



Beyond the Teams Lecture: Interactive Strategies for Student Engagement in Live Online Higher Education

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Abstract

The rapid adoption of live online teaching in higher education has heightened long-standing concerns about student engagement, particularly in synchronous environments where passive, lecture-centric pedagogies often persist. While platforms such as Microsoft Teams have ensured continuity and access, they have also revealed limitations of traditional teaching methods when applied directly to online classes. This paper presents a structured literature review exploring interactive teaching strategies that enhance student engagement in live online higher education contexts. The review synthesises findings from empirical and conceptual studies published between 2019 and 2025, examining behavioural, cognitive, and emotional dimensions. The findings indicate that engagement is strengthened not by technology alone, but by intentional pedagogical design and a strong teaching presence. Interactive strategies identified in the literature include breakout room discussions, real-time polling, collaborative digital tools, scenario-based learning, peer interaction, structured questioning, and formative feedback practices. The review further highlights that effective engagement strategies are most successful when aligned with clear learning outcomes, supported by lecturer facilitation skills, and embedded within coherent instructional design frameworks. Persistent challenges identified in the literature include lecturer preparedness, digital fatigue, uneven student participation, cognitive overload, and limitations in institutional support for online pedagogy. This review contributes to higher education teaching practice by consolidating evidence-based strategies to support meaningful student engagement in synchronous online classrooms and identifying areas for future research.

Keywords: cognitive engagement; digital pedagogy; instructional design; learning facilitation; synchronous learning environment

1. Introduction

Online learning has grown significantly over the past 20 years (Martin et al., 2020), and its rapid expansion in higher education has profoundly transformed teaching and learning methods worldwide. Although the COVID-19 pandemic sped up the use of synchronous online teaching, platforms like Microsoft Teams and Zoom continue to play a key role in daily higher education activities (Bond et al., 2021). These tools offer greater flexibility and accessibility for students and instructors alike, but they also reveal persistent issues with student engagement during live online classes.

Student engagement remains a strong indicator of participation, persistence, and meaningful learning in higher education. Fredricks et al. (2004) conceptualise engagement across

behavioural, cognitive, and emotional dimensions, while more recent literature on online learning extends this framework to include collaborative and social engagement in digital learning spaces (Redmond et al., 2023). In synchronous online environments, engagement is often harder to sustain because of reduced social cues, passive participation, digital fatigue, and the absence of face-to-face interaction (Wang et al., 2023).

Early approaches to online teaching often replicated traditional lecture-based practices in digital environments. While this ensured continuity of instruction, it frequently led to teacher-centred delivery and limited learner participation (Wang et al., 2023). Many lecturers still encounter students attending online classes with cameras off, microphones muted, and minimal interaction, making it difficult to distinguish between attendance and genuine engagement.

Research increasingly suggests that meaningful engagement in synchronous online learning depends less on technology itself than on intentional pedagogical design, teaching presence, and opportunities for active participation (Rapanta et al., 2020). Consequently, there has been growing interest in identifying interactive strategies that encourage collaboration, participation, critical thinking, and social connection in live online learning environments.

Interactive strategies commonly identified in the literature include real-time polling, breakout room discussions, collaborative digital tools, scenario-based learning, peer interaction, and structured questioning activities. These approaches aim to shift online learning away from passive content delivery toward more student-centred and participatory learning experiences (Pusey & Vanderplank, 2023; Tualaulelei et al., 2025).

Although research on online engagement has expanded, understanding of how various interactive strategies affect different aspects of engagement, especially in real-time higher education contexts, remains limited. This paper offers a structured review of interactive teaching methods that foster student engagement during live online higher education. It also explores how pedagogical design and teaching presence shape meaningful engagement in synchronous online learning.

1.1 Research Objectives and Questions

The core objective of this study is to examine interactive teaching strategies that support student engagement in synchronous online higher education settings. The review also examines how pedagogical design and teaching presence affect behavioural, cognitive, emotional, and collaborative engagement in live online learning. To direct this review, the following research questions were developed:

1. What interactive teaching strategies are commonly used to support engagement in synchronous online higher education?
2. In what ways do these strategies impact the behavioural, cognitive, emotional, and collaborative aspects of student engagement?
3. What role do pedagogical design and teaching presence play in fostering meaningful engagement in synchronous online learning environments?
4. What challenges affect student engagement in synchronous online higher education?

2. Literature Review

A substantial body of research highlights student engagement as a key factor influencing participation, motivation, persistence, and satisfaction in online higher education (Redmond et al., 2023). In synchronous online learning environments, engagement is particularly significant because of the real-time nature of instruction and the heightened risk of learner

disengagement from distractions, passive attendance, and reduced interaction (Wang et al., 2023).

Student engagement is often viewed as a multifaceted concept encompassing behavioural, cognitive, and emotional dimensions (Fredricks et al., 2004). Behavioural engagement involves active participation in learning tasks; cognitive engagement concerns critical thinking and deeper learning; and emotional engagement encompasses students' motivation, interest, and emotional ties to their learning experiences. Recently, online learning models have broadened this understanding to emphasise social and collaborative elements, focusing on interaction, community, and connectedness within digital learning environments (Redmond et al., 2023). Additionally, social presence has been recognised as a key factor affecting interaction and participation in online settings (Tu & McIsaac, 2002).

Research on synchronous online learning consistently highlights the importance of interaction in maintaining engagement. Martin and Bolliger (2018) identify learner-to-learner, learner-to-instructor, and learner-to-content interactions as key elements of effective online engagement. Similarly, Wang et al. (2023) contend that engagement in synchronous online environments is influenced by various interconnected factors, including instructors, learners, content, technology, and learning settings. Across these studies, teaching presence and lecturer facilitation are especially significant in shaping students' online learning experiences. The role of teaching presence and meaningful interaction has long been emphasised within the Community of Inquiry framework, established by Garrison et al. (2000).

Further research indicates that meaningful engagement is enhanced by deliberate teaching methods that promote participation and collaboration. Techniques that promote participation, collaboration, and interaction, such as breakout discussions, group tasks, polls, structured questions, formative feedback, simulations, and scenario-based activities, are commonly employed in synchronous online learning (Rapanta et al., 2020; Pusey & Vanderplank, 2023; Wang et al., 2023). These approaches are linked to higher levels of participation, a stronger sense of social presence, and more active learner involvement during online sessions.

Breakout room discussions are widely acknowledged as a highly effective method to promote participation and collaborative engagement during synchronous online learning. Smaller groups provide a comfortable environment for students to interact, share ideas, and deepen their understanding of the content (Douglas, 2023). Likewise, digital collaborative tools foster active involvement by enabling students to co-create knowledge and engage in shared learning activities (Wang et al., 2023).

Polling tools have also become popular in synchronous online environments because they encourage immediate participation and provide lecturers with real-time feedback on students' understanding (Hollister et al., 2022; Wang et al., 2023). These tools may also support quieter students who are less likely to participate verbally during live sessions.

Scenario-based learning and simulations further support engagement by requiring students to apply theoretical concepts in realistic contexts. These approaches encourage higher-order thinking, problem-solving, and the practical application of knowledge while supporting cognitive and emotional engagement (Tualaulelei et al., 2025).

The literature highlights several challenges associated with synchronous online engagement, including digital fatigue, uneven participation, reduced motivation, feelings of isolation, and increased cognitive load from managing multiple online interactions (Hollister et al., 2022). As a result, researchers emphasise that successful online engagement depends on balancing interaction with well-structured instruction and intentional facilitation to prevent superficial participation or cognitive overload.

3. Materials and Methods

This study employed a structured literature review to gather recent research on interactive strategies that engage students in synchronous online higher education. It primarily focused on empirical and conceptual studies published between 2019 and 2025, while also incorporating a few foundational works that underpin key theoretical concepts in student engagement and online instruction.

The literature search was conducted using Google Scholar, ERIC, and Scopus-indexed journals. Search terms comprised keyword combinations, including “student engagement,” “synchronous online learning,” “live online teaching,” “interactive strategies,” “online pedagogy,” “teaching presence,” and “higher education.”

Studies were included if they focused on synchronous online learning environments, were conducted in higher education settings, investigated interactive teaching methods or engagement strategies, and addressed behavioural, cognitive, emotional, social, or collaborative engagement. Those that focused only on asynchronous learning, non-higher-education settings, or were non-English were excluded.

The initial database search identified 86 studies from Google Scholar, ERIC, and Scopus-indexed journals. During screening, duplicate studies and articles unrelated to synchronous online higher education were excluded. Titles and abstracts were then screened against the inclusion criteria, resulting in 45 potentially relevant studies. After a full-text review, 30 studies were selected for thematic analysis.

Table 1 summarises the selected studies included in the review, highlighting their contexts, methodological approaches, and focus areas related to student engagement in synchronous online higher education.

Table 1: Summary of Selected Studies Included in the Review

Author(s)	Context	Method	Focus
Wang et al. (2023)	Higher Education	Mixed methods	Synchronous engagement
Redmond et al. (2023)	Online Higher Education	Mixed methods	Online engagement dimensions
Douglas (2023)	University teaching	Mixed methods	Dialogic learning through breakout rooms
Hollister et al. (2022)	COVID-era online learning	Mixed methods	Student engagement in online learning
Tualaulelei et al. (2025)	Postgraduate online learning	Design-based research	Interactive technologies

Note. Developed by the author from the reviewed literature.

Thirty studies meeting the inclusion criteria were thematically analysed to identify common pedagogical strategies, conceptual trends, and challenges associated with engagement in synchronous online learning. The thematic analysis involved identifying recurring themes, pedagogical approaches, and engagement-related patterns across the selected studies. The primary themes included teaching presence, collaborative interaction, active participation techniques, emotional engagement, instructional design, and barriers to sustaining participation. The included studies were reviewed for relevance, methodological clarity, and alignment with the study focus on student engagement in synchronous online higher education.

This review does not seek to achieve statistical generalisability but provides a critical overview of current scholarship to inform higher education teaching practices and identify areas requiring further empirical study.

4. Results and Discussion

4.1 Interactive Strategies for Engagement

The reviewed literature indicates that meaningful engagement in synchronous online learning is primarily influenced by pedagogical design, teaching presence, and opportunities for interaction, rather than by technology alone. Interactive strategies are most effective when purposefully incorporated into learning activities and aligned with specific learning goals.

Real-time polling has become one of the most widely used strategies to support behavioural engagement. Polling tools encourage immediate participation and give lecturers opportunities to gauge student understanding during live sessions (Hollister et al., 2022; Wang et al., 2023). Beyond increasing participation, polling may stimulate discussion and reflection by prompting students to compare responses and consider different perspectives.

Breakout room discussions were repeatedly found to be especially effective in fostering collaboration and cognitive engagement. Smaller groups offer more manageable environments for interaction and enable students to participate more comfortably than in large-group settings (Douglas, 2023). These activities promote peer learning, discussion, and active participation while reducing some of the social pressure associated with speaking in larger online classrooms.

Collaborative digital tools also contribute to engagement by enabling students to work together in real time. Shared documents, whiteboards, and collaborative activities support active participation and the construction of shared knowledge while shifting the learning process toward more student-centred approaches (Wang et al., 2023).

Scenario-based learning and simulations enhance engagement by linking theory to real-world practice. These methods prompt students to analyse scenarios, solve problems, and apply concepts in realistic settings, fostering deeper cognitive involvement and hands-on learning (Tualaulelei et al., 2025).

The findings indicate that interaction by itself does not guarantee meaningful engagement. Multiple studies warn that overusing simultaneous interactive activities can lead to cognitive overload and digital fatigue, especially during long synchronous sessions (Hollister et al., 2022). This suggests that successful engagement involves more than simply increasing interaction; it also requires complementary participation that aligns with students' cognitive abilities and overall online learning experiences.

4.2 Lecturer Presence and Facilitation

The literature emphasises the crucial role of teaching presence and lecturer facilitation in maintaining student engagement. Lecturers are vital in designing activities, directing interactions, offering feedback, and motivating participation (Rapanta et al., 2020). Therefore, effective facilitation is essential for transforming online learning from passive lectures into engaging, collaborative experiences.

The literature also indicates that student engagement depends on perceptions of relevance, inclusion, and participation in synchronous online learning settings. Students tend to participate more actively when activities are explicitly linked to learning goals and participation standards.

An additional key insight from the literature is the link between engagement and social presence. Students tend to participate more actively when they feel a connection with peers and instructors. Therefore, methods that foster peer engagement can enhance not just participation but also students' sense of belonging in synchronous online learning settings.

The literature further suggests that lecturers should adopt a balanced approach to interactivity in synchronous online sessions. While encouraging participation and collaboration is valuable, overusing interactive activities can lead to cognitive overload and fatigue. To teach effectively online, it is essential to pace activities carefully, provide clear instructions, and integrate engagement strategically to support overall learning goals.

4.3 Challenges in Synchronous Online Higher Education

Research shows that student engagement in synchronous online higher education varies among learners. Factors like confidence, digital literacy, language barriers, internet access, and experience with online learning can affect students' willingness and ability to engage in interactive activities. In some online settings, highly interactive sessions may favour more confident or digitally adept students, leaving quieter students as passive observers. Therefore, instructors should implement a variety of participation methods, such as chat, polls, collaborative documents, and verbal discussions, to promote inclusive engagement among diverse student groups.

Simultaneously, maintaining highly interactive online learning environments can increase lecturers' workload. Tasks like managing breakout discussions, monitoring participation, designing collaborative activities, and providing continuous feedback require significant preparation and active facilitation. This highlights the need for institutional support and specialised professional development in digital pedagogy and online facilitation skills.

Research indicates that extended periods of synchronous online learning can cause decreased focus, digital fatigue, and declining motivation. Although interactive techniques can enhance participation and teamwork, their success depends on proper pacing, clear instruction, and alignment of activities with overall learning goals. This highlights the need to balance interactive elements with students' cognitive load and well-being in these settings.

The literature also emphasises concerns related to equity in synchronous online higher education. Students' participation can be influenced by factors such as internet stability, access to digital resources, language skills, and differing levels of digital literacy, especially in resource-limited settings. These issues may affect how students engage and lead to unequal opportunities for participation across online learning spaces. Although most existing research comes from Anglophone contexts, more studies are needed to understand synchronous online engagement practices across a variety of cultural, linguistic, and institutional environments.

Table 2: Interactive Strategies and Engagement Dimensions in Synchronous Online Learning

Strategy	Engagement Supported	Example Purpose
Polling	Behavioural	Immediate participation and feedback
Breakout discussions	Cognitive & Social	Collaborative learning and discussion
Collaborative tools	Behavioural & Cognitive	Shared knowledge construction
Scenario-based learning	Cognitive	Application of theory to practice
Lecturer Feedback	Emotional	Motivation and connection

Note. Developed by the author from the reviewed literature.

The strategies analysed in Table 2 promote various aspects of engagement, emphasising that successful synchronous online learning depends on balancing opportunities for behavioural, cognitive, emotional, and collaborative involvement.

4.4 Practical Implications for Higher Education

The findings of this review have significant implications for lecturers and higher education institutions engaged in synchronous online teaching. First, the literature indicates that

increasing engagement involves more than just granting access to digital platforms. Institutions should focus on professional development programs that emphasise digital pedagogy, online facilitation, and the creation of interactive learning experiences.

Secondly, the findings highlight that institutions need to acknowledge the extra workload involved in supporting highly interactive synchronous online learning. Creating collaborative activities, overseeing breakout room discussions, engaging with chat, and offering continuous feedback all demand considerable preparation and active management during live sessions. Support mechanisms such as training programs and workload recognition are crucial in maintaining effective online teaching practices.

Finally, the review highlights the importance of designing inclusive synchronous online learning environments that cater to diverse student needs and participation preferences. Offering a variety of engagement opportunities can increase overall participation and lower barriers related to confidence, communication styles, and digital access.

Furthermore, higher education institutions might need to rethink how they assess the effectiveness of online teaching in synchronous settings. Relying solely on attendance and participation metrics may not accurately represent genuine engagement in digital learning. Instead, institutions should explore additional indicators such as collaborative efforts, reflective interactions, and proactive involvement in learning tasks. This shift could promote more student-centred approaches in synchronous online teaching and learning.

Table 3 presents facilitation strategies lecturers can apply to enhance engagement, participation, and pacing during synchronous online learning. These strategies demonstrate how structured facilitation practices may support participation while also reducing cognitive overload and passive engagement during synchronous online sessions.

Table 3: *Practical Facilitation Strategies for Synchronous Online Learning*

Strategy	Example Facilitation Practice
Polling	Use low-stakes polls every 15–20 minutes to check understanding
Breakout rooms	Provide clear discussion prompts and time limits
Collaborative tools	Assign structured group tasks with defined roles
Lecturer Feedback	Use verbal and written feedback during live sessions
Pacing	Alternate between instruction and interaction to reduce fatigue

Note. Developed by the author from the reviewed literature.

5. Conclusion

This paper explored interactive teaching strategies that enhance student engagement in live online higher education settings. Interactive strategies like polling, breakout room discussions, collaborative digital tools, scenario-based learning, and structured feedback can enhance behavioural, cognitive, emotional, and collaborative engagement when used intentionally in synchronous online learning. However, the findings also indicate that excessive interactivity can lead to cognitive overload and digital fatigue, emphasising the need to balance engagement methods with students' cognitive capacity and well-being.

The findings highlight the essential role of lecturer facilitation in maintaining engagement in synchronous online classrooms. Successful online teaching goes beyond just technical skills; it involves creating interactive learning experiences, encouraging meaningful discussions, and fostering participation in digital learning settings.

Institutions, therefore, play a crucial role in aiding lecturers with professional development, pedagogical training, and sustainable online teaching. Future studies could delve deeper into discipline-specific engagement strategies and examine how emerging technologies, such as

AI-supported educational tools, impact participation and interaction in synchronous online higher education settings. Future research could also examine how engagement strategies differ across disciplines, as participation methods and facilitation requirements may vary widely between fields of study.

As synchronous online learning continues to evolve within higher education, the effectiveness of digital teaching will increasingly depend on lecturers' ability to design interactive, inclusive, and pedagogically meaningful learning experiences rather than simply adopting new technologies.

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