Journal of Infrastructure, Policy and Development 2025, 9(2), 11507.
https://doi.org/10.24294/jipd11507

Article

Online assessments and their impact on student's academic performance and learning outcomes: A case of South African University of Technology

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CITATION

Molokomme RT, Motebe MG. (2025). Online assessments and their impact on student's academic performance and learning outcomes: A case of South African University of Technology. Journal of Infrastructure, Policy and Development. 9(2): 11507. https://doi.org/10.24294/jipd11507

ARTICLE INFO

Received: 12 February 2025
Accepted: 5 March 2025
Available online: 21 March 2025

Abstract: This study explores the impact of online assessments on students' academic performance and learning outcomes at the University of Technology in South Africa. The research problem addresses the effectiveness and challenges of digital assessment platforms in higher education (HE), particularly their influence on student engagement, feedback quality, and academic integrity. A qualitative case study approach was employed, involving semi-structured interviews with ten undergraduate and postgraduate students from diverse academic backgrounds. The findings reveal that while online assessments provide flexibility and immediate feedback, they also pose challenges related to technical issues, feedback delays, and concerns about long-term knowledge retention. The study highlights the necessity of aligning assessment strategies with constructivist learning principles to enhance critical thinking and student-centered learning. Implications for theory include strengthening the application of constructivist learning in digital environments, while practical recommendations focus on improving assessment design, institutional support, and feedback mechanisms. Policy adjustments should consider inclusive and equitable access to online assessments. Future research should further investigate the long-term impact of digital assessments on professional readiness. This study contributes to ongoing discussions on online education by offering a nuanced understanding of digital assessment challenges and opportunities in higher education.

Keywords: online assessments; academic performance; learning outcomes feedback mechanisms; higher education; digital learning environments

1. Introduction

The shift towards online learning and assessments has been a defining transformation in higher education (HE) over the past decade, particularly accelerated by the COVID-19 pandemic. Online assessments have become a crucial element of modern pedagogy, reshaping how students engage with their coursework and how institutions evaluate academic performance. According to a report by the World Economic Forum (2020), digital learning and assessments can enhance student engagement and broaden access to education. However, this transition also raises critical questions about the effectiveness of online assessments in fostering knowledge retention, skill development, and overall academic success (Montenegro-Rueda et al., 2021). Additionally, Molokomme's (2024) research uncovered that while online assessments are becoming increasingly prevalent, there is ongoing debate about whether they genuinely enhance student learning or simply act as a substitute for traditional evaluation methods.

Higher education institutions (HEIs) worldwide have increasingly integrated

online assessments due to their flexibility and efficiency in evaluating students' understanding (Barua et al., 2025). In South Africa, online assessments have gained traction as institutions strive to align with global trends in digital education. Karunarathna et al. (2024) highlight that these assessments, typically administered through learning management systems, are available in various formats, including multiple-choice quizzes, essay-based questions, and practical simulations. However, while this digital approach presents numerous advantages, including immediate feedback and personalized learning pathways. This also poses significant challenges related to digital access, academic integrity, and student engagement (Rana, 2024; Sato et al., 2023).

A growing body of research has explored the impact of online assessments on students' academic performance. Barua et al. (2025), indicate that students generally appreciate the flexibility of online assessments and the prompt feedback they receive, which enhances their ability to track progress and improve learning strategies. However, some studies suggest that online assessments may not fully capture students' critical thinking skills or practical competencies, particularly in disciplines that require hands-on training (Fitrianto 2024; Molokomme, 2024). Moreover, Schmidt and DeSchryver (2022) posit that students' comfort with online assessments varies based on their digital literacy, access to stable internet, and familiarity with online assessment platforms. Thus, this raises concerns about whether online assessments are equitable and whether they provide a reliable measure of students' academic abilities.

Furthermore, despite the increasing adoption of online assessments, certain gaps remain in the literature regarding their effectiveness in enhancing students' knowledge retention and skill development. While some scholars argue that digital assessment formats promote active learning and self-discipline (Molokomme, 2024; Solovyeva et al., 2023). Others contend that they may reduce deep learning due to overreliance on open-book formats and limited interaction with lecturers (Fitrianto, 2024; Molokomme, 2024). Moreover, many existing studies touched on online assessments in developed countries, where students typically have stable digital access and institutional support (Tuah et al., 2021). The unique challenges faced by students at the South African University of Technology (UoT), particularly those from underprivileged backgrounds, are often overlooked.

Therefore, this study aims to address these gaps by examining the impact of online assessments on students' academic performance and learning outcomes at a South African UoT. It seeks to determine whether online assessments enhance learning effectiveness, provide a reliable measure of students' abilities, and promote equitable academic evaluation. By investigating these aspects, the study provides valuable insights into the effectiveness of online assessments in fostering knowledge retention and skill development, while also identifying potential areas for improvement in digital assessment strategies. Through this research, HEIs can draw from this study and develop more inclusive and effective online assessment policies that enhance student success and engagement in digital learning environments.

2. Literature review

2.1. Student satisfaction with feedback mechanisms

Feedback during and after online assessments plays a crucial role in shaping students' learning experiences and academic performance. Research highlights that timely and specific feedback enhances student engagement, motivation, and understanding of the subject material (Chen et al., 2021 Zhu et al., 2020). Irons et al. 2021 and Warfvinge et al. (2022) stress that immediate feedback allows students to reflect on their performance, identify areas for improvement, and reinforce their learning. Conversely, delayed or generic feedback may fail to provide sufficient guidance, leading to frustration and disengagement (Pishchukhina et al., 2021; Şenel et al., 2021).

The nature of feedback, whether formative or summative, further influences students' perceptions and learning outcomes (Brnieh, 2022). Formative feedback, which supports ongoing learning and improvement, is generally well-received as it provides students with the opportunity to self-assess and refine their understanding. In contrast, summative feedback, which focuses on final grades and evaluation, may be perceived as less useful for continuous learning (Morris et al., 2021). As such, incorporating formative feedback strategies in online assessments can contribute to a more supportive and student-centered learning environment (Kelly et al., 2023). Moreover, effective feedback should be personalized, acknowledging individual efforts to foster a sense of motivation and ownership in students (Rababah et al., 2023).

Beyond performance enhancement, feedback serves as a dynamic and formative element of the learning process (Panadero et al., 2022). Constructive and well-structured feedback encourages self-reflection and deeper comprehension of academic content. It also supports student autonomy, critical thinking, and long-term retention of knowledge (Caulfield, 2023). Therefore, the integration of well-designed feedback mechanisms in online assessments is essential for optimizing student learning experiences.

2.2. Impact of assessment format on student engagement

The format of online assessments significantly affects student engagement, motivation, and overall learning experiences (Ferrer et al., 2022). Different assessment formats, such as quizzes, assignments, and exams, elicit varying responses from students based on their preferences and learning styles.

Quizzes, characterized by short and focused questions, promote continuous learning by encouraging regular interaction with course content (Raes et al., 2020). The incorporation of gamification elements and immediate feedback in quizzes enhances motivation and engagement (Zainuddin et al., 2020). Singh et al. (2022) argue that the repetitive nature of quizzes fosters a sense of accomplishment, further reinforcing student motivation.

Assignments, in contrast, require deeper engagement with course material, promoting research, critical thinking, and creativity (Curtin et al., 2021). While they allow for greater personalization and ownership of learning, the extended time commitment and complexity can also impact motivation. Therefore, ensuring clear

guidelines and constructive feedback in assignments is crucial for maintaining student interest and motivation (Hill et al., 2021).

Examinations, as a traditional form of assessment, test students' comprehensive knowledge within a structured and time-constrained environment (Asad et al., 2021). While some students thrive under the pressure of exams, others may experience high levels of stress, which can negatively impact performance and motivation (Abdullah et al., 2024). Employing a variety of assessment formats can accommodate diverse learning preferences and enhance inclusivity in online education.

2.3. Students' comfort and engagement with online assessment practices

Cultural diversity significantly influences students' engagement and comfort with online assessments (Vahed et al., 2021). Different cultures have varying communication styles, learning preferences, and interpretations of assessment materials (Prihatin et al., 2020). For instance, while some students prefer explicit and direct instructions, others may be more accustomed to indirect or contextual communication. Lecturers must recognize these differences to ensure clarity and accessibility in online assessment materials.

Additionally, cultural factors shape students' approaches to learning. Some cultures emphasize collaborative learning, whereas others prioritize individual academic achievements (El-Sabagh, 2021). Online assessments that incorporate diverse formats can accommodate these preferences, fostering a more inclusive educational environment (Hutchison et al., 2020). Moreover, integrating culturally relevant examples in assessment tasks enhances students' connection to the material, making learning more meaningful and engaging (Barik, 2023).

Thus, recognizing and embracing cultural diversity in online assessments is essential for fostering equity and inclusivity. By incorporating flexible and culturally responsive assessment strategies, lecturers can create a more supportive and engaging learning experience for all students, ultimately contributing to improved academic performance and learning outcomes (Molokomme, 2024).

2.4. Theoretical underpinnings

Constructivist Learning Theory, primarily developed by Swiss psychologist Jean Piaget, posits that learners actively construct knowledge through experiences and interactions, rather than passively absorbing information (Buehrer, 2000). Piaget (1978) emphasizes the significance of active engagement and discovery in the learning process, suggesting that individuals build understanding by integrating new information with their existing cognitive frameworks. This theory highlights the importance of interaction, feedback, and self-regulation, aligning closely with the dynamics of online assessments (Brown and Desforges, 2013). In the context of HE, particularly within South African UoTs, online assessments offer platforms for students to engage with digital content, receive immediate feedback, and iteratively refine their understanding, thereby facilitating deeper learning and improved academic performance.

Recent South African scholars have explored the application of constructivist principles in various educational settings. For instance, Ndlovu (2010) revisited the

efficacy of constructivism in mathematics education, highlighting the role of learners in constructing and reconstructing knowledge through active engagement. Similarly, Naidoo and Mabaso (2020) confirm that social constructivist methods, which focus on teamwork and collaborative learning, are being adopted in the teaching and learning process. Therefore, these studies suggest that when online assessments are designed to promote critical thinking, problem-solving, and self-reflection core belief of a constructivist theory they can enhance skill development and knowledge retention. By aligning online assessment strategies with constructivist principles, educational institutions can develop more inclusive and effective assessment policies that foster student success and engagement in digital learning environments (Molokomme, 2024).

3. Research methodology

This study employed a qualitative research approach within a constructivist paradigm to explore students' experiences and perceptions of online assessments at a UoT in South Africa. A qualitative approach was chosen as it allows for a deep exploration of participants' lived experiences and the meanings they attach to online assessments (Creswell and Poth, 2016). The constructivist paradigm was appropriate as it acknowledges the subjective nature of knowledge and emphasizes understanding individuals' perspectives within their specific contexts (Guba, 1994). A case study design was selected because it facilitates an in-depth, contextual analysis of a particular phenomenon within its real-life setting (Yin, 2018). This design enabled a thorough investigation of the challenges and benefits associated with online assessments in a specific institutional setting.

The target population included undergraduate and postgraduate students, ensuring a diverse representation of experiences across academic levels. A purposive sampling technique was used to select ten participants until data saturation was achieved (five undergraduates and five postgraduates) to capture varied perspectives on online assessments (Cresswell and Poth, 2018). Had data saturation not been reached the researcher would have persisted in collecting data from participants until data saturation was fully established. Purposive sampling was appropriate as it enabled the selection of information-rich cases relevant to the study's objectives (Nyimbili and Nyimbili, 2024). Semi-structured interviews served as the primary data collection method, allowing for flexibility while ensuring key research themes were addressed. This approach facilitated deeper insights into students' perceptions while enabling follow-up questions to clarify responses (Lauterbach, 2018). Data were collected over one month, with informed consent obtained before face-to-face interviews, which were recorded and transcribed to maintain accuracy.

Thematic analysis was conducted to identify patterns and themes related to accessibility, usability, feedback quality, and equity in online assessments This method was suitable as it provided a structured yet flexible approach to analysing qualitative data (Braun et al., 2016). To ensure trustworthiness, credibility was maintained through member checking, dependability through detailed documentation of research procedures, and transferability through thick descriptions of the study context (Schwandt et al., 2007). Ethical considerations included obtaining prior ethical

approval, ensuring confidentiality through pseudonyms, and securely storing data to protect participants' privacy. The study adhered to all ethical standards of research since ethical clearance was obtained from a UoT as well as the Gatekeeper letter which provided permission for researchers to conduct this study in the UoT. This was to ensure that participants' rights were safeguarded and allow them the option to withdraw at any stage.

However, it should be noted that the study's rigorous methodological approach had certain limitations. Potential biases, such as interviewer self-selection bias, may have affected the findings. The presence of the researcher during interviews could have inadvertently shaped participants' responses, while self-selection bias may have resulted in the participation of students with particularly strong opinions on online assessments. Additionally, the sample size was limited to ten participants, which, while sufficient for achieving data saturation, may not fully capture the diversity of experiences across a broader student population. Furthermore, future studies could address these limitations by incorporating a larger sample size of thirty or more participants or employing a mixed-methods approach. This would allow for both in-depth qualitative insights and broader quantitative validation, enhancing the generalizability and reliability of the findings.

4. Findings and discussions

This chapter presents the findings of a study on the impact of online assessments on students at a UoT in South Africa. The main research question for this study is: What is the impact of online assessments on students' academic performance and their learning outcomes at the UoT in South Africa?

The transition to online learning and assessment has brought about significant changes in the academic landscape, affecting students' academic performance and learning outcomes in various ways. Through thematic analysis of interview transcripts with students, key insights into their experiences, challenges, and perceptions of online assessments were identified.

Table 1 below provides an overview of the demographic characteristics of the ten participants interviewed for this study. The demographic profile of the participants reflects a diverse group of undergraduate and postgraduate students, varying in age, year of study, mode of study, internet access, and living arrangements. The sample consists of both full-time and part-time students, with most undergraduates in their second to fourth year, while postgraduates range from the fifth to the seventh year of study. Internet accessibility varies, with some students experiencing poor connectivity, particularly those residing on-campus, whereas those living off-campus generally report moderate to good internet access. The majority of participants are full-time students, but a few postgraduates are enrolled part-time, which may impact their engagement with online assessments. Additionally, the highest qualification attained ranges from Grade 12 (Matric) to a Master's degree, further contributing to the diversity of academic backgrounds. This demographic variation provides valuable insights into how different student experiences and circumstances influence their perceptions of online assessments.

Table 1. The demographic information of participants.

ID	Age	Gender	Year of study	Mode of study	Internet (Poor, moderate, good or excellent)	Living arrangements (Off-campus/on-campus)	Highest qualification
PS1	18–25	Female	5th	Full-time	Poor	On-campus	Postgraduate
US2	26–30	Male	3rd	Full-time	Poor	On-campus	Diploma
PS3	26–30	Female	6th	Full-time	Moderate	On-campus	Postgraduate
US4	35+	Male	4th	Full-time	Good	Off-campus	Advanced diploma
US5	26–30	Male	4th	Full-time	Moderate	Off-campus	Advanced diploma
US6	26–30	Male	3rd	Full-time	Poor	On-campus	Diploma
PS7	18–25	Female	5th	Full-time	Good	Off-campus	Postgraduate
US8	18–25	Female	2nd	Full-time	Poor	On-campus	Grade 12 (matric)
PS9	18–25	Male	6th	Part-time	Good	Off-campus	Postgraduate
PS10	26–30	Female	7th	Part-time	Good	Off-campus	Master degree

Key: US = Undergraduate student; PS = Postgraduate student.

The qualitative analysis of the interviews conducted with students from a UoT in South Africa reveals several critical themes regarding the impact of online assessments on academic performance and learning outcomes. Each theme highlights specific concerns, challenges, and opportunities expressed by the participants, offering valuable insights into their experiences within online learning environments. To interpret these insights, the data was analysed using the narrative analyzed method.

Time constraints and technical disruptions: Both undergraduates and postgraduate students identified several factors affecting academic performance due to online assessments. One of the recurring themes was the challenge posed by time constraints and technical disruptions. For example, PS4 highlighted that, "*The time allocated for assessments was often insufficient, especially when students needed to refer to course materials*". Similarly, US5 mentioned that, "*A lack of preparation led to difficulties in retaining information long-term*". These findings align with Curelaru et al. (2022), who observed that unreliable technology and limited time allocation negatively impact student performance. Additionally, PS5 warned that, "*Online assessments provide short-term convenience but may not support long-term knowledge retention*", echoing Nambiar's (2020) concerns regarding disrupted study routines due to shifts in digital assessment modes.

While online assessments offer flexibility, disparities in access to stable internet connections and reliable devices create unequal academic outcomes (Bozkurt et al., 2020). This confirms that digital inequalities remain a barrier to effective online learning, supporting the broader discourse on digital access and equity in South African higher education.

The findings are also consistent with constructivist learning theory, which emphasizes active engagement, self-regulation, and iterative knowledge construction (Piaget, 1978). The challenges identified by students, such as insufficient time for assessments and unstable digital infrastructure, hinder their ability to interact meaningfully with course material, disrupting the learning process. Curelaru et al.

(2022) posit that unreliable technology and limited time allocation negatively impact student performance, reinforcing Piaget's (1978) argument that effective learning requires a stable and supportive environment. Additionally, the disparities in digital access highlighted by Bozkurt et al. (2020) suggest that students facing technological barriers struggle to engage in self-directed learning, which is a core tenet of constructivist education. While online assessments have the potential to promote deeper learning through interactive and reflective engagement (Brown and Desforges, 2013), their effectiveness depends on equitable access and well-structured assessment designs. Therefore, aligning online assessment strategies with constructivist principles such as providing sufficient time, integrating problem-solving tasks, and ensuring reliable digital access can enhance knowledge retention and academic success. Future assessment policies should incorporate these elements to create a more inclusive and effective learning environment in South African HE (Molokomme, 2024).

Effectiveness in learning outcomes: Students expressed mixed perceptions regarding the effectiveness of online assessments in enhancing learning. PS1 emphasized that, "*Continuous engagement with digital assessments, such as quizzes and recorded lectures, promotes deeper learning*". This aligns with Villarroel et al. (2020), who advocate for authentic assessments that mimic real-world challenges to encourage practical knowledge application.

However, US2 criticised multiple-choice and true/false questions, stating that, "*Such formats do not foster critical thinking*". This is supported by Kim et al. (2020), who argue that passive assessment formats fail to develop higher-order cognitive skills. PS3 pointed out that, "*Well-structured online assessments, combined with accessible resources and prompt feedback, can enhance learning outcomes*". This resonates with Zhu et al. (2020), who stress that meaningful digital assessments must be accompanied by timely feedback to improve academic performance.

Other participants shared varied experiences regarding the effectiveness of online assessments. PS2 noted that, "*Open-book online assessments encouraged resourcefulness but sometimes led to over-reliance on materials rather than critical thinking.*" Similarly, US3 highlighted that, "*group-based assessments improved collaboration, but unequal participation among students was a challenge.*" Meanwhile, PS4 emphasized the value of timely feedback, stating that, "*Detailed feedback helped clarify misconceptions and guided future learning.*" These insights reinforce the importance of assessment design in shaping learning outcomes, aligning with the constructivist perspective that emphasizes active engagement, collaboration, and meaningful feedback in the learning process.

These insights align with constructivist learning theory (Piaget, 1978). Constructivism suggests that assessments should not only test knowledge but also encourage critical thinking and problem-solving (Brown and Desforges, 2013). Thus, incorporating interactive assessments, structured peer collaboration, and timely feedback can enhance digital learning experiences, reinforcing constructivist principles in online education (Molokomme, 2024).

Feedback and grading processes: Participants acknowledged that online assessments often provide immediate feedback, which helps them identify mistakes quickly. US4 noted that, "*While automated grading systems offer rapid responses, many assessments lack rubrics, making it difficult for students to understand grading*

criteria". This finding is consistent with Warfvinge et al. (2022), who state that structured rubrics are essential for transparent grading.

PS2 expressed frustration over rigid grading systems, stating that, "*Answers not perfectly aligned with expected responses are marked incorrect without opportunities for review*". This critique aligns with Pishchukhina et al. (2021), who highlight the need for formative feedback mechanisms that allow students to discuss their responses with instructors. US5 emphasized that, "*Delayed feedback hinders learning progress*", reinforcing studies by Kelly et al. (2023) and LaDonna et al. (2023), which suggest that prompt feedback enhances motivation and engagement in digital learning environments.

Digital divide and accessibility challenges: The findings from students also revealed significant disparities in access to stable internet, with some participants experiencing persistent connectivity issues. Students living on-campus in particular, reported mentioned issues around connectivity. PS1 states that theirs "*poor and unreliable internet access, making it difficult to complete assessments on time.*" US2 shared that, "*Sometimes I have to leave my room and go sit near the administration block just to get a stable connection to submit my work.*" In contrast, PS7 living off-campus indicates, "*moderate to good internet connectivity*", which allowed them to participate more effectively in online learning. These findings align with existing literature that highlights the digital divide in HE, where students from different socio-economic backgrounds experience unequal access to digital resources (Czerniewicz et al., 2020). However, while previous studies suggest that universities provide sufficient on-campus connectivity (Ngubane-Mokiwa, 2021), the findings challenge this notion, indicating persistent accessibility gaps.

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The findings of this study do align with Constructivist Learning Theory, which emphasizes active knowledge construction through experience, interaction, and reflection (Buehrer, 2000; Piaget, 1978). The challenges identified, such as time constraints, technical disruptions, and digital inequalities, highlight how students navigate and construct understanding within online assessment environments. While online assessments provide flexibility, disparities in internet access and reliable devices create unequal academic experiences, reinforcing the digital divide in South African HE (Czerniewicz et al., 2020). The mixed perceptions on the effectiveness of

online assessments further demonstrate the constructivist principle that learning is shaped by engagement with meaningful tasks and feedback. While some students found digital assessments beneficial for continuous engagement, others criticized passive formats like multiple-choice questions for failing to foster critical thinking. This supports the argument that assessments should encourage problem-solving and self-reflection to enhance skill development (Naidoo and Mabaso, 2020). Moreover, the role of feedback in shaping learning aligns with constructivist views that emphasize iterative learning and knowledge refinement through interaction with digital content and timely responses from instructors (Brown and Desforges, 2013). The absence of structured rubrics and rigid grading systems undermines this process, as students struggle to understand evaluation criteria, limiting opportunities for self-regulated learning.

Additionally, the study highlights how part-time students face greater challenges in balancing academic and professional responsibilities, affecting their ability to fully engage with online assessments. While constructivist theory suggests that learning should be flexible and adaptive to different contexts, the findings indicate that technical barriers and limited institutional support hinder the realization of this flexibility (Moore et al., 2018). This suggests that online assessments must be designed to accommodate diverse learning needs, promoting inclusivity and equitable participation. Furthermore, constructivist principles emphasize collaborative and social learning experiences, yet the study reveals that online assessments often lack interactive components, reducing opportunities for peer learning and engagement. The findings challenge the assumption that digital learning inherently supports constructivist principles unless properly structured to promote higher-order thinking and meaningful knowledge application (Ndlovu, 2010). Therefore, integrating constructivist approaches into online assessments requires not only the inclusion of interactive and problem-solving elements but also addressing systemic issues such as digital accessibility and institutional support, ensuring that all students can effectively engage with and benefit from digital learning environments.

5. Conclusion

This study examined the impact of online assessments on students' academic performance and learning experiences at a South African UoT. The findings underscore the dual nature of online assessments: while they offer benefits such as accessibility, flexibility, and instant feedback, they also present challenges related to technical issues, feedback quality, and knowledge retention. The study reaffirms that the constructivist learning theory provides a valuable framework for understanding how students engage with online assessments, highlighting the need for interaction, self-regulation, and critical thinking.

This study also revealed that digital assessments influence students' academic success in complex ways. A comprehensive analysis of student experiences met the study's purpose of evaluating the effectiveness and challenges of online assessments. A key synthesis of the findings suggests that well-structured online assessments, supported by timely and constructive feedback, can enhance learning outcomes, whereas poorly designed assessments may hinder deeper engagement with course

materials.

For theoretical contributions, the study reinforces the relevance of constructivist principles in digital learning contexts. Practical recommendations include integrating diverse assessment formats, enhancing digital literacy training for students and educators, and improving feedback mechanisms. Policy implications emphasize the need for equitable access to reliable technology and the development of inclusive digital assessment policies.

Additionally, the researcher recommends the integration of diverse assessment formats that cater to different learning styles, ensuring a more comprehensive evaluation of student performance. Enhancing digital literacy training for both students and educators equips them with the necessary skills to navigate online assessments effectively. Improving feedback mechanisms can be crucial, as timely and constructive feedback enhances student engagement and learning outcomes. Furthermore, policy adjustments should focus on ensuring equitable access to reliable technology, addressing digital disparities to create an inclusive learning environment. Lastly, the development of clear and inclusive digital assessment policies is essential to promoting academic integrity while accommodating diverse student needs.

Future research can explore the long-term effects of online assessments on students' professional competencies and knowledge retention beyond academic settings. A major contribution of this study is its nuanced understanding of how students navigate digital assessments, offering insights for universities to refine their assessment strategies. Limitations included a small sample size and the focus on a single institution, necessitating broader studies for more generalisable findings. Ultimately, while online assessments are shaping the future of HE, their effectiveness depends on intentional design, institutional support, and a commitment to fostering meaningful learning experiences.

Author contributions: Conceptualization, RTM and MGM; methodology, RTM; software, RTM; validation, RTM and MGM; formal analysis, RTM and MGM; investigation, RTM; resources, RTM; data curation, RTM; writing—original draft preparation, RTM; writing—review and editing, RTM; visualization, RTM; supervision, RTM; project administration, RTM; funding acquisition, MGM. All authors have read and agreed to the published version of the manuscript.

Conflict of interest: The authors declare no conflict of interest.

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