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Potential Benefits of Integrating Teaching and Learning Technologies into Higher Education Pedagogies: A Scoping Review

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Abstract

The integration of digital technologies into higher education has gained momentum due to global shifts in pedagogy and learning environments. Understanding the benefits of this integration is essential for informing institutional strategies and enhancing teaching practices. This scoping review aims to identify and synthesise the potential benefits of teaching and learning technologies within higher education contexts. Guided by Arksey and O'Malley's (2005) framework, a systematic search of literature published between 2018 and 2023 was conducted across ten peer-reviewed journals. Thematic analysis, following Braun and Clarke's (2006) approach, was employed to extract and categorise key findings. Nineteen studies met the predefined inclusion criteria. Five key benefits were identified: (1) unrestricted access to educational materials; (2) increased student engagement and promotion of active learning; (3) enhanced student learning and improved academic success; (4) improved communication through collaborative learning; and (5) enhanced quality of teaching and learning. The review highlights the significant potential impact of digital technologies in higher education, while also emphasising the need for a more comprehensive theoretical engagement and broader literature coverage. Noted limitations include the scope of journal selection and reporting focus. These findings offer valuable insights for informing future pedagogical strategies and guiding further research.

Keywords: benefits, higher education, pedagogies, scoping review, teaching and learning, technologies

Introduction

The use of digital tools and technologies in teaching and learning has been on the rise in higher education globally, amidst pressures exacerbated by various factors such as the Fourth Industrial Revolution, the worldwide call to transform higher education spaces, and most recently, the onset of the COVID-19 pandemic, which prompted most universities across the globe to transition to emergency remote teaching and learning (ECLAC-UNESCO 2020). Institutions of higher learning were rapidly urged to respond to the call to invest in the use of these technologies, to produce digitally fluent graduates equipped to thrive in a technology-driven economy and address evolving challenges (Fleming et al. 2021) such as digital equity and global competitiveness. Traditionally, most institutions of higher learning across the globe had already adopted and started implementing blended learning approaches to teaching and learning due to the important role that technology plays in education. Blended learning has thus evolved into an approach that integrates the benefits of face-to-face interaction with the flexibility of technology-mediated instruction (Sharma et al. 2020). Pinto and Leite (2020) posit that, at the centre of transforming higher education teaching and learning through applying digital technologies, are a wide range of technologies that can be used. These technologies, according to Oke and Fernandes (2020), include but are not limited to internet-based digital technologies that have the potential of enhancing and supporting the learning process for students, and teaching strategies for educators.

According to Jensen, Price and Roxå (2020), this global transition to delivering teaching and learning using virtual platforms not only presents a significant change in teaching and learning approaches but also challenges instructors

to tap into and maximise the potential benefits presented by digital technologies. Pinto and Leite (2020) state that one of the benefits of the integration of digital technologies into higher education pedagogies is that it allows students to make their voices heard by creating a social platform that enables sharing and interaction. While existing literature frequently emphasises the challenges associated with technology integration, there is a need for a more systematic exploration of the positive impacts and pedagogical value of specific teaching and learning technologies. Focusing on the benefits not only highlights effective practices but also offers insights into how digital tools can enhance student engagement, collaboration, and learning outcomes. Consequently, this study aimed to explore the potential benefits of integrating teaching and learning technologies into higher education pedagogies through a scoping review guided by Arksey and O'Malley's framework. This review is guided by two of the four common reasons why scoping reviews should be conducted, that is, "to summarise and disseminate research findings and to identify potential research gaps within the existing literature" (Arksey & O'Malley 2005, 21).

Research problem

Despite the rapid proliferation of digital technologies in higher education pedagogies, there remains a lack of consolidated evidence on which teaching and learning technologies are most commonly used and how they contribute to pedagogical outcomes. The diversity of available tools creates an uneven understanding of their application and effectiveness in different educational contexts. While individual studies have explored the integration of specific technologies, few have comprehensively mapped their pedagogical benefits. Thus, to address this gap, this scoping review aims firstly, to provide context by identifying the teaching and learning technologies commonly used in the selected studies, due to the vast number of digital technologies available, and secondly, to outline the potential benefits of integrating teaching and learning technologies into higher education pedagogies. The approach taken in this scoping review focuses on research findings and draws conclusions from extant literature related to the topic. This scoping review further seeks to contribute to existing knowledge and provide valuable insights into the dynamics of pedagogies and the use of digital technologies in the transformation of higher education pedagogy.

Rationale

The rapid evolution of digital technologies has significantly transformed teaching and learning practices in higher education. As institutions increasingly integrate tools such as Learning Management Systems (LMSs) and other collaborative platforms into pedagogical design, there is a growing need to understand their potential benefits for learners, educators, and institutions. However, existing research on teaching and learning technologies is fragmented across disciplines, contexts, and theoretical frameworks, making it challenging to fully comprehend their pedagogical value and impact. A scoping review is therefore appropriate to systematically map the scope of available evidence on the potential benefits of integrating these technologies into higher education pedagogy. This approach allows for the identification of key themes, gaps, and emerging trends in the literature, providing a foundation for informed decision-making, policy development, and future empirical research. By synthesising diverse findings, the review can clarify how technological integration supports pedagogical innovation, enhances student engagement, and aligns with evolving educational theories and practices in the digital age.

Theoretical underpinnings

The advent of digital technologies in higher education teaching and learning has necessitated the need to critically examine how learning occurs through the lens of an appropriate theory that considers technological factors. To fully understand the potential benefits of integrating teaching and learning technologies into higher education pedagogies, it is important to foreground this review with a theory that provides guidelines and explanations for behaviour that influences the learning process in the digital era. Consequently, this scoping review is underpinned by Siemens' (2005) connectivism as the underlying theoretical framework, which provides

a relevant theoretical lens for understanding how digital technologies support learning in higher education. Connectivism views knowledge as distributed across networks and recognises technology as central to the learning process (Siemens 2005). Often described as "a learning theory for the digital age" (Siemens 2005), it posits that learning should encourage autonomy and allow students to learn and build communities through digital networks. Connectivism further highlights the importance of technology in fostering a learning environment that is engaging, interactive, and self-directed. Its emphasis on learning as a process of connecting information sources, people, and digital tools aligns with the scope and purpose of this review.

Additionally, this theoretical lens supports the exploration of how digital tools can reshape teaching methods to better align with how students learn in technology-rich environments. Therefore, it is suitable for this review because it acknowledges the important role of digital technologies in enabling networked learning and in creating opportunities for personalised and self-directed learning. While this theory has been widely used to underpin learning in the digital era in various studies, it has also been criticised for simply combining views of a myriad other learning theories (Corbett & Spinello 2020), as well as how it assumes that there is always access to and competence with the use of digital tools and technologies. However, the theory was developed to explain learning in digital and networked contexts, and thus, it remains relevant to be applied in this review of technology integration into higher education pedagogies for the purpose of reshaping knowledge acquisition, collaboration, and lifelong learning in the 21st century.

Methods

This scoping review was guided by Arksey and O'Malley's framework, which provides a narration or description of published work (Arksey & O'Malley 2005). A scoping review was deemed appropriate due to the broad and exploratory nature of the research questions. Unlike systematic reviews, which are typically used to assess the effectiveness of specific interventions, scoping reviews are designed to map key concepts, identify the types of available evidence, and highlight gaps in the literature (Arksey & O'Malley 2005). The scoping review framework proposes the five stages of "1) identifying the research question; 2) identifying relevant studies; 3) study selection; 4) charting the data; and 5) collating, summarising and reporting the results" (Arksey & O'Malley 2005, 22). These stages were applied as follows in this study:

Research questions

The review was guided by the following two research questions:

i) Which teaching and learning technologies are used in the selected studies?

ii) What are the potential benefits of integrating teaching and learning technologies into higher education pedagogies?

The main purpose of the first question was to provide background and context on the type of teaching and learning tools used in the selected studies. The second question was aimed at identifying the possible benefits of integrating digital technologies into pedagogies used in higher education, with the purpose of contributing to existing literature.

Identifying studies

To identify relevant studies for inclusion in this review, Education Full-Text Finder EBSCOhost was utilised to search various databases, including Academic Search Premier, JSTOR, Taylor & Francis, and ERIC, for articles that address and answer the two research questions. The EBSCOhost database was selected because it provides access to full-text journals that focus on higher education studies. Due to the nature of this scoping review, the search was limited to ten specific academic journals that are within the scope of higher education, namely:

- *Journal of Higher Education*
- *Journal of Higher Education Research and Development*
- *Studies in Higher Education*
- *Innovations in Education and Teaching International*
- *Journal of Higher Education in Africa*

- *Journal of Teaching in Higher Education*
- *South African Journal of Higher Education*
- *Research in Higher Education*
- *Transformation in Higher Education*
- *Praxis in Higher Education*

The decision to include articles from only the ten above-mentioned journals represents a limitation regarding the comprehensiveness of the review. While confining the review to a specific, defined set of journals may lead to the exclusion of relevant studies published elsewhere, these journals were carefully chosen to balance the breadth and depth of the review, especially given the rapid expansion of research in this field. As a result, the findings may not entirely reflect the full spectrum of evidence concerning the integration of teaching and learning technologies in higher education pedagogy, a limitation that is acknowledged. Additionally, this approach was adopted to ensure a manageable scope for analysis while maintaining methodological rigour by concentrating on a limited number of sources. Acknowledging this limitation is crucial for transparency and helps contextualise the findings and conclusions, which should be viewed as indicative of trends within the selected journals rather than the entire body of literature.

Search strategy

A university librarian was consulted for guidance on structuring the online search strategy. Specific key search terms were determined based on the two main research questions that guided the review. Additionally, detailed Boolean search keywords and terms (see Table 1) were utilised to find journal articles related to the topic, with an advanced search publication date restriction of the term between 2018 and 2023. This date restriction was particularly relevant for this study due to the rapid advancement of research in the field of technology.

Selection of studies

The selection of articles from the ten journals yielded the results stated in Table 3. The initial search generated a total of 128 articles. To identify relevant studies, the articles were screened by checking the titles and reading the abstracts and results sections. Consequently, a total of 109 articles were eliminated since they were found not applicable to this study as they did not focus on the potential benefits of integrating digital technologies into higher education pedagogies. As a result, a final total of 19 articles (see Table 3) were included in the scoping review.

The next step of the scoping review focused on charting the data. Arksey and O'Malley (2005) describe this step of the review as the process of producing and interpreting qualitative data by examining, outlining, and organising material according to important and dominating issues and themes. In this study, this involved the categorisation and coding of the results into key dominant themes related to the benefits of integrating teaching and learning technologies into higher education pedagogies using Braun and Clarke's (2006) thematic analysis framework. Subsequently, the selected studies were summarised using indicators including the journal of publication, author(s), year of publication, teaching and learning technologies used in the study, and potential benefits identified (see Table 4).

Table 1: Key search terms

Search terms	
AND	"benefits" OR "advantages" OR "positive effects" OR "importance" OR "impact"
AND	"technology" OR "technology in education" OR "technology integration"
AND	"pedagogy" OR "teaching" OR "teaching strategies" OR "teaching methods"

A set of inclusion and exclusion criteria was applied to refine the scope of the review (see Table 2).

Table 2: Inclusion and exclusion criteria

Criterion	*Included*	*Excluded*
Databases	Academic Search Premier, JSTOR, Taylor & Francis and ERIC using EBSCOhost	Other databases
Journals	*Journal of Higher Education; Journal of Higher Education Research and Development; Studies in Higher Education; Innovations in Education and Teaching International; Journal of Higher Education in Africa; Journal of Teaching in Higher Education; South African Journal of Higher Education; Research in Higher Education; Transformation in Higher Education* and *Praxis in Higher Education*	Other journals
Time frame	2018–2023	Articles published before 1 January 2018
Language	English	Other languages
Literature	Studies focusing on the benefits of integrating teaching and learning technologies into higher education pedagogies	Studies not focusing on the topic
Focus	HE studies	Studies not related to HE

Results

As shown in Table 3, a total of 19 *(n = 19)* articles were extracted and deemed relevant and appropriate for this scoping review. A process of analysis was conducted with the purpose of firstly confirming the types of digital technologies used, as well as identifying common themes that emerged from the studies pertaining to the potential benefits of integrating technology in higher education teaching and learning. All the selected articles utilised different digital technologies in teaching and learning, as stipulated in the appended table (Appendix A). The technologies used and identified themes are discussed in the next section.

Teaching and learning technologies used in selected studies

To provide context for this scoping review, it was imperative to outline an overview of the teaching and learning technologies used in the studies selected. Studies reviewed referred to digital technologies such as virtual learning environments like Prezi and YouTube; LMSs, with popular ones mentioned such as Google Classroom, Moodle and Blackboard; social media platforms such as WhatsApp, Facebook, Twitter, Telegrams, Slack; video conferencing tools such as Zoom, Skype, Microsoft Teams; the incorporation of other digital tools such as tablets and multimedia projectors; and other technologies such as e-tutoring systems, MyStatLab and StatCrunch, online design studios, flipped classrooms, video lectures and annotation tools, and e-mails.

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The selected studies were further analysed by reading key sections of the articles, and thematic analysis was utilised as a technique for identifying common patterns seen as related to the topic. Braun and Clarke's (2006) thematic analysis framework, which involves identifying, examining, and summarising patterns within the data, was used. The process commenced with familiarisation, a systematic process of reading and re-reading the extracted data to understand the content. Each selected article was carefully reviewed to gain a comprehensive understanding of its subject matter. Important concepts related to the benefits of integrating teaching and learning technologies into higher education pedagogies were identified through preliminary coding. To ensure a coherent synthesis of the literature, these codes were subsequently organised into broader themes, which were refined and assigned names that accurately reflected their core concepts. The

final phase involved reporting and interpretation, where the themes were synthesised to construct an overarching narrative that highlighted how the literature conceptualises the role and potential benefits of technology integration within higher education pedagogies. Applying Braun and Clarke's (2006) thematic analysis framework enabled a systematic yet interpretive synthesis of the literature, providing a rich, contextualised understanding of emerging patterns and gaps within the field.

Key findings related to the potential benefits of using teaching and learning technologies were highlighted and grouped based on conceptual similarities, allowing for the development of overarching themes that captured the core contributions of the included studies. Subsequently, five dominant themes of the potential benefits of integrating the above-mentioned digital technologies into higher education pedagogies were identified. The most frequently reported theme was "increases student engagement and promotes active learning" (n = 10), followed by "enhances student learning and improves success" (n = 9), "unrestricted access to educational materials" (n = 8), "enhances the quality of teaching and learning" (n = 6), and "improves communication through collaborative learning" (n = 5). These findings are summarised in Table 5 below, along with their descriptions and the number of studies contributing to each theme.

Table 5: Summary and distribution of themes

Theme No.		Description	No. of studies (n)	Studies
1	Unrestricted access to educational materials	Technologies that enable continuous, flexible, and on-demand access to course content, allowing students to learn at their own pace and revisit materials as needed.	8	Sharma et al. (2020); Zhou & Li (2019); Patrick et al. (2021); Ngcobo et al. (2022); Goodchild & Speed (2019); McKenzie et al. (2020); Mihai & Correa (2019); Lacka & Wong (2021)
2	Increases student engagement and promotes active learning	Digital tools and platforms that foster student interaction, motivation, participation, and collaboration, encouraging learners to take an active role in their education	10	Brown et al. (2022); Lacka & Wong (2021); Zhou & Li (2019); Alsaleh (2020); Wragg (2020); Abdella & Fataar (2021); Oyefara et al. (2021); McKenzie et al. (2020); Mihai & Correa (2019); Chiu et al. (2018)
3	Enhances student learning and improves success	Tools that directly contribute to deeper learning, skill development, academic performance, and overall student success.	9	Sharma et al. (2020); Chiu et al. (2018); Snyman & Kasirye (2021); Mashau & Nyawo (2021); Machaba & Bedada (2022); Zhou & Li (2019); Lacka & Wong (2021); Alsaleh (2020); Oyefara et al. (2021)
4	Improves communication through collaborative learning	Digital technologies enhance communication by enabling peer-to-peer and student-instructor interactions, supporting collaborative, active, and community-based learning.	5	Lacka & Wong (2021); Wragg (2020); Patrick et al. (2021); Elliot & Makara (2021); Zhou & Li (2019)
5	Enhances the quality of teaching and learning	The use of digital technologies to improve instructional practices, course delivery, and teaching effectiveness, often leading to more innovative and responsive pedagogy.	6	Du Toit & Verhoef (2018); Goodchild & Speed (2019); Oyefara et al. (2021); Mihai & Correa (2019); Abdella & Fataar (2021); Mashau & Nyawo (2021)

The five identified themes are summarised and discussed below.

Theme 1: Unrestricted access to educational materials

Several studies have highlighted that a key advantage of using digital technologies is that they provide learners with unlimited access to learning materials and that these resources are available without being restricted or timebound (Goodchild & Speed 2019; Zhou & Li 2019; Sharma et al. 2020; Lacka & Wong 2021; Patrick, Abiolu & Abiolu 2021). Technologies that enable the documentation and recording of lectures were frequently cited as beneficial for students who were unable to attend virtual classes, as well as for those seeking to revisit instructional content to reinforce their understanding. This enables students to engage with content at any time and anywhere, fostering flexible, self-directed, and continuous learning beyond traditional classroom boundaries.

Theme 2: Increases student engagement and promotes active learning

Another potential advantage of effectively using digital technologies in teaching and learning is that it increases students' engagement, which in turn promotes active learning. Studies conducted by McKenzie et al. (2022), Brown et al. (2022), Abdella and Fataar (2021) and Patrick, Abiolu and Abiolu (2021) found that the use of digital technologies in teaching and learning creates a more interactive classroom environment, which promotes student participation, increases students' engagement with the learning material, and encourages active learning. Similarly, Zhou and Li (2019) found that students become active participants in that they can tailor their learning, with instructors taking the role of facilitators, mainly to guide and organise the learning process, rather than following the traditional teacher-centred approach in the classroom. Bergdahl, Nouri and Fors (2020) postulate that three aspects of student engagement are enhanced by using technology, namely *behaviour*, where students spend more effort and time participating in learning activities; *emotions* which are impacted positively by the attitudes and interests students display in learning; and *cognitive*, where students can mentally invest in comprehending and understanding online content.

Theme 3: Enhances student learning and improves success

Integrating technology during lectures can be stimulating and beneficial to students. According to Alsaleh (2020), incorporating innovative educational technologies in pedagogies can afford learners and educators effective learning and teaching experiences. Machaba and Bedada (2022) agree that using digital technologies enhances student learning and transforms lectures from basic to activity-based learning. Sharma et al. (2020) and Snyman and Kasirye (2021) found that students' success is influenced by frequent attendance and active participation in an online learning environment. Thus, the use of technologies such as digital videos enables students to come to virtual classes prepared, which makes it possible for educators to focus on attending to questions and addressing difficult concepts. This finding is in line with Chiu et al.'s (2018) assertion that using technologies enhances comprehension of content and students' understanding of focal topics, consequently increasing students' interest in memorising and grasping important knowledge. McKenzie et al. (2022) also posit that the use of technology provides a successful classroom experience that allows students to interact with their lecturers and peers and enables immediate student feedback (Mashau & Nyawo 2021).

Theme 4: Improves communication through collaborative learning

Another notable advantage of incorporating digital technology in higher education pedagogy is that it provides a platform for students to communicate (McKenzie et al. 2022) and allows students to collaborate more easily with their peers, tutors, and instructors on different digital platforms such as discussion forums and chat sessions through LMSs, social media platforms, and e-mails. Wragg (2019) and Elliot and Makara (2021) emphasise that online platforms support communities of learning and build communities of practice among students and educators. Similarly, Patrick, Abiolu and Abiolu (2021) state that the use of such technologies

extends discussions beyond the classroom, consequently encouraging peer-to-peer collaborative learning. Zhou and Li (2019) contend that this approach to learning is effective and contributes to building beneficial learning communities. It further allows students to be in a learning environment where they can work as a team to solve problems, construct learning together and discover nuances (Zhou & Li 2019). According to Patrick, Abiolu and Abiolu (2021), this collaborative approach to learning extends class discussions and allows students and educators to be co-producers of educational content and knowledge.

Theme 5: Enhances the quality of teaching and learning

Oyefara et al. (2021) argue that the use of digital technologies is rising, and that one of its most prominent benefits is that it improves the overall quality of teaching and learning. Earlier, Du Toit and Verhoef (2018) similarly reported that using digital technologies in higher education pedagogy contributes positively to the quality of teaching and learning. Academics who participated in a study by Goodchild and Speed (2019) perceived digital technologies to enhance the quality of teaching by improving access to learning resources, streamlining course delivery, and supporting more efficient communication between instructors and students, ultimately contributing to a more engaging and effective learning environment. Another notable advantage is that using digital technologies not only enhances problem-solving, information-seeking and -sharing (Lacka & Wong 2021), but also makes teaching and learning flexible, making it easier for instructors to manage large classes (Ngcobo, Enu & Nkum 2022).

Discussion

While there is no doubt that the integration of digital technologies in teaching and learning plays a vital role in transforming higher education pedagogies, and that it produces various benefits as stated above, a number of scholars argue that there are equally several barriers associated with the use of technology in teaching and learning (Oyefara et al. 2021; Elliot & Makara 2021). This scoping review revealed that integrating technology in teaching and learning provides unlimited access to educational materials, in line with the principles of Connectivism that promote personalised learning, which is tailored to the individual needs of learners. However, Huang et al. (2021) caution that the integration of digital technologies can be associated with barriers such as general issues of resources such as accessibility, funding, time, training, and attitudes. Patrick, Abiolu and Abiolu (2021) support this view: they state that the challenge of accessibility is experienced by students from rural areas who are underprivileged in terms of access to devices, internet connectivity, and other challenges of literacy, which continue to exacerbate the realities of inequality and the widening of the digital divide. Le Grange et al. (2022) emphasise that having access to and using digital technologies in teaching and learning does not guarantee a transformed online teaching environment. Patrick, Abiolu and Abiolu (2021) caution that when students struggle with grasping concepts, and clarity is required, direct interaction with peers and educators is needed in real time. This is a benefit that face-to-face teaching and learning provides.

Additionally, the ability to access learning materials without restriction can extend learning beyond the confines of the online classroom and may further encourage student engagement with both peers and facilitators outside of scheduled lectures. This perspective is supported by findings from a national survey conducted by the South African Department of Higher Education and Training (DHET, 2020), which explored how students access and use learning materials. The survey reported that one of the main benefits of technology in online learning is the ease of flexible access, allowing students to learn at their own pace and at times that suit their individual schedules. Furthermore, this aligns with the principles of Connectivism, which promotes student engagement by positioning learners as active participants in a networked, digital environment, where they are encouraged to interact with information, tools, peers, and communities in meaningful ways. By enabling continuous access to resources and fostering communication beyond formal learning spaces, technology supports the kind of connected, self-

directed learning that is central to the connectivist approach.

While other benefits mentioned are associated with increased student engagement, enhanced active learning, improved communication through collaborative learning, and better teaching and learning, Coman et al. (2020) advise that the digitisation of teaching and learning will only bring benefits when the technologies are used as complementary tools for the traditional face-to-face method of education. The overall quality of virtual teaching and learning depends on factors such as educators' level of training in using technology, their teaching styles and strategies, and the ability to initiate collaborative peer-to-peer and peer-to-educator communication and learning (Coman et al. 2020). Despite the increased acceptance of technology within institutions of higher learning, the biggest challenge is how academics can reconstruct pedagogy in a meaningful manner, to transform teaching and learning in higher education.

Conclusion

This scoping review explored extant literature that focused on teaching and learning technologies used, as well as identifying potential benefits of integrating these digital technologies into higher education pedagogies. Technology-enhanced teaching and learning has become an integral part of higher education pedagogy. The new normal is to embrace the integration of technologies and digital tools into higher education pedagogies. Thus, institutions are encouraged to provide students and lecturers with the necessary support, including access to these technologies and the skills required to use them effectively. However, Ahmed and Opoku (2022) caution that the support should not merely encompass providing training, and adapting tools and software to manage virtual learning: the integration of technology into pedagogies should be well-structured and effectively implemented to enhance and support the virtual teaching and learning environment. This can be achieved through investing in innovative and transformative technologically enhanced pedagogical practices and strategies that are flexible and adaptable to socio-economic, socio-political, and technological disruptions that characterise, underpin and support 21st century global needs (DHET 2020).

In response to the call to explore research related to the impact and consequences of the use of digital technologies in teaching and learning, this scoping review sought to contribute to the growing body of literature on this issue, thus providing valuable insight into the potential benefits that are associated with online pedagogies in the higher education context. However, a key limitation of this scoping review is its focus on only ten peer-reviewed higher education journals. While these were selected for their impact and relevance, this narrow scope may have excluded valuable insights from other publications, interdisciplinary sources, and grey literature; therefore, the findings of this research may not cover valuable contributions from other journals not included in this study. Other journals not prescribed that produced relevant and related information on the topic include but are not limited to *Educational Technology & Society, Education and Information Technologies; Journal of Applied Research in Higher Education; European Journal of Education;* and *International Journal of Educational Technology in Higher Education.* To broaden and extend the scope of this study, it is recommended that similar future studies should consider including databases that cover a wider range of journals that publish research related to this topic, to capture a more comprehensive and diverse body of literature. Finally, future studies may consider using guidelines such as the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA-ScR) and the Joanna Briggs Institute (JBI) framework to improve the quality and strengthen the methodological rigour of scoping reviews, through enhancing transparency and uniformity in reporting findings.

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Disclosure of Interests

The author has no competing interests to declare.

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Appendix A: Overview of studies included in the scoping review

Journal	Author(s)	Year of publication	Teaching and learning technologies used	Potential benefits identified
Journal of Higher Education	N/A	N/A	N/A	N/A
Journal of Higher Education Research and Development	Mihai & Correa	2019	Electronic software (such as MyStatLab and StatCrunch)	- Instructor focuses on concepts that require attention - Specific needs of students can be identified and focused upon
	Brown, Lawrence, Basson & Redmond	2022	LMS	- Enhances student engagement and retention
Studies in Higher Education	Lacka & Wong	2021	Virtual learning environment, Social Media Platforms	- Greater access to information - Increased student engagement - Supports student learning - Enhanced problem-solving, information-seeking and -sharing - Increased peer-to-peer and peer-to-faculty interaction - Increased collaborative and active learning
	McKenzie, Hains-Wesson, Bangay & Bowtell	2020	Team teaching in blended mode (LMS)	- Promotes student participation - Provides avenues for communication not normally available in face-to-face
	Sharma, Nand, Naseem & Reddy	2020	LMS (Moodle)	- Flexible and continuous (unlimited) access to the course materials - Students' presence in an online environment has a significant impact on students' final marks

	Wragg	2020	Online design studio	- Enables social activities that build a community of practice
Innovations in Education and Teaching International	Alsaleh	2020	Flipped classroom, video lectures	- Encourages the use of active learning strategies that put students at the centre of the learning experience - Enhances students' learning and research skills
	Chiu, Chen, Huang, Liu, Liu & Shen	2018	Video annotation	- Enhances students' learning
	Elliot & Makara	2021	Online platforms such as Zoom and Slack	- Support communities of learning
	Zhou & Li	2019	Mobile technology	- Access to a substantial amount of online resources - Increases the level of the students' engagement and participation - Improved communication multi-modally with peers, teachers and other experts - Students customise their own learning
Journal of Higher Education in Africa	Abdella & Fataar	2021		- Encourages active participation in student learning - Student-centeredness that develops problem solvers as well as self-directed and lifelong learners
	Oyefara, Adejoh, Adisa, Abdulsalam & Alabi	2021	Use of tablets and multimedia projectors	- Improves quality of teaching and learning - Improves student engagement and closes noticeable gaps in the digital divide - Helps produce students that can be constructive, critical, innovative and collaborative

Journal of Teaching in Higher Education	N/A	N/A	N/A	N/A
South African Journal of Higher Education	Ngcobo, Enu & Nkum	2022	Zoom, Google classroom, LMSs	- Easier to manage large classes in an online environment - Allows for flexibility through the use of the synchronous and asynchronous modes of teaching
	Snyman & Kasirye	2021	e-Tutor system, Moodle, Facebook, Twitter, Skype	- Increases success
	Mashau & Nyawo	2021	Moodle	- Enhances learning through immediate feedback
	Machaba & Bedada	2022	Telegram, Teams, Zoom, Google classroom, Moodle	- Enhances learning
Research in Higher Education	Goodchild & Speed	2019	Blackboard	- Perceived to enhance teaching and learning - Provides access to resources
Transformation in Higher Education	Du Toit & Verhoef	2018	Not mentioned (general)	- Positive effect on various aspects of enhancing learning and teaching practices
	Patrick, Abiolu & Abiolu	2021	Teams, Zoom, Skype WhatsApp, LMSs, e-mails	- Provides students with unrestricted access to educational materials and resources - Encourages peer-to-peer collaborative learning by extending class discussions and active engagement
Praxis in Higher Education	N/A	N/A	N/A	N/A