.5%) that the institution should provide technological training for teaching and learning as part of the onboarding process for all new staff.

Table 3: Technology training linked to staff onboarding

| Agreement | Academic (Lecturing) | |
|-------------------|----------------------|----------------|
| | n | % |
| Strongly disagree | 1 | 0.90% |
| Disagree | 0 | 0.00% |
| Neutral | 6 | 5.20% |
| Agree | 35 | 30.40% |
| Strongly agree | 73 | 63.50% |
| Total | 115 | 100.00% |

The emerging use of social networks (wikis, blogs, Twitter, Facebook) for teaching and learning was encouraging -71 respondents (62% of the sample) indicated using them once a day or more, 15 (13%) used them once a week, 9 (8%) indicated using them once a month or less frequently, and 20 (17.4%) responded that they did not use social networks at all in their teaching and facilitation of learning. The literature presents many examples of studies investigating the effectiveness of social networks for improved teaching and learning. While not originally designed for educational purposes, the use of social networks in education is quickly gaining traction. Chawinga (2017:19) confirms the positive benefit, pointing out that if properly deployed, social networks can be catalysts for the critically important learner-centered approach to teaching and learning “because using these technologies, it emerged that students shared and discussed course materials, posted their course reflections and interacted amongst themselves and with their lecturers 24/7.” Supporting the advantages of social networks, Menkoff et al. (2014:1295) emphasize “the voice” that it gives to students, encouraging them to be more engaged and enhancing classroom interactivity with both peers and lecturers. In the classroom specifically, using social networks can offer students opportunities to provide prompt and immediate feedback to lecturers described as fundamental to encouraging a student-centered learning approach (Chawinga, 2017). However, Mbodila and Ndebele (2021:7) point out that amidst the hype, not all lecturers have embraced such technologies in teaching and learning, describing it as “disruptive” and “having the potential to divert student attention from educational work to non-educational activities”. The specific (valid) responses they recorded from the lecturing staff included:

“ The greatest challenge is that there are no monitoring mechanisms to ensure that students are using social networks for academic purposes.

And

Students can fight in class because of posting irrelevant comments or pictures about other students and some of us the lecturers we are not really into social networks.

The last-mentioned sentiment is significantly telling of why lecturers would not adopt social networking in teaching, seeing it as *another new thing to learn*. However, conceding to the rapidly growing use of social networks amongst young South Africans - the so-called “technological generation” of students – Mbodila and Ndabele (2021:7) advise that institutions intending to integrate social networking as a pedagogical tool must plan to actively build the collective understanding of the value, and respond to the challenges identified by resistant staff members. On this point, they note:

“ We recommend ... vigorous lecturer advocacy programs to develop positive attitudes and to encourage lecturers to embrace the use of social network platforms in teaching. We further recommend developing standards and procedures for using social network platforms in teaching and providing the tools to integrate them into learning and teaching.

The survey recorded a relatively high use of SMS messaging by academic staff for student engagement. This is aligned with the STADIO Student Voice Survey conducted 3 months earlier on the use of technology by STADIO students. The STADIO Student Voice Survey revealed that:

“ Insofar as communication and messaging, 70% of the adult learner sub-sample use SMS-es daily.

SMS messaging is still a popular communication tool with adult learners and STADIO lecturers are responding to the student voice.

Technology Use and Competence for Learning Purposes

Respondents were required to compare their technology use and competence for teaching purposes with their use and competence of technology for social purposes. Regarding use, 58.2% of the respondents used technology *always* and *almost always* for social purposes, with 38.3% indicating use for social purposes *occasionally* or *sometimes*. On the other hand, in response to the question about use for teaching and learning, 90.5% of the respondents indicated *always* or *almost always*. However, there was also a (relatively

high) 9% response rate indicating *occasionally* or *sometimes*. Respondents rated their competence with technology for social purposes quite highly (83%), notwithstanding the fact that only 58% indicated high use and even more highly for use for teaching and learning (93.1%). This is an extremely positive outcome. In addition, 83.5% of the sample described their basic computer skills as *very good* to *excellent*; 31.2% rated their skills with AI as *very good* to *excellent*, and 31.2% rated their AI skills as *good*. 59.7% rated their ability to use Canvas (the institutional learning management system) as *very good* to *excellent*, 31.2% rated it as *good*, and 9.2% believed their skills were *acceptable*.

Table 4: Acceptable to Excellent Technology Skills

| Technology skills | Academic (Lecturing) |
|---|----------------------|
| Basic Computer Skills (e.g., document creation) | 88.33% |
| AI Skills | 64.83% |
| Using Canvas as Learning Management Systems | 77.33% |

For the purposes of this study, it was interesting to note that almost 5% of the respondents responded *neutral* to *strongly disagree* when asked whether STADIO should use technology for teaching and learning. Whilst initially surprising, this is not a unique view in higher education. Increasingly, the literature shows an anti-lobby group who similarly report that technology is not the panacea for effective teaching and learning and does not enhance or facilitate the teaching process (Hyndman, 2018; Berges-Puyo, 2024). Berges-Puyo (2024) summarizes the findings of several research papers and reports on the efficacy of technology in the classroom and it is still not possible to reach consensus.

In the open-ended section of the survey, respondents argued emphatically that:

- Technology has increased the workload.
- Technology has tripled the workload, not reduced it.

- There is much better attendance and a higher level of understanding content with face-to-face engagements, as well as more opportunity to build relationships with students.

Technology Expectations and Experiences – STADIO Systems and Platforms

Having ascertained respondents' more general views on technology for teaching and learning, the study focused specifically on the ease with which academic staff members could navigate the four key technology platforms adopted by the Institution. Regarding the learning management system (Canvas), 78.3% of respondents identified it as easy/very easy to use, with a further 20% describing it as “average”. Two (2) respondents stated that they experienced Canvas as *difficult* to use. The respondents' feedback on Turnitin was more disconcerting as faculty members are required to explain the use of Turnitin to students. Only 61.70% of staff indicated ease of use, 30.4% stated that usability was of average ease, and 3.5% described it as *difficult*. 4% of the academic staff respondents indicated they had never engaged with Turnitin. This may explain the ongoing appeal from sectors of the academic staff and academic management to continue allowing students to email assessments outside of the Turnitin system.

The third platform surveyed was the online library. Only 47% of the respondents confirmed that it was *easy* or *very easy*, 30% of staff described it as being of *average ease* to use, and 13% of the respondent sample stated that the online library was either *difficult* or *very difficult* to use. 10% of the respondents had never used online library resources for the purposes of teaching and learning. Finally, regarding online classes on MS Teams, 88% of the respondents found it *easy* or *very easy* to use for online teaching and learning, while 12% recorded ease of use as *average*. Overall, the mean rating for ease of use of Canvas, Turnitin, Online Library, and MS Teams for teaching and learning is set out below:

Table 5: *How easy is it to use the listed technologies (where 1 = Very Difficult and 5 = Very Easy)*

| STADIO technologies | Academic (Lecturing) |
|---------------------|----------------------|
| | Mean |
| Canvas | 4.20 |
| Turnitin | 3.93 |
| Online library | 3.60 |
| MS Teams | 4.37 |

This is a positive finding, especially regarding the learning management system (Canvas) and the use of MS Teams. The satisfaction with Canvas “*as a well-organised and easy to use system*” was iterated in the open-ended feedback. Other comments from respondents included, “Platforms like Canvas are reliable, fast, *and easy to navigate.*” However, different realities emerge when triangulating the information with other audit data and the student responses on their experience of technology in teaching and learning. In her paper, Singh (2024) highlights the following student responses:

“ The third area of major dissatisfaction with online learning [identified by students] was intrinsic to the Institution and specifically connected to how the teaching staff used the technology platforms for teaching and learning. ... students pointed out:

It is also obvious that lecturers have a hard time using it [Canvas] because nothing is in the same place and sometimes there are due dates for empty assessments. ... [T]his causes so much panic amongst students.

The lecturers themselves come off as if they don’t know how to use the platforms especially Canvas! It becomes difficult studying, dates and materials sometimes tend not to show, it’s all a mess and all confusing.

Based on this feedback received, it is apparent that staff development and capacity-building are needed to improve

online teaching and build an experience that focuses on enhancing the students' learning experience.

In the open-ended feedback section of the survey, several respondents indicated a need “*for regular staff training focused on online teaching for learning*” and “*to learn more about Canvas features to enhance online teaching and learning.*” Another respondent noted: *Recordings of how to operate and use Canvas should be provided instead of occasional workshops.* Against this backdrop, it was very interesting to find that only 60.10% of respondents were *mostly/completely satisfied* that online teaching provided a more engaged learning experience. 29.6% were *somewhat satisfied*, 8.7% were *somewhat dissatisfied*, and 2.6% were *mostly dissatisfied*. In the open-ended section of the survey, several respondents highlighted that students did not participate in the online classes because of data and device constraints – “*Not all students have the means to engage remotely.*” On the other hand, in the study by Singh (2024), students attributed limited engagement to the lecturers' ability to use the technology for online teaching effectively. Several students actively pointed out that:

“ lecturers in the online classes had their cameras turned off for the duration of the class; and/or appeared not to be cognisant of the time required for students to effectively engage with the information presented. Respondents shared:

Before you can type out your response, the lecturer has moved on.

[Online learning is] extremely disengaging, lecturers do not give you time to type out your response.

During online sessions, no time is allocated for student engagement and questions.

This is a material issue to clarify as research reveals a strong positive correlation between instructor clarity, student motivation, and academic performance (Bolkan et al, 2015).

In addition to the survey questions, respondents were also allowed to present open-ended feedback on significant areas of satisfaction and dissatisfaction with the online technology-led teaching and learning model at STADIO. One of the areas that emerged from the qualitative data was the concern with the quality of the teaching and learning content. Respondents commented:

“ *There is inconsistent instructional design of the learning materials and staff members responsible for converting content from analogue to digital make many mistakes.*

There has been insufficient instructional design/planning/training to make contact learning modules more effective in the online environment.

Premium services like Menti, Kahoot, and Powtoons are encouraged but STADIO does not provide paid subscriptions.

Respondents who were in favor of using technology in the classroom stressed, in the open-ended questions, that “technology is used to prepare students for the working environment. For that reason, and as STADIO focuses on 21st-century readiness, it is critical for all students.”

5. Conclusion and Recommendations

The results of the study and the literature highlight important challenges experienced by academics in utilising technology for teaching and, concomitantly, the impact on effective, student-centred technology-enabled teaching and learning. Both stress the critical quality and ethical need to develop academic staff competencies and capabilities as higher education institutions forge ahead with new systems and technology platforms. Some of the identified constraints are specific to the individual academic (such as technological competence and having the tools and infrastructure at home). In contrast, others may be linked to the institution (and include, for example, the absence of professional staff development opportunities).

The identified challenges highlight an ethical need for higher education institutions to provide ongoing professional development as part of any

transition to online learning. Addressing the problem requires a holistic solution, including fostering a culture of digital literacy and enhancing technical skills, but also more fundamental interventions, such as providing equitable access to technology for academic faculty and ensuring ongoing professional development that keeps pace with technological advancements. The ethical implications of transitioning teaching and learning online without adequate training are profound. HEIs must recognise the importance of investing in the professional development of faculty to ensure that they can provide high quality, equitable, and inclusive online education. Failing to do so not only compromise the learning experience for students but also undermines the professional integrity and well-being of staff as well as damaging their reputations. Acknowledging the ethical concerns and based on the challenges identified from the SV survey and the literature, as well as taking cognisance of recommendations from other similar surveys conducted, the following professional staff development model is proposed. It is premised on the principle that training interventions must be carefully structured and continuous. They must be contextually relevant and responsive to the academic's general and specific needs. They must be consulted with the academics to ensure buy-in for what is being offered. A professional staff development model that is focussed on developing digital competence and technological capabilities of academics while taking cognisance of the so-called soft factors must, however, also address the hard factors such as resources and the costs of data, and the governance/policy framework to support the uniform adoption of the new technologies and systems at the institution.

Step 1 was, therefore, the development of a Table highlighting relevant factors impacting the adoption of technology by academics.

TABLE 6: *Factors for a technology-supported teaching and learning environment in higher education*

| INDIVIDUAL | | INSTITUTIONAL |
|------------|-------------------|--------------------------------|
| Intrinsic | Extrinsic | |
| Attitude | High cost of data | Professional staff development |

| | | |
|--|---|--|
| Affordability of Resources/ Tools of the Trade | Poor bandwidth/ unstable connectivity | Provision of Resources/ Tools of the Trade |
| Fatigue | Loadshedding (unstable national electricity supply) | Change Management |
| Stress | | Policy Framework |
| | | Psychological Support |

Step 2 of the process would be compiling a comprehensive list of all factors pertinent to the institution. For each factor identified, it is crucial to specify (a) the necessary actions to be undertaken, (b) the designated individual or team responsible for executing these actions, and (c) the resources - whether personnel, financial, or technological - required to facilitate successful implementation. This systematic approach ensures clarity and accountability throughout the process, optimizing the institution's ability to address its specific needs effectively.

As higher education has adopted the mantra of *leave no student behind*, it is key that there is a concomitant understanding of *leave no academic behind*. Resolving the problem requires a holistic institutional solution, and professional staff development is a critical cog. Given the identified importance of a clear policy framework to guide the integration of 4IR technologies in a way that benefits all role players, the buy-in and support of management will be vital. In addition, where challenges of infrastructure and resources are identified, a significant increase in the investment in digital infrastructure and resourcing will be required, as well as strategic decisions on providing support to academics to alleviate the added financial burden linked to the technology-driven teaching engagements. This sets a fertile ground for staff development and more robust support systems, including psychological and emotional support to staff members frustrated by the new technologies. An effective professional development programme, especially one contextually designed for the institution's environment, will always include the diverse needs and circumstances of all staff members.

The Survey findings and the proposed staff development framework to support academic staff in their continued effective use of technology for

teaching and learning respond to the challenge raised by Rapanta et al (2020) for more reflection-in-action of online teaching and learning post the emergency of the COVID-19 pandemic. This study will add value for all higher education institutions, creating a lens through which existing practices may be evaluated and enhanced.

6. References

- Ajani, O. A. 2020. "Investigating the Quality and Nature of Teachers' Professional Development in South Africa and Nigeria". 18(2). *Gender & Behaviour*. 15813-15823.
- Ajani, O. A. 2021. "Teachers' Perspectives on Professional Development in South Africa and Nigeria: Towards an Andragogical Approach." 11(3). *Journal of Educational and Social Research*. 288-300. <https://doi.org/10.36941/jesr-2021-0070>.<https://doi.org/10.36941/jesr-2021-0070>.
- Albrahim, F.A. 2020. "Online Teaching Skills and Competencies". 19(1). *The Turkish Online Journal of Educational Technology*. 9-20.
- Aldosemani, T.I. 2020. "Towards Ethically Responsive Online Education: Variables and Strategies from Educators' Perspective." 9(1). *Journal of Education and Learning*. 79-84. <https://doi.org/10.5539/jel.v9n1p79>
- Anderson, B. & Simpson, M. 2007. "Ethical Issues in Online Education." 22(2). *The Journal of Open and Distance Learning*. 129-138. <https://doi.org/10.1080/02680510701306673>.
- Andrade, C. 2020. "The Limitations of Online Surveys." 42(6). *Indian Journal of Psychology and Medicine*. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7735245/>
- Australian Council for Educational Research (ACER). 2020. *Digital Literacy and the Role of Educators*. Online at <https://www.acer.org/au>.
- Barakabitze, A. A., William-Andey Lazaro, A., Ainea, N., Mkwizu, M. H., Maziku, H., Matofali, A. X., ... & Sanga, C. 2019. "Transforming African Education Systems in Science, Technology, Engineering, and Mathematics (STEM) using ICTs: Challenges and Opportunities". *Education Research International*. 1-29.

- Bates, T. 2019. *Teaching in a Digital Age: Guidelines for Designing Teaching and Learning*. ISBN: 978-0-9952692-0-0.
- Berges-Puyo, J.G. 2024. “The Use of Technology in Education”. 12(3). *International Journal of Research - GRANTHAALAYAH*, Volume 12, Issue 3, March 2024. 76-87. DOI: <https://doi.org/10.29121/granthaalayah.v12.i3.2024.5563>
- Bolkan, S., Goodboy, A., & Kelsey, D. 2015. “Instructor Clarity and Student Motivation: Academic Performance as a Product of Students’ Ability and Motivation to Process Instructional Material”. 65(2). *Communication Education*. 129-148. DOI: 10.1080/03634523.2015.1079329.
- Chawinga, W.C. 2017. “Taking Social Media to a University Classroom: Teaching and Learning using Twitter and Blogs”. 14(3). *International Journal of Educational Technology in Higher Education*. DOI 10.1186/s41239-017-0041-6.
- Chuvgunova, A. 2019. “ICT-Competence of University Lecturers: Diagnostics and Development published in Open Education”. 23(3). *Open Education*. 49-61. DOI:10.21686/1818-4243-2019-3-49-61
- Das, S. & Arundhathi Bai, C. 2024. «A Study on Digital Competency and Self Directed Learning Among Higher Education Teachers”. 11(7). *Journal of Emerging Technologies and Innovative Research*. Online at www.jetir.org. ISSN-2349-5162.
- Davis, F. D. 1989. “Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology”. 13(3). *MIS Quarterly*. 319-340.
- Dias-Trindade, S., Moreira, J. A., García Huertas, J. G., Garrido Pintado, P., & Mas Miguel, A. 2023. “Teachers’ Digital Competences in Higher Education in Portugal and Spain.” 15(4). *Contemporary Educational Technology*. <https://doi.org/10.30935/cedtech/13604>.
- Dube, B. 2020. “Rural Online Learning in the Context of COVID-19 in South Africa: Evoking an Inclusive Education Approach.” 10(2). *Multidisciplinary Journal of Educational Research*. 135-157.
- European Commission. 2021. *The Impact of Digital Technologies on Learning and Teaching in the EU*. Online at https://ec.europa.eu/info/publications/impact-digital-technologies-learning-and-teaching_en.

- From, J. 2017. *Pedagogical Digital Competence - Between Values, Knowledge and Skills*. Department of Education, Umea University, Umea, Sweden. <https://doi.org/10.5539/hes.v7n2p43>.
- Govender, S., Ajani, O. A., Ndaba, N. H., & Ngema, T. 2023. "Making In-service Professional Development Effective in a Rural Context: Enhancing Social Justice for Rural Teachers." 78-95. In *Contextualising Rural Education in South African Schools*. Brill, Netherlands <https://doi.org/10.46303/ressat.2023.4>.
- Hyndman, B. 2018. "Ten Reasons Teachers can Struggle to Use Technology in the Classroom." August 13. *The Conversation*. Online at <https://www.theconversation.com/ten-reasons-why-teachers-can-struggle-to-use-technology-in-the-classroom-101114>.
- Ifinedo, E., Rikala, J., & Hämäläinen, T. 2020. "Factors Affecting Nigerian Teacher Educators' Technology Integration: Considering Characteristics, Knowledge Constructs, ICT Practices, and Beliefs." 13. *Journal of Educational and Social Research*. 146.
- Käck, A. & Männikkö Barbutiu, S. 2019. "Self-Estimated Digital Competence: A Study within Swedish Teacher Education". *Contemporary Issues in Technology and Teacher Education*. Volume 19, Issue 2.
- Kotter, T., Wagner, J., Bruheim, L. & Voltmer, E. 2017. "Perceived Medical School Stress of Undergraduate Medical Students Predicts Academic Performance: An Observational Study. 17". *BMC Medical Education*. 256. <https://doi.org/10.1186/s12909-017-1091-0>.
- Lembani, R., Gunter, A., Breines, M., & Dalu, M. T. B. 2020. "The Same Course, Different Access: The Digital Divide Between Urban and Rural Distance Education Students in South Africa". 44(1). *Journal of Geography in Higher Education*. 70-84.
- Maisiri, W., Darwish, H., & Van Dyk, L. 2019. "An Investigation of Industry 4.0 Skills Requirements". 30(3). *South African Journal of Industrial Engineering*. 90-105.
- Makhananasa, J. L., & Sepeng, M. S. 2022. "Exploring Threats to Novice Teachers' Development in Selected Secondary Schools in South Africa." 21(12). *International Journal of Learning, Teaching and Educational Research*, Volume 21, Issue 12, on pages 259–271

- Mbodila, M., & Ndebele, C. (2021). “The impact of social networks on teaching and learning in South African universities.” *Journal of Educators Online*, 18(1), 1–20.
<https://files.eric.ed.gov/fulltext/EJ1363831.pdf>
- Mbodile, M. & Ndebele, C. 2022. *Journal of Educators Online*.
- Mertler, C. A. (2016). *Action research: Improving schools and empowering educators* (5th ed.). Sage Publications. ISBN 978-1506337708.
- Menkhoff, T., Chay, Y. W., Bengtsson, M L., Woodard, C. J., & Gan, B. (2014). “Incorporating microblogging (“tweeting”) in higher education: lessons learnt in a Knowledge Management Course”. *Computers in Human Behavior*. <http://www.sciencedirect.com/science/article/pii/S074756321400681>
- Mishra, P. & Koehler, M. J. 2006. „Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge”. 108(6). *Teachers College Record*. 1017-1054.
- Modise, E.P. 2023. “Online Learning Platforms Aren’t Enough – Lecturers Need the Right Technical Skills”. February 27. *The Conversation*. Online at <https://theconversation.com/online-learning-platforms-arent-enough-lecturers-need-the-right-technical-skills-199310>.
- Mohr, S.C. & Shelton, K. 2017. “Best Practices Framework for Online Faculty Professional Development: A Delphi Study”. 21(4). *Online Learning Journal*. 123-140.
- Mora-Cantallops, M., Inamorato Dos Santos, A., Villalonga-Gomez, C., Lacalle Remigo, J. R., Camarillo Casado, J., Sota Eguzabal, J. M., Velasco, J. R., & Ruiz Martinez, P. M. 2022. “The Digital Competence of Academics in Spain. A Study Based on the European Frameworks. Digital Competence Framework for Educators and Open Education Framework”. *Publications Office of the European Union*. <https://doi.org/10.2760/541915>
- Motala, S & Menon, K. (2020) “In Search of the ‘New Normal’: Reflections on Teaching and Learning During Covid-19 in a South African university.” *Southern African Review of Education*, 26(1). 80–99.
- Nwosu, L.I., Bereng, M. C., Segotso, T., & Enebe, N. B. 2023. “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". 8(1). *Research in Social Sciences and Technology*. 51-62.
- Oluwatoyin, A.J. & Govender, S. 2023. "Impact of ICT-Driven Teacher Professional Development for the Enhancement of Classroom Practices in South Africa: A Systematic Review of Literature". *Journal of Educational and Social Research*, Volume 13, Issue 5, on September 5, 2023.
- Rapanta, C., Botturi, L., & Goodyear, P. 2020. "Online University Teaching During and After the Covid-19 Crisis: Refocusing Teacher Presence and Learning Activity". 2. *Postdigital Science Education*. 923-945. <https://doi.org/10.1007/s42438-020-00155-y>.
- Rashid, T. & Asgar, H.M. 2016. *Technology Use, Self-Directed Learning, Student Engagement, and Academic Performance*. <https://doi.org/10.1016/j.chb.2016.05.084>.
- Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press: New York, NY.
- Singh, D. 2024. "Student Voices: Challenges and Preferences with Technology-Enabled Online Teaching and Learning in Higher Education." *Journal of Ethics in Higher Education*. (4), 27–59. <https://doi.org/10.26034/fr.jehe.2024.5961>
- International Society for Technology in Education (ISTE). (2020). *The future of education: Trends and challenges*. ISTE: Arlington, VA.
- Tus, J. 2020. "Academic Stress, Academic Motivation, and its Relationship to the Academic Performance of Senior High School Students". 8(11). *Asian Journal of Multidisciplinary Studies*. November. ISSN: 2321-8819 (Online).
- Venkatesh, V. & Bala, H. 2008. "Technology Acceptance Model 3 and A Research Agenda on Interventions." 54(1). *Management Science* 1-22. <https://doi.org/10.1287/mnsc.1070.0713>
- Venkatesh, V., Morris, M. G., Davis, G. B. & Davis, F.D. 2003. "User Acceptance of Information Technology: Toward a Unified View". 27(3). *Information Systems Research*. 425-478. <https://doi.org/10.1287/isre.27.3.425>
- Wangdi, T., Dhendup, S. & Gyelmo, T. 2023. "Factors Influencing Teachers' Intention to Use Technology: Role of TPACK and Facilitating Conditions."16(2). *International Journal of Instruction*. 1017-1036.

- Yesilyurt, E. & Celik, V. 2013. “Attitudes to Technology Perceived Computer Self-Efficacy and Computer Anxiety as Predictors of Computer-Supported Education.” 60. *Computers and Education*. 148-158.
- Zembylas, M. & Vrasidas, C. 2005. “Levinas and the “Inter-face”: The Ethical Challenge of Online Education.” 55(1). *Educational Theory*. 61-78. <https://doi.org/10.1111/j.1741-5446.2005.0005a.x>

7. Short biography

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Sheryll Kisten serves as the Head of Human Resources at STADIO Higher Education. At STADIO, she fosters initiatives such as staff wellness programs, leadership development, and technological upskilling, aligning her HR practices with the institution’s core values of service, integrity, quality, and people-centricity. Sheryll’s academic contributions include co-authoring a scholarly paper with Professor Divya Singh, STADIO’s Chief Academic Officer, on steering staff development in the 21st century and technological competences of academic staff as a critical driver of teaching and learning.