

Teaching and learning delivery modes in higher education: looking back to move forward post-COVID-19 era

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Teaching and Learning Delivery Modes in Higher Education: Looking Back to Move Forward Post-COVID-19 Era

ABSTRACT

The COVID-19 pandemic has forced the education sector to adapt rapidly to online and blended learning modes. This systematic literature review examines the impact of the pandemic on teaching and learning in higher education, including management education and other disciplines. The review of 68 studies reveals that blended teaching, combining the benefits of face-to-face and online teaching methods, has emerged as a promising approach for higher education in the post-COVID-19 era. However, further research is needed to fully understand the dynamics of this mode, particularly in the context of business management education. The review highlights the importance of flexible and adaptable learning modes in higher education, with a need for institutions to continue promoting and creating diverse learning modes that meet the needs of all students. The use of technology is expected to continue to be integrated into teaching and learning, with a greater focus on blended learning modes. As the pandemic has emphasized the importance of effective and accessible education, future research should focus on analyzing the effects of blended learning in diverse nations and addressing issues such as access to technology and digital literacy.

Keywords: Systematic review; Higher education; Learning mode; Face-to-face; Blended teaching; Online.

Paper type: Systematic review

1. Introduction

In the current dynamic scenario, the higher education sector is exposed to unconventional challenges. The teaching and learning activities are typically undertaken in person and to accommodate the increasing demand for educational possibilities. Higher education institutions (HEIs) are constantly expanding their services online. However, rapid advancements, new teaching technologies, software packages and student span of attention had changed the ways of teaching especially in higher education institutions (Hearn, Turley & Rainwater, 2017). Moreover, the prevailing COVID-19 has also pressurized even the most passive institutions to change their teaching modes (Daniel, 2020).

Effective learning in higher education is largely dependent on the choice of appropriate delivery mode. The Face-to-Face (F2F) mode has been traditionally considered as the most reliable one where the content is provided by the instructor in person in regular classes or labs with in person feedback (Gros, Garcia, & Escofet, 2012). This mode is mostly related to the instructor's delivery method and the classroom activities (Boon, 2010). On the other hand, the online/remote teaching is a type of distant education in which students do not go to the university campus but instead get learning and assessments remotely. The remote mode has been functional since long and prior to the advent of the internet, remote education was accomplished through postal communication. However, technology advancements have modernized remote education, allowing courses to be provided "virtually/online" for the first time in the early 1990s and has now become essential in higher education (McKenna, Horton and Kopittke, 2022). Ratten (2023) stressed the importance of cutting-edge tools like the metaverse for management educators.

Due to the COVID-19 epidemic, the HEIs' campuses were enforced to close and to adapt to the changing scenario, at least for some time, completely shifted to online/virtual teaching mode (Watermeyer, Crick, Knight and Goodall, 2021). This situation resulted in unique issues as student engagement and achievement of learning outcomes became really a challenge. Moreover, not every discipline can be taught in an online mode, so the quality and future of many disciplines became a question. The world is out of the emergency situation created by COVID-19 now, however, it's not over. Thus, the universities post COVID-19 are adopting a new form of teaching to meet the requirements of almost all the disciplines, and it is called blended teaching mode. The blended teaching mixes online with in-person learning. It is a strategy that blends the two modes

that are online and face-to-face learning to design an environment characterized by enthusiasm and individual learning opportunities (Heirdsfield, Walker, Tambyah, & Beutel, 2011). With increasing emphasis on online learning outcomes in higher education, blended learning has the potential to create the best setting for improving engagement among students, resulting in better performance (Alducin-Ochoa & Vázquez-Martínez, 2016). Daily social engagement with students and peers is crucial in learning and teaching environments in management education (Truss & Anderson, 2023). In both online or blended learning, undergraduate business students face a considerable barrier to work on group projects (Fang, Pechenkina & Rayner, 2023; Conrad, Deng, Caron, Shkurska, Skerrett, & Sundararajan, 2022).

In early 2020, the COVID-19 pandemic disrupted students' learning worldwide, resulting in a need for instructional delivery and academic continuity to be reimaged (Moser, Wei & Brenner, 2021). To mitigate the disruption, higher education institutions implemented remote learning strategies that utilized a variety of delivery models (Albert, Fulton, Ramanau and Janes, 2021; Saavedra, 2020). Although online education was a suitable alternative to regular classroom teaching during the pandemic due to its flexibility in time and place (Dong, Cao, & Li, 2020; Yang, Li, Liu, & Tan, 2021), it lacked the in-person touch, social learning, and individual attention of traditional teaching methods. As a result, HEIs have been struggling to find an appropriate mode of teaching that not only fulfills the novel demands raised by the pandemic but also achieves learning outcomes.

A plethora of recent studies have focused on the transition from face-to-face mode to alternate delivery modes in different contexts. While the traditional face-to-face teaching mode has always been effective, virtual mode was introduced with technological advancements, and the blended mode has gained importance post-pandemic (Peimani & Kamalipour, 2022; Mariam et al., 2023). Prior to the pandemic, research primarily focused on the benefits and drawbacks of online teaching and learning, but the emergence of online learning during the pandemic has led to a significant paradigm shift in higher education (Daniel, 2020). It is evident from available research that there is a growing interest in understanding the capabilities of online learning approaches (Masdéu & Fuses, 2017; Sagun, Demirkan & Goktepe, 2001). Despite the educational merits of online study models, they have faced criticism (Iranmanesh & Onur, 2021). The challenge now is to create and implement an adaptive and flexible learning model that blends traditional education methods with virtual ones.

The global COVID-19 pandemic has had substantial ramifications for higher education in recent years, driving course redesigns and pedagogical reforms (Peimani & Kamalipour, 2021a, 2021b). Blended learning has emerged as a more effective mode of teaching and learning than traditional face-to-face and virtual learning post-pandemic (Dixon, Christison, Dixon, & Palmer, 2021). In management and business education, blended learning provides opportunities for innovative and distinctive learning and teaching models (Truss & Anderson, 2023; Ratten & Jones, 2021a, 2021b; Sarfraz, Khawaja, & Ivascu, 2022).

To address this issue, this study presents a systematic literature review of the teaching modes adopted during and post-COVID-19. This review specifically focuses on the teaching modes emerging during and post-COVID-19 in management studies and other disciplines in higher education, which is different from other published reviews on the topic. While there have been reviews on face-to-face and online teaching modes in the past, this review reveals the emergence of blended teaching mode in response to the pandemic. Additionally, this study provides a comprehensive overview of recent research studies from different countries, disciplines, and perspectives, giving readers a well-rounded understanding of the challenges and opportunities faced by educators and students during the pandemic.

The objective of this study is to examine the existing body of literature and systematically identify the best mode of delivery that would be adaptable in vulnerable and post-pandemic situations. With the following overarching questions in mind, we approached our literature analysis as follows:

- 1 What are the emerging themes in the research on teaching and learning modes in higher education post-COVID-19?
- 2 What is the future map of teaching and learning modes in higher education?

By answering these questions, this study aims to provide insights and recommendations for HEIs to navigate the challenges posed by the COVID-19 pandemic and develop effective teaching and learning modes that meet the needs of all students.

2. Research Methodology

To systematically examine the teaching and learning modes adopted during and post-COVID-19 in higher education, we adopted a five-step procedure proposed by Fahimnia et al. (2015). The

objective of our research is to examine the current body of literature and systematically identify research gaps objectively (García et al., 2022, Salem et al., 2022 & Sigala, 2021). We carried out a systematic appraisal of extant literature using the following steps: selection of appropriate keywords as well as database, initial search results, results in refinements, initial data statistics, and data analysis. We conducted bibliometric analysis and science mapping approach through VOSviewer 1.6.19 (Fosso Wamba & Mishra, 2017) to analyze the data. This methodology allowed us to identify the current research trends and the potential areas for future research.

2.1 Defining the appropriate search terms

For this study, we selected Scopus database as our primary source of literature. We employed appropriate keywords to ensure that the explored set of literature embodies teaching delivery modes in higher education to move forward post-COVID-19. After several rounds of deliberations, researchers finalized their search to 'teaching/learning delivery modes or teaching/learning delivery methods or teaching/learning delivery approaches or face-to-face mode/method/approach or online mode/method/approach or blended mode/method/approach' and 'Covid-19' and 'higher education.' The researchers then reviewed the titles, abstracts, and keywords of the selected papers to determine if their content fit the topic.

2.2 Initial search results and their refinements

The researchers chose the Scopus database due to its relatively broader coverage (approximately 44,000 journals) compared to databases like Web of Science (approximately 25,000 journals) and its preference by scholars for emerging research fields (Feng et al., 2017). The inclusion criteria were as follows: (1) the article must appear in a peer-reviewed journal, (2) the article must be written in English, and (3) the article's primary content must be related to learning and teaching modes. Book chapters, conference proceedings, editorials, and editorial material were excluded, as were any papers that did not meet the inclusion criteria. The study period selected for this review was 2020–2022, and the first article meeting the inclusion criteria was published in 2020. Initially, 115 documents were obtained and screened using the inclusion-exclusion criteria. Fig. 1 depicts the review strategy, which is based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA; Liberati et al., 2009; Elkhwesky et al., 2022^a; Elkhweski et al., 2022^b). Any disagreements regarding the exclusion of an article were discussed and

resolved through a consensus approach to avoid any improper exclusion. After excluding 45 less relevant research papers, 68 research papers related to management and other disciplines were considered eligible for the final analysis (see Appendix 1).

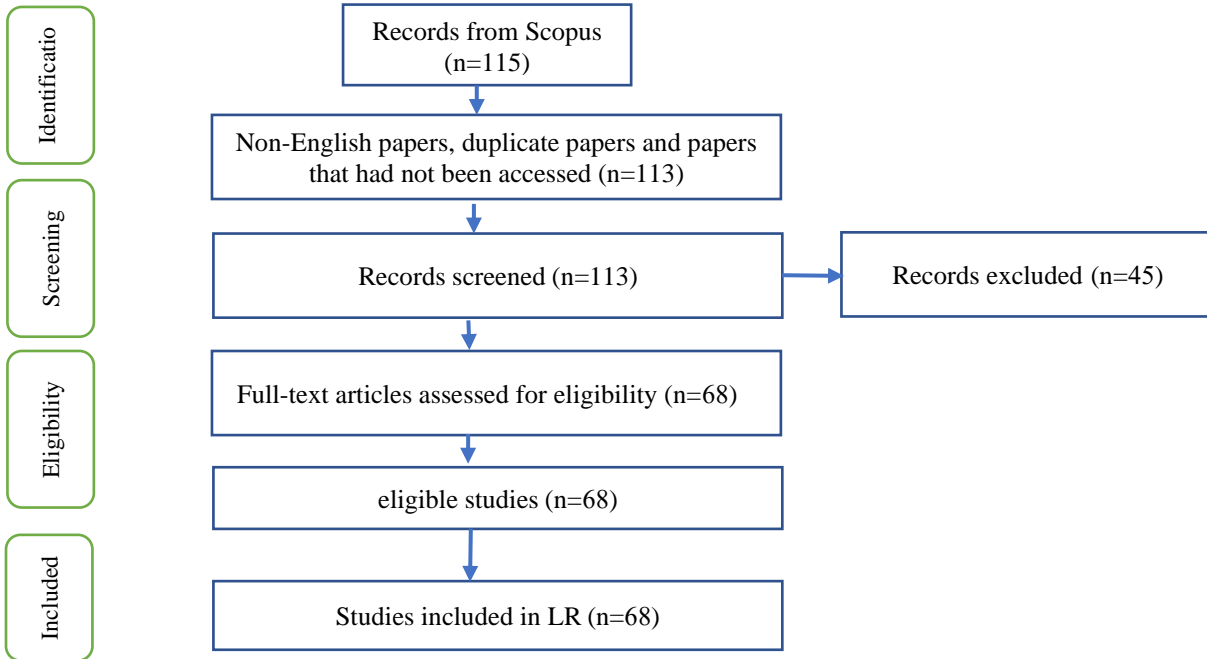


Fig.1. PRISMA flow diagram

3. Results

A systematic literature review of 68 articles was conducted using Scopus database. The analysis was done using Excel and VOSviewer version 1.6.18 software to identify emerging themes in research related to teaching modes during and post COVID-19. Appendix 2 provides a comprehensive summary of the 68 articles, including author name, paper title, learning mode, sample, method, results/findings, implications/recommendations, future plan, conclusions, and country.

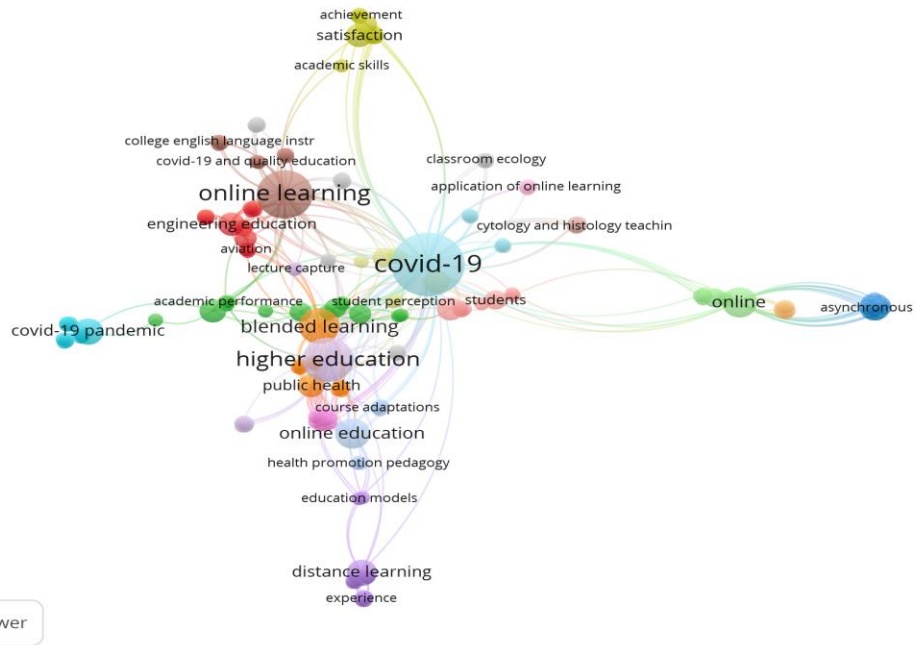


Figure 2: Distribution of documents in terms of c-occurrence of author keywords

The analysis is based on the search terms defined in Section 2.1. Figure 2 shows a term map that highlights the most frequently occurring keywords in the literature. COVID-19 emerges as the most prominent keyword, followed by online learning, higher education, online, distant learning, and blended learning. The lines connecting the terms show that COVID-19 is linked with all the other keywords.

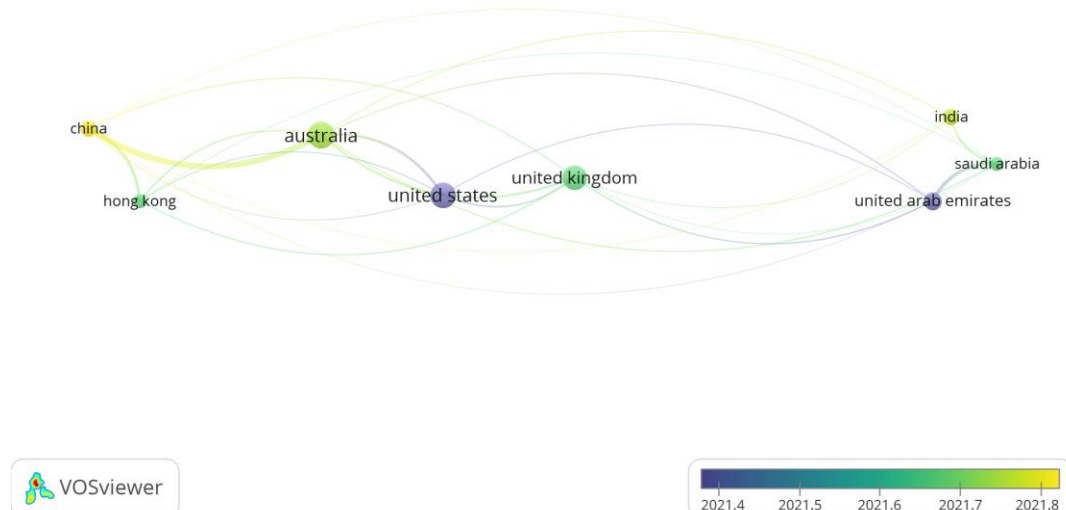


Figure 3: Distribution of documents by country or territory

In terms of geographical distribution, Figure 3 shows that Australia has the highest number of published articles (11 Scopus-indexed articles), followed by the USA (10), UK (9), UAE (5), Mainland China (4), India (4), Hong Kong (3), and Saudi Arabia (3), with 29 other countries publishing 1-2 articles.

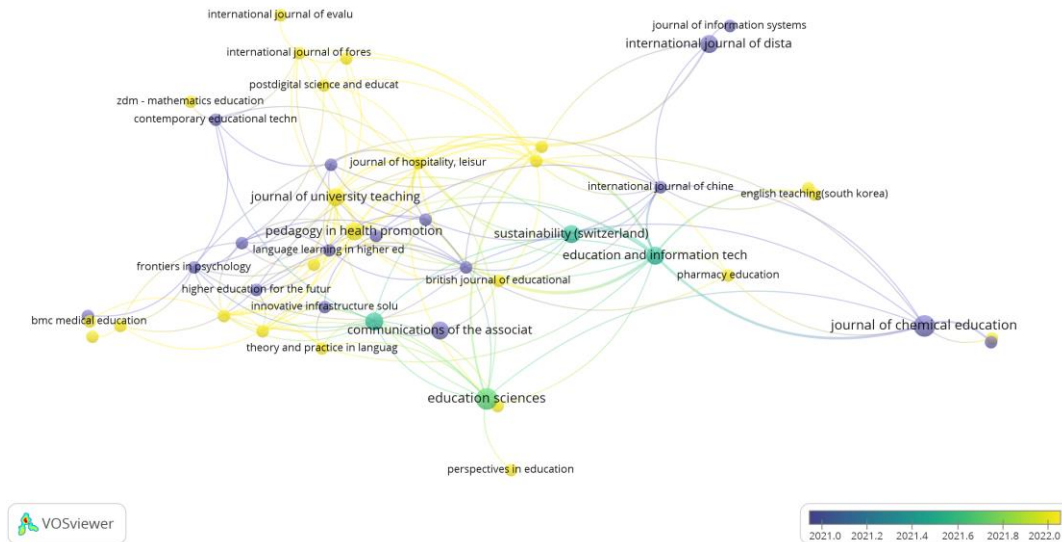


Figure 4: Distribution of documents by source/journal

Figure 4 shows that the 68 articles were published across 56 different journals, indicating that research on teaching modes during and post-COVID-19 was conducted in almost all disciplines. The journals with the most articles published were Journal of Chemical Education (3), Education Sciences (3), Education and Information Technologies (2), Journal of University Teaching and Learning Practice (2), Frontiers in Education (2), and Sustainability (2), among others.

4. Research themes

As shown in Appendix 1, learning modes via the extracted studies were very diverse. The analysis of research on learning Mode used during COVID 19 (2020-2022) 68 papers in Scopus revealed following research themes.

4.1 Theme 1: Face to face teaching mode

Theme 1 emerged during COVID 19 focuses on the traditional face-to-face teaching mode, which requires physical presence and direct interaction between students and instructors to achieve learning goals. While the COVID-19 pandemic has forced many educational institutions to shift to online teaching, face-to-face education remains the preferred method for many students, particularly those in management programs (Mali & Lim, 2021).

There are several advantages to face-to-face education, including promoting interpersonal interaction among students and between students and instructors, enabling students to engage in social learning behavior, and providing fewer distractions (Kiser, 2002; Marold & Haga, 2003). Additionally, incorporating computer technology into face-to-face interactions can enhance the quality of education (Taylor, Vaughan, Ghani, Atas and Fairbrother, 2018).

One of the key benefits of face-to-face contact is the social side of direct group engagement (Heilporn and Lakhal, 2021). Research has shown that discussion not only allows students to assess their learning but also helps them develop social intelligence through interaction with their peers, which can help alleviate feelings of isolation that distance students often experience (Chen, 1997).

While the pandemic has made face-to-face teaching challenging due to the closure of campuses, student inclination towards this mode of learning has remained strong (Howe and Watson, 2021). However, it is important to note that face-to-face education also has its challenges, such as scheduling conflicts and commuting, and educational institutions need to consider these factors when offering this mode of delivery.

As demonstrated in Appendix 1, there is a wide range of research on teaching modes in higher education. However, a significant number of studies advocate for face-to-face education, even during the COVID-19 pandemic. For instance, Joji et al. (2022) conducted research on medical students' perceptions of face-to-face and online teaching methods while conducting microbiology laboratory sessions at Arabian Gulf University. The majority of students still preferred face-to-face lab sessions over online labs, but considered online labs to be a useful supplement to the face-to-face mode. Conversely, the faculty unanimously disagreed with online teaching mode. The faculty and students agreed that if the positive aspects of both modes are combined, the learning experience can be maximized.

Another study by Huh, Shen, Wang, and Lee (2022) examined the perceptions and attitudes of EFL (English as a Foreign Language) students toward online and face-to-face English language learning techniques during the COVID-19 pandemic in Chinese and Korean universities. The findings revealed that even during the pandemic, students preferred face-to-face mode over online, but found online mode to be more flexible and independent. The suggestion was to combine the positive aspects of face-to-face with the flexibility and independence of online mode.

Phelps and Moro (2022) conducted interesting research on the comparison of the impact of interactive polling in both face-to-face and online delivery modes. First-year medical and health science students used the Kahoot! platform to perform a live interactive poll in either a face-to-face or online hybrid-delivered course. The study revealed that Kahoot! interactive polling remains effective as an instruction mode for both face-to-face and online learners.

Similarly, Kundu, Bej, and Mondal (2022) conducted a comparative study of three alternative delivery modes in India prior to the COVID-19 outbreak, using a Design-Based Research methodology. In terms of students' learning achievement and satisfaction, comparisons were drawn from the quantitative data collected from every teaching modality, including face-to-face, online, and blended modes. The results showed that the face-to-face group participants outperformed the other two groups.

These studies suggest that while face-to-face education has many advantages, it is important to consider the positive aspects of online and blended modes as well. By combining the strengths of each mode, educators can enhance the learning experience for their students.

In the educational context, a study by Kumari, Gautam, Nityadarshini, Das, and Chaudhry (2021) compared conventional classroom (i.e., face-to-face mode) and e-Learning for medical undergraduate students. The results revealed that many students found online course material difficult to understand and struggled to clear their doubts in online instruction, while a vast majority believed they learned more in face-to-face learning.

Similarly, Lee and Nuatomue (2021) examined course delivery methods and students' perceived difficulty of a technology-intensive course in both online and face-to-face components, using the community of inquiry (CoI) framework to study how perceived difficulty and the delivery methods were related to course satisfaction and CoI framework. The research found that a large majority of students in the online mode struggled to learn in the course.

Despite the challenges faced by face-to-face teaching due to lockdowns and social distancing measures that limit the number of students in the classes (Huh, Shen, Wang & Lee, 2022), it is worth noting that face-to-face teaching still has its advantages, such as promoting deeper comprehension of the subject matter, developing skills and competencies, and fostering a sense of community (Abdelkader and Barbagallo, 2022; Blackford et al., 2022).

Furthermore, technology has been integrated into learning and teaching in all areas of education, altering the nature of face-to-face instruction (Ng, 2022). While face-to-face teaching remains necessary, it is essential to adapt it to fit the emerging scenario by combining its strengths with those of technology to enhance the learning experience.

4.2 Theme 2: Online teaching mode

Theme 2 focuses on articles that examine online teaching methods during COVID 19. This mode of teaching involves delivering courses through the internet, including developing course content, evaluating it, and delivering it online (Parida, Amankwaa, Mohammadi, Ayentimi, D'Cruz, Dhakal and Dayaram (2023). With the widespread use of ICT and internet technologies in education, students now have access to a variety of learning resources, such as interactions facilitated by social networking tools, mobile devices, and more. Online learning occurs in an environment where students learn and correspond with other students and teachers through learning management systems enabled by internet technology (Ally, 2004; Munawar, Yousaf, Ahmed and Rehman, 2023). Unlike face-to-face teaching, online learning takes place entirely online and excludes face-to-face contact between students and professors or between students in physical surroundings for learning (Lee & McLoughlin, 2010).

Numerous scholarly articles have focused on online teaching and its importance. For example, Zhu, Geng, Disney, and Pan (2022) examined 193 university students' behavioral intentions to learn online before, throughout, and after the COVID-19 lockdown. The researchers aimed to study how students' general learning aptitude, use of online mode, level of online course engagement, and academic success might impact their readiness to learn in an online mode. It was discovered that students' propensity to study online grew dramatically during the COVID-19 pandemic but subsequently fell marginally after the university reopened.

Similarly, Blackford et al. (2022) investigated the impact of "remote internal" unit delivery in a large Western Australian institution, as perceived by students and faculty. The results revealed that while online learning is generally convenient, it requires effective support and students have privacy concerns. However, students generally enjoy a mixed method of teaching.

Despite the growing importance of online teaching, some management education students remain uncomfortable with engaging online (Mali & Lim, 2021). Ng (2022) conducted an interesting study on university students from Hong Kong and mainland China who participated in a one-month online aviation learning program. The study found that the virtual mode removes geographical barriers, effectively encourages a broader audience, and achieves online collaboration among universities however, misses the physical touch.

Mudau, Biccard, Van Wyk, Kotze, and Nkuna (2022) investigated the perceptions of students and their understanding of transitioning to a totally online mode during COVID-19. The results of this research reveal that the students reported that the institution waited too long to distribute laptops, and that the Internet connection was inadequate and inconsistent. Although the students had developed necessary digital competencies during COVID-19, the digital divide became more visible and significant.

Similarly, Callo and Yazon (2020) explored the factors impacting readiness in online teaching and learning as an alternate delivery channel to continue the teaching-learning process in the absence of face-to-face interaction between students and teachers. The findings demonstrated that students' familiarity, capability, preparation, device connectivity, self-efficacy, and technological experience all had a significant influence on their preparedness to undertake online teaching and learning.

The COVID-19 pandemic has accelerated the adoption of online teaching, which has been available for a long time but was not widely used in higher education before the pandemic. The majority of educational institutions worldwide adopted online teaching mode in the first half of 2020 to continue the educational activities (Blackford et al., 2022). The success of online teaching depends on various factors. Kang and Park (2022) found that management students' satisfaction with online modules was positively influenced by instructors' useful interaction (feedback) during the sessions. Similarly, Alam, Mahmud, Hoque, Akter and Rana (2022) revealed that task skills (TS) and task challenges (TC) significantly influenced business students' enjoyment and

ultimately led to their satisfaction levels. Baber (2021) identified that instructor characteristics (attitude, competency, and interaction), student characteristics (motivation, mindset, and collaboration), and technology acceptance model (perceived ease of use and perceived usefulness) were positively associated with management students' behavioral intention to accept and use e-learning during the pandemic COVID-19. It is crucial to develop online courses that meet students' needs and preferences while ensuring instructors' engagement and interaction with them.

The shift to online teaching during the COVID-19 pandemic brought several benefits such as convenience and flexibility, but it also brought several challenges. Connectivity issues, lack of interaction, self-discipline and privacy concerns, and attention problems were among the challenges faced by the educational institutions (Mudau, Biccard, Van Wyk, Kotze & Nkuna, 2022; Zhao, Zhang & Chen, 2022). The pandemic also posted significant challenges to management education, especially for international students and experiential courses (Mahajan, Marc Lim, Kumar, and Sareen, 2023; Ratten & Jones, 2021b). Moreover, academic integrity is a concern in the online teaching mode as several studies reported a higher propensity for cheating among students in online courses (Ababneh, Ahmed & Dedousis, 2022; King, Guyette Jr & Piotrowski, 2009). For instance, Ababneh et al. (2022) found that cheating intentions and perceived control were positively related to actual cheating during online exams among management students.

Before COVID-19, both face-to-face and online teaching modes were prevalent, and the analysis of selected research reveals that both of them faced challenges during the pandemic. There was an urge to recent shift toward online learning for the adoption of responsible management education however the teachers faced a lot of difficulties (Mousa and Arslan, 2023). As a result, the concept of blended teaching mode emerged, which was flexible and had the benefits of both methods.

Online teaching has become increasingly important in recent years due to advances in technology and the COVID-19 pandemic. As such, it is crucial to continue exploring the benefits and limitations of this mode of teaching and to develop effective support systems to help students succeed in an online learning environment. These studies highlight the challenges and opportunities of online teaching, including the importance of ensuring adequate digital resources

and support for students, and the need to explore innovative ways to enhance online collaboration and engagement among students and teachers (Barnes, 2020).

In addition, while online teaching has its advantages, the COVID-19 pandemic highlighted the importance of exploring new teaching methods that combine the best aspects of both face-to-face and online teaching (Truss and Anderson, 2023). It is crucial to continue studying the benefits and limitations of each teaching mode and to develop effective support systems that help students succeed in different learning environments. As such, educational institutions should explore innovative ways to combine online and face-to-face teaching modes to create a flexible and effective learning environment (Mali and Lim, 2021).

Overall, the COVID-19 pandemic has accelerated the adoption of online teaching and highlighted the need for more flexible and adaptable teaching methods (Szopiński & Bachnik, 2022). By continuing to study the benefits and limitations of each teaching mode and developing effective support systems, educational institutions can ensure that students succeed in different learning environments and are prepared for the challenges of the future. There was an urge to recent shift toward online learning for the adoption of responsible management education however the teachers faced a lot of difficulties

The research articles conducted during COVID 19 reveal that the online teaching method was adopted during pandemic however, it was never a preference of any discipline. The merits of face-to-face teaching despite the pandemic are more and the demerits of online teaching despite its flexibility are immense. Therefore, the researches above indicate towards the third theme that started emerging post COVID 19 and that is the mix of face to face and online teaching named as blended teaching mode.

4.3 Theme 3: Blended teaching mode

Theme 3 examines the combination of face-to-face and online teaching modes, known as blended teaching mode that emerged post COVID 19. Blended teaching mode has been defined as the integration of face-to-face education with online learning experiences (Ng, 2022), allowing students to learn in a more flexible environment (Bardus, Nasser AlDeen, Kabakian-Khasholian, Kanj & Germani, 2022). By combining the benefits of both traditional and online modes, blended learning is considered to be the most feasible approach (Abdelkade & Barbagallo, 2022).

The primary aim of using a blended mode is to encourage students to participate actively in their own learning, rather than sitting quietly during a face-to-face discussion (Mariam et al., 2023). The balanced mix of approaches can help to develop effective learning behaviors among students, enabling them to manage their time effectively and comprehend the themes in a better position. Blended learning mode facilitates flexible learning in higher education, fosters student engagement, and increases self-regulated learning. Furthermore, blended learning is recognized to have the potential to increase content transfer (Peimani & Kamalipour, 2022).

Higher education institutions have been greatly affected by the COVID-19 pandemic, leading to disruptions and a need to adopt new technology-supported teaching methods. Blended teaching mode has emerged as a valuable alternative that combines in-person and online teaching-learning activities to adapt to the new normal (Mariam et al., 2023; Heilporn and Lakhali, 2021).

Cheung and Wu (2022) conducted a study on the applicability and implications of Blended Synchronous Learning (BSL) for academic property and built environment teaching and learning during and after the pandemic. The study found that blended learning is a practical and innovative teaching method that can foster a welcoming and fair learning environment, and produce high-quality learning outcomes for property education.

Another study by Finlay, Tinnion, and Simpson (2022) examined how undergraduate students in sport and exercise sciences perceived virtual and blended learning modalities during the pandemic. The study aimed to determine whether and how student perceptions of both learning techniques varied within and between year groups. The findings indicated that blended learning consistently produced higher satisfaction scores, leading to a noticeably higher overall course satisfaction, and students showed a clear preference for blended learning as they valued the opportunity to receive face-to-face instruction.

Management education students believe that the biggest problem with Blended learning is their inability to socially communicate with their peers (Mali & Lim, 2021). Dunaway and Kumi (2021) described how teachers might use collaboration tools to support learner-teacher interactions both during and before online classes. These interactions are an important component of teaching that are sometimes disregarded but are crucial to student progress. Numerous institutions were compelled by the coronavirus disease of COVID-19 pandemic to quickly convert their face-to-face (F2F) classrooms to some type of blended mode that would integrate

asynchronous and synchronous course delivery. engage students and give prompt feedback because there is no physical or social presence. According to Kang & Park (2022), business students' perceptions of their instructors' interactions and comments with them had a favorable impact on their satisfaction. Thus, blended mode solves these problems.

During the COVID-19 outbreak in the United Kingdom, Peimani and Kamalipour (2022) explored the creation and teaching of a postgraduate Urban Design Studio course for Cardiff University's MA Urban Design program during the COVID-19 epidemic in the UK. The research had a strong emphasis on students' experience and perception within the framework of design studio pedagogy, and specifically studied the capabilities and problems of blended learning and teaching. The findings of this paper guide in developing methods in future such as blended learning and teaching that combine face-to-face and online delivery methods in relation to design studio instruction, especially in the global health crises like the COVID-19 pandemic.

Overall, the analysis of selected research in this theme highlights the growing importance of blended teaching mode in the context of higher education, particularly during the COVID-19 pandemic. Blended learning mode is considered a feasible and practical teaching-learning method that combines the benefits of both traditional and online modes, and it has been widely adopted by universities as a valued alternative to combine in-person and online teaching-learning activities. Moreover, it is a preferred mode of teaching in management education that gives the benefits of both face-to-face and online teaching modes. The research indicates that blended learning mode facilitates flexible learning, fosters student engagement, increases self-regulated learning, and has the potential to produce high-caliber learning outcomes (Müller and Mildemberger, 2021).

While the adoption of blended teaching mode has brought about certain challenges such as students' inability to socially communicate with their peers, the research suggests that the benefits of blended learning outweigh the challenges. Blended teaching mode allows for the integration of in-person instruction with online study, providing a welcoming and fair learning environment that produces higher satisfaction scores and overall course satisfaction (Mali and Lim, 2021). The findings of these studies can inform the development of methods for blended learning and teaching that combine face-to-face and online delivery methods in the context of higher education.

Table 1. The most prevalent ways of learning delivery modes during and post COVID 19.

Learning mode	Pros	Cons
1. Face-to-face	Face-to-face interaction with teachers and peers, immediate feedback, a structured learning environment, and hands-on learning experiences.	Limited flexibility, limited access to resources, and a one-size-fits-all approach to learning that may not be effective for all students.
2. Online Learning	Flexibility in terms of time and place, access to a wide range of resources, and personalized learning experiences.	Limited interaction with teachers and peers, the need for self-motivation and discipline, and technical difficulties that may arise.
3. Blended Learning	Combines the best of both traditional and online learning, providing students with greater flexibility, personalized learning experiences, and increased engagement.	Requires access to technology, the need for teacher training, and the potential for inequity if some students do not have access to the necessary resources.

5. Implications

Our research has shown the themes developed by researches in the area of teaching mode during and post COVID -19. This research tried to analyze the behavior during and post COVID -19 to connect it to current and future concerns in higher education. Our research has implications for the theory and the higher education sector following COVID-19 based on our systematic review of 68 articles on the teaching modes.

It contributes to the body of knowledge as it is one of its kind in the field of teaching modes. It provides analysis of 68 articles published in Scopus related to different teaching modes. It brings together the emerging themes and provides a basis for academicians and researchers to build their content and research on it. The current study adds to the body of knowledge by exploring the primary elements influencing the successful blended teaching mode adoption (Hwang et al., 2022). Moreover, this is novel research which provides a holistic picture of available literature and opens future avenues of research.

On the other hand, it provides policymakers a base to choose an appropriate mode according to their circumstances. Moreover, it guides instructors about some important aspects of the blending mode. Blended teaching modes are vital for HEIs to promote better learning and cope with the dynamic environment post COVID -19 (Tikadar and Bhattacharya, 2021). This research has implications for instructors to set clear expectations, develop the right mix for blended teaching

and ensure that students have the technical skills and capabilities to utilize the modes of delivery (Bardus et al., 2022; Mali & Lim, 2021).

This research implies that instructors need to be aware of group dynamics as well as students' level of comfort with technology-based communication. When planning online lessons and teaching methods, instructors need to choose the appropriate platform. Instructors should also provide a periodical time-out check on the students to assess their replies and offer timely feedback (Siah et al., 2022).

This study has implications not only for faculty who are planning to teach blended post- COVID-19 to prepare their teaching with the benefits of face-to-face and online teaching but also for administrators who can offer assistance to faculty in their online teaching preparations or can select an appropriate blend of online and face-to-face for better learning.

6. Future map of teaching and learning modes in higher business management education

The current section discusses the future research potentials identified based on the systematic literature review conducted in the previous sections. The studies reviewed were primarily conducted in Australia, USA, UK, UAE, Mainlan China, India, Hong Kong, and Saudi Arabia, with very few studies conducted in developing and rising countries, and developed countries such as Canada and Greece. Therefore, future research should focus on these underrepresented regions to ensure the quality and spread of education. Additionally, while most research focused on higher education, future research should also concentrate on school education.

As suggested by Abdelkader and Barbagallo (2022), future research should investigate the long-term effects of COVID-19 and the resulting changes in teaching modes on curriculum development, learning outcomes, and student behaviors. Li et al. (2022) also recommended exploring why postsecondary or postgraduate students choose face-to-face learning over hybrid/online learning. During the pandemic, many online courses provided to students did not represent excellent online learning, but instead served as a stop-gap solution for emergency remote education. Understanding the underlying reasons for students' preferences is critical for the development of future blended/online programs. Thus, future research should aim to explore these areas and provide important insights to educators and policymakers in shaping the future of teaching and learning modes in higher business management education.

Another important aspect that needs to be considered in future research is the development of new educational models that integrate traditional and distance learning in business management education. Such a model can help establish criteria for successful implementation of distance learning and facilitate better time management for students (Grynyuk, Kovtun, Sultanova, Zheludenko, Zasluzhena and Zaytseva, 2022).

The impact of COVID-19 on language classes and students' intercultural differences in their perceptions of online teaching and learning is another important area for future research (Huh, Shen, Wang & Lee, 2022). Additionally, it is important to note that a major limitation of the studies reviewed is the lack of qualitative data from parents' perspectives. Future research should aim to collect in-depth data from parents through various means, including interviews and observations, to provide a more comprehensive understanding of students' learning experiences (Zhao, Zhang and Chen, 2022).

Further research can also focus on students' intentions to learn online, including their behavioral intentions and perspectives on online learning at various phases. As recommended by Zhu et al. (2022), future studies can expand to places with different lockdown policies or levels of COVID influence, providing valuable insights into the adoption of online learning in different contexts.

In addition to the aforementioned areas for future research, it is important to address the challenges associated with online education in post-pandemic scenarios where access to tools and connectivity is limited. To this end, future researchers should investigate theoretical frameworks to better understand the difficulties and limitations associated with online education. More qualitative and mixed-method studies should be undertaken to fill research gaps and understand the circumstances and challenges faced by students and instructors with online learning (Zhu, Geng, Disney & Pan, 2022).

Furthermore, the pandemic has created significant obstacles for educational institutions and industries in less developed areas where resources for blended synchronous learning (BSL) are limited, resulting in greater disparities in the allocation of educational resources and competencies. Cheung and Wu (2022) recommended further research using BSL in the design and delivery of specific types of subjects during and after the pandemic. Another suggestion is to compare BSL models across countries and institutions to examine the effects of technological development on teaching and learning in different contexts.

Finally, as most of the studies reviewed did not include the perspectives of parents, future research could include in-depth data from parents as well as other means of data triangulation, such as in-class observations or peer evaluations ((Zhu, Geng, Disney & Pan, 2022).

To provide a clear and organized view of future research directions, the following recommendations can be made based on the findings of this systematic literature review. Firstly, there is a need for more research to be conducted in developing and rising countries as well as developed countries such as Canada and Greece to ensure the quality and spread of education. Furthermore, research should be conducted on school education in addition to higher education. Secondly, future research should focus on the long-term effects of COVID-19 on teaching modes and the resulting changes in curriculum development, learning outcome achievement, and student behaviors. Additionally, there should be further research to understand why postsecondary or postgraduate students choose face-to-face learning over hybrid/online learning.

Thirdly, the effects of blended synchronous learning (BSL) on specific types of subjects during and after the pandemic should be explored, and BSL models across countries and institutions should be compared to examine the effects of technological development on teaching and learning in their respective contexts. Fourthly, theoretical frameworks should be investigated to better understand the difficulties associated with online education, and more qualitative and mixed-method studies should be conducted to fill the research gaps and understand the circumstances and challenges of students and instructors with online learning.

Lastly, future research should focus on the use of affordable and trustworthy digital technologies that could be utilized to support personalization, socialization, and professionalization in online learning. This is especially important in areas where digital technologies are seen to promote a digital divide due to limited internet access, bad connectivity, and expensive data. In conclusion, the future of teaching and learning in management education in higher education institutions will likely be shaped by the integration of technology and a focus on personalized, experiential, and engaging learning experiences, including the use of game-based elements and virtual and augmented reality.

7. Conclusion to Post COVID 19

The COVID-19 pandemic has severely disrupted higher education and caused a rapid transition to online learning (Arbel, Arbel, Kerner and Kerner, 2022; Fang, Pechenkina and Rayner, 2023). However, this transition must be handled with caution, as not all stakeholders may prioritize it.

Based on the analysis of 68 research articles in Scopus, blended teaching mode has emerged as the most effective mode of teaching post-COVID-19. It combines the benefits of both face-to-face and online teaching and has the potential to boost student engagement and learning outcomes (Abdelkade & Barbagallo, 2022; Bardus et al., 2022; Peimani & Kamalipour, 2022; Ng, 2022). However, further research is needed to identify the dynamics of this mode in business management education specifically.

In conclusion, this study provides a comprehensive understanding of the teaching modes used in business management education and other disciplines during and post COVID-19 and their challenges. The findings suggest that a blended teaching mode is the most feasible approach post-COVID-19. The use of technology and a focus on personalized, experiential, and engaging learning experiences will likely shape the future of teaching and learning in higher education.

The review highlighted that the COVID-19 pandemic has disrupted higher education, prompting a rapid switch to online and blended learning modes. While online learning has its advantages, such as the flexibility and self-paced learning it allows, it lacks the social and emotional cues of face-to-face teaching and can leave students feeling confused without proper feedback.

As a result, blended teaching mode, which combines the benefits of both face-to-face and online teaching, has emerged as a promising approach for higher education in the post-COVID-19 era. However, further research is needed to fully understand the dynamics of this mode especially in the context of business management education.

In conclusion, the COVID-19 pandemic has forced higher education institutions to rethink their teaching and learning approaches, with a greater emphasis on online and blended modes. While there are challenges and limitations associated with these modes, the use of blended teaching can provide a promising path forward for HEIs. It is important for future research to continue exploring the effectiveness of blended teaching in various contexts and to address issues such as access to technology and digital literacy to ensure all students can benefit from these modes of

learning. Table 1 depicts the most common ways of learning delivery modes that may be employed post-COVID-19 and some of the key implications of different learning modes.

To summarize, this paper aimed to examine the impact of the COVID-19 pandemic on teaching and learning modes in higher education, with a focus on business management education. Through a systematic literature review of 68 studies, three themes emerged: face-to-face teaching mode, online teaching mode, and blended teaching mode. Blended mode emerged as the most promising mode of teaching post-COVID-19, combining the benefits of both face-to-face and online teaching methods. The paper also highlighted the need for future research to focus on other parts of the world, school education, long-term effects of COVID-19, and the variety of students' intentions towards online learning. In conclusion, the COVID-19 pandemic has emphasized the importance of flexible and adaptable learning modes, and higher education institutions need to continue to support and develop a range of learning modes that meet the needs of all students. Technology integration and a greater focus on blended learning mode are expected to shape the future of teaching and learning in higher education.

In this study, we have presented a systematic review of teaching modes during and post-COVID-19, which provides insights for future research in the area of learning delivery modes. However, it is important to note that this research has limitations. Firstly, the sample used in this research is limited to the Scopus database, and thus, some relevant studies published in non-Scopus indexed publications may have been missed. Therefore, future research could expand on this study by exploring other significant datasets, such as Web of Science-indexed journals or ABDC-listed journals. Secondly, the data gathering in this study was limited to articles, and other forms of writing such as reviews, symposium papers, and working papers could provide additional insights into the latest results in the learning modes area. Furthermore, a meta-analysis could be used in future research to provide statistical metrics of previous findings. Despite these limitations, our research is among the first to provide a comprehensive evaluation of various learning modes in higher education, and it provides a useful frame.

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Appendix 1: Emerging themes in Researches of Teaching modes (Scopus database 2020-2022)

SN.	Article Reference	Teaching Modes
1. Face to face Mode		
1	Cadorna, Cadorna, Jaramilla and Cadorna (2022)	<ul style="list-style-type: none"> ○ Flexible learning ○ Face-to-face and online mode ○ Inclination/orientation toward face-to-face mode
2	Johnson, Liddell, Lederer and Sheffield (2022)	<ul style="list-style-type: none"> ○ Comparing in-person/face-to-face to online ○ No difference found
3	Huh, Shen, Wang and Lee (202)	<ul style="list-style-type: none"> ○ Online and face-to-face ○ Face-to-face mode preferred
4	Thurm, Vandervieren, Moons, Drijvers, Barzel, Klinger and Doorman (2022).	<ul style="list-style-type: none"> ○ Face to Face Teaching
5	Dodson and Blinn (2022)	<ul style="list-style-type: none"> ○ Transition from face to face to online ○ Face to face preferred
6	Lee and Nuatomue (2021)	<ul style="list-style-type: none"> ○ Students' perceived difficulty and satisfaction in face-to-face vs. Online sections
2. Online Mode		
7	Dabbou, Golli-Bennour, Skandrani and Kassab (2022)	<ul style="list-style-type: none"> ○ Delivery of online biochemistry laboratories to undergraduate students ○ Virtual experimentation ○ Online laboratory
8	Bardus, M., Nasser AlDeen, K., Kabakian-Khasholian, T., Kanj, M., & Germani, A. (2022).	<ul style="list-style-type: none"> ○ Comparing face-to-face section to a blended section and online section ○ Blended learning offers a more flexible learning environment for public health students
9	Fleischmann and Manoharan (2022)	<ul style="list-style-type: none"> ○ Remote delivery mode ○ At home experiment and onsite experiments

		<ul style="list-style-type: none"> ○ At-home experiments were effective
10	Kwan, Memon, Hashmi, Rhode and Kadel (2022)	<ul style="list-style-type: none"> ○ Online/Block mode ○ Flipped classroom
11	Kanetaki, Stergiou, Bekas, Jacques, Troussas, Sgouropoulou and Ouahabi, (2022).	<ul style="list-style-type: none"> ○ YouTube channel as a support to synchronized teaching
12	Thompson, Bourke, Callow, and Hipsey (2022)	<ul style="list-style-type: none"> ○ Online Teaching
13	Blackford, Birney, Sharma, Crawford, Tilley, Winter and Hendriks (2022).	<ul style="list-style-type: none"> ○ Online Teaching ○ Focus Groups ○ e-survey
14	Siah, Huang, Poon and Koh, (2022).	<ul style="list-style-type: none"> ○ Online Teaching
15	Ng (2022).	<ul style="list-style-type: none"> ○ Online Teaching
16	Zamecnik, Kovanović, Joksimović and Liu (2022)	<ul style="list-style-type: none"> ○ Non-traditional learner motivations and characteristics in online learning
17	Wolever, Fin and Shields (2022)	<ul style="list-style-type: none"> ○ Live and recorded online mindfulness training programs to Lower Stress in the Workplace
18	Asharani, Ningaiah and Lokanathan (2022)	<ul style="list-style-type: none"> ○ Online Teaching
19	Grynyuk, Kovtun, Sultanova, Zheludenko, Zasluzhena and Zaytseva (2022)	<ul style="list-style-type: none"> ○ Distant Learning
20	Balseiro, Pérez-Martínez, de Paz and García Iglesias (2022).	<ul style="list-style-type: none"> ○ Lockdown-adapted methodologies ○ Compare face to face and online teaching (pre-post analysis)
21	Zhao, Zhang and Chen (2022).	<ul style="list-style-type: none"> ○ Online Teaching mode ○ EFL (English as a Foreign Language)
22	Bryce, Thinakaran and Zakaria (2022)	<ul style="list-style-type: none"> ○ Online Instructional Videos ○ English as a Second Language
23	Zhu, Geng, Disney and Pan (2022).	<ul style="list-style-type: none"> ○ Online Teaching
24	Mansfield and Rice (2022).	<ul style="list-style-type: none"> ○ Online Teaching

25	Mudau, Biccard, Van Wyk, Kotze and Nkuna (2022).	<ul style="list-style-type: none"> ○ Online Teaching
26	McKenna, Horton and Kopittke (2022).	<ul style="list-style-type: none"> ○ Comparing face to face to online ○ Smooth transition to online
27	Buhari, S. M., Suganya, R., & Rajaram, S. (2022)	<ul style="list-style-type: none"> ○ Comparing face to face to online ○ Better performance in online
28	Zamecnik, Kovanović, Joksimović and Liu (2022)	<ul style="list-style-type: none"> ○ Non-traditional learner motivations and characteristics in online learning
29	Wolever, Fin and Shields (2022)	<ul style="list-style-type: none"> ○ Live and recorded online mindfulness training programs to Lower Stress in the Workplace
30	Kanetaki, Stergiou, Bekas, Troussas and Sgouropoulou (2022)	<ul style="list-style-type: none"> ○ Remote task assignment ○ Virtual communication Platform environment
31	Nordmann, Hutchison and MacKay (2022)	<ul style="list-style-type: none"> ○ Online Lectures
32	Alatni, Abubakar and Iqbal (2021)	<ul style="list-style-type: none"> ○ Remote teaching and learning.
33	Alhasan and Al-Horani (2021)	<ul style="list-style-type: none"> ○ Students' perspectives on online lectures
34	Maheshwari (2021)	<ul style="list-style-type: none"> ○ Factors affecting students' intentions to undertake online learning
35	Zamborová, Stefanutti and Klimová (2021)	<ul style="list-style-type: none"> ○ Whether online learning is effective ○ Teachers' reflections on teaching during the pandemic and ○ The future of foreign language
36	Alhammadi (2021)	<ul style="list-style-type: none"> ○ Using e-learning mode to examine learning quality and practices in HEI
37	Perera and Gamage (2021)	<ul style="list-style-type: none"> ○ Students' readiness in a developing country in terms of tools and resources for swift changes
38	Hojeij and Baroudi (2021)	<ul style="list-style-type: none"> ○ Pre-service teachers in virtual field experience during COVID-19
39	Al-Karaki, Ababneh, Hamid and Gawanmeh (2021)	<ul style="list-style-type: none"> ○ Effectiveness of distance learning in higher education during covid-19 global crisis

40	Iglesias-Pradas, Hernández-García, Chaparro-Peláez , Prieto (2021)	<ul style="list-style-type: none"> ○ Emergency remote teaching ○ students' academic performance
41	Pilkington and Hanif (2020)	<ul style="list-style-type: none"> ○ Adapt, invent, and implement adjustments quickly to adopt an online learning environment. ○ Distance learning, learning and curriculum design, teaching and learning techniques methods and approaches
42	Moore, Scheifele, Chihade, and Provost (2021)	<ul style="list-style-type: none"> ○ Online Resources for Engaging Teaching
43	Dorovolomo, Rodie, Fito'o. and Rafiq (2021)	<ul style="list-style-type: none"> ○ Online learning experiences during COVID
44	Selvam and Ma'rof (2021)	<ul style="list-style-type: none"> ○ Computer-supported collaborative learning (CSCL) environment
45	Mok, Xiong, Bin Aedy Rahman (2021)	<ul style="list-style-type: none"> ○ Student evaluation of online learning experiences
46	Dunaway and Kumi (2021)	<ul style="list-style-type: none"> ○ Use of collaboration software to facilitate post-and pre-learner-instructor interactions
47	Barber (2021)	<ul style="list-style-type: none"> ○ Leveraging the online experience
48	Makumane (2021)	<ul style="list-style-type: none"> ○ Students' perceptions on the use of LMS
49	Cervera, Schmidt., Schwadron (2021)	<ul style="list-style-type: none"> ○ Planetary performance pedagogy
50	Mohammed, Khidhir, Nazeer, Vijayan (2020)	<ul style="list-style-type: none"> ○ Emergency remote teaching during Coronavirus pandemic: the current trend and future directive at Middle East College Oman
51	McDowell (2020)	<ul style="list-style-type: none"> ○ Asynchronous Online Assessment of Physical Chemistry Concepts
52	Schweiker and Levonis (2020)	<ul style="list-style-type: none"> ○ Insights Gained while Teaching First Semester Chemistry in the Time of COVID-19
53	Callo and Yazon (2020)	<ul style="list-style-type: none"> ○ Readiness on Online Teaching and Learning
3. Blended Mode		
54	Joji, Kumar, Almarabheh, Dar, Deifalla, Tayem, Y., ... and Shahid (2022).	<ul style="list-style-type: none"> ○ Online and face to face modes ○ Preferred blended mode
55	Li, Li, Han and Zhang (2022).	<ul style="list-style-type: none"> ○ Blended/online mode of delivery for theory-based courses ○ face-to-face delivery for practice-based courses

		<ul style="list-style-type: none"> ○ Flipped classroom approach
56	Finlay, Tinnion and Simpson, (2022)	<ul style="list-style-type: none"> ○ Virtual vs. blended learning approach ○ Preference to blended
57	Abdelkader and Barbagallo, (2022).	<ul style="list-style-type: none"> ○ Blended teaching mode preferred over others
58	Peimani and Kamalipour (2022).	<ul style="list-style-type: none"> ○ Blended Teaching
59	Dodson and Blinn (2022)	<ul style="list-style-type: none"> ○ Blended Teaching
60	Phelps and Moro (2022)	<ul style="list-style-type: none"> ○ Blended Teaching
61	Gillani, Siddiqui, Elshafie and Rathore (2022).	<ul style="list-style-type: none"> ○ Blended Teaching
62	Kundu, Bej and Mondal (2022)	<ul style="list-style-type: none"> ○ Face-to-face, blended flipped, and fully online ○ Better satisfaction of blended/flipped & better results of face to face
63	Boys (2022)	<ul style="list-style-type: none"> ○ Shift from face to face to virtual ○ Problem of student competencies in virtual compared to face to face
64	Niksiar, Bubacz, Ragan, Elamin and Bass (2021)	<ul style="list-style-type: none"> ○ Examining face to face and hybrid to see impact on students' academic performance
65	Kumari, Gautam, Nityadarshini, Das and Chaudhry (2021)	<ul style="list-style-type: none"> ○ Comparison of online and traditional modes during Covid 19
66	Peslak, Kovalchick., Wang, and Kovacs (2021)	<ul style="list-style-type: none"> ○ Online, hybrid, and on-ground course delivery methods to examine the effectiveness of educational delivery modes
67	Lee and Nuatomue (2021)	<ul style="list-style-type: none"> ○ Students' perceived difficulty and satisfaction in face-to-face vs. Online sections
68	Ashour, El-Refae., Zaitoun (2021)	<ul style="list-style-type: none"> ○ Opportunity to rethink higher education. ○ Imagine post-COVID-19 higher education
69	Howe and Watson (2021)	<ul style="list-style-type: none"> ○ Teaching in Alternate Modes of Delivery
70	Ginting, Fahmi, Barella, Linarsih, Hamdani (2021)	<ul style="list-style-type: none"> ○ Foreign language students' voices on blended learning and fully online classes

Appendix 2: A detailed summary of learning and teaching modes from 2020–2022, *accessible on*; shorturl.at/gtUV8