

Instructional Strategies for Engaging Online Learners: Do Learner-centeredness and Modality Matter?

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Abstract

This study explores how online instructors use different instructional strategies to engage learners, and the active learning indicators that they look for among their students. Additionally, it examines how modality—synchronous versus asynchronous—and instructor learner-centeredness relate to instructional strategy choices. Using a mixed methods approach with a concurrent triangulation design, 101 higher education online instructors were surveyed and 11 were interviewed. Findings show that the use of learner-centered strategies, particularly discussion, occurs at a high rate regardless of an instructor's learner-centeredness or modality. Interestingly, instructors with high learner-centeredness reported greater use of lectures as a percentage of both synchronous and asynchronous courses than instructors with low learner-centeredness. This finding was counterbalanced by the high learner-centeredness group reporting significantly higher importance for having learners speak and post messages during class.

Keywords: learner-centeredness, online instruction, synchronous learning, asynchronous learning, active engagement

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Student engagement has long been hailed as an important component of online learning, although definitions of and strategies for engagement vary widely. Engagement implies some form of interaction, which in online classes may entail learner interaction with their instructor, other learners, or learning content (Moore, 1993). This interaction framework has served as the foundation of much student engagement research and practice. For example, Martin and Bolliger (2018) used it to frame their study on student engagement in online learning, finding that common engagement strategies such as course discussion are considered valuable to some students, but not valuable to others. Systematic reviews of the online teaching and learning literature confirm both the importance of student engagement and the challenge that online instructors face when trying to determine how to best engage students (Berge & Mrozowski, 2001; Martin et al., 2020; Zawacki-Richter et al., 2009). Professional development may help instructors develop better engagement strategies (Bigatel & Williams, 2015), although instructor and learner perceptions of what is effective may differ (Bolliger & Martin, 2018). Whereas learners may passively consume course content and perceive that they are learning, instructors rely on visible indicators of student engagement to gauge student learning in a formative sense.

Learner-centeredness similarly has been proposed as critical to online learner success. Learner-centeredness refers to an educational approach that places the learner at the center of the instructional process, considering their individual needs, interests, and abilities (McCombs, 2008). By placing learner needs at the center of the class experience instead of pre-designed content delivery, learner-centered approaches empower students to actively participate and take ownership of their learning process (Blum-Smith et al., 2021; Considine et al., 2014). Given the level of autonomy typically associated with online learning, learners take responsibility for their learning journey (Moore et al., 2011) and, especially in asynchronous courses, apply self-regulation and independent problem-solving skills (Ribbe & Bezanilla, 2013). Learner-centered online instruction can foster the development and use of these skills.

Both student engagement and learner-centeredness promote active learning. Active learners do not simply consume course content but must participate in learning activities and are likely to receive formative feedback based on that participation (Nguyen et al., 2021). To engage active learners, instructors must apply learner-centered principles to promote learning strategies such as inquiry, collaboration, and reflection (Archambault et al., 2022). In other words, a class taught by lecture alone would not engage students in active learning or be considered learner-centered. In contrast, by requiring students to participate in ways that help them make meaningful connections with the course content and perhaps also with each other, instructors draw upon learner-centered principles and support active learning. These concepts are interrelated but are not always designed for online classes and may not be valued equally by all online instructors.

This study explores the relationship between online instructors' learner-centeredness and their instructional choices and perceptions related to student engagement. Specifically, it considers the pedagogical strategies that higher education instructors use, the indicators of active learning they seek, and the importance they place on peer and instructor interaction. These elements of online learning are examined in both synchronous and asynchronous learning modalities, with the recognition that different temporal experiences of learning and engagement may lead to different instructor strategies and perceptions.

Literature Review

Online Learning Engagement

Students have varied engagement levels and patterns in online courses. For example, in asynchronous courses, some students contribute posts and comments on discussion boards, while others do not contribute. Some researchers propose viewing engagement patterns dichotomously, with students categorized as either active or passive (Blau & Shamir-Inbal, 2021; Mikum et al., 2018; Rubio et al., 2018, Ruthotto et al., 2020, Srba et al., 2019). In this classification, students have been deemed active when they leave visible traces and thus, students' non-posting or read-only behaviors are considered passive (Choi & Hur, 2023). Passive students may be following along with the learning activities and learning both from course content and vicariously through others' interactions—essentially, less visible activities, such as reading, may also be part of the engaged student's repertoire (Dixson, 2015)—or they may be absent from the course and not learning.

To examine students' engagement patterns, a variety of quantitative measures and visible indicators have been used, such as posting frequency, posting volume, and time spent online (Malinen, 2015; Ruthotto et al., 2020; Shi et al., 2023; Wilton, 2018). Each indicator is an observable metric that can gauge students' engagement levels. Posting volume is a common indicator and online instructors frequently specify a minimum contribution level for credits (Dennen, 2008). Similarly, posting frequency allows instructors to determine if students are participating concurrently with their peers (and hopefully engaging with those peers) or in a delayed fashion. Students commonly follow the engagement guidelines that are connected to their course grades, and the prevailing belief is that engagement and learning outcomes are heavily intertwined (Hrastinski, 2009). Still, student engagement patterns also may vary based on learning activity design and instructor facilitation styles (Binali et al., 2021; Choi & Hur, 2023). Essentially, instructor decisions and actions can influence visible learner activity.

Course Modalities and Engagement Patterns

Online courses are typically designated as synchronous or asynchronous, indicating the most prominent modality in which learners engage with their instructor and peers. Synchronous teaching refers to the pedagogical approach where educators and learners engage in real-time, interactive instruction, while asynchronous teaching involves pre-prepared materials and assignments accessed by learners at their convenience (Kear et al., 2012). Communication and interaction occur differently based on modality (Hrastinski, 2008), and as a result, the indicators of engagement vary. For instance, instructors in synchronous courses may use turning on webcams as an indicator of active learning due to the fear of students' absence behind the screen (Gilmour, 2021), although students may be present yet keeping their webcams off for other reasons (Dennen et al., 2022). In asynchronous courses, instructors may value both posting frequency and time spent in the course (Wilton, 2018; Wise et al., 2013). Different modalities support different purposes and aspects of online courses (Hrastinski, 2008), and instructors adopt distinct tools and pedagogical activities for each modality, affecting measurement and indicators of engagement patterns. Similarly, students experience social presence and perceptions of learning differently across modalities (Ratan et al., 2022). Thus, online learning should not be treated as a monolith, and modality differences may be relevant to both instructors and learners as they choose the experience that best fits their needs and preferences.

Learner-centered in Online Instruction

Learner-centered education has long been advocated by educators and researchers as an approach to enhance learning effectiveness (Zhou et al., 2019). This approach involves the implementation of strategies that actively engage learners and give them ownership over their learning experience, including problem-based learning, inquiry-based learning, and project-based learning in the classroom (Chimbi & Jita, 2021; Herranen, 2016; Karimi, 2011). In the context of online courses, to support learner-centeredness instructors are also encouraged to create a constructivist learning environment where learners are active contributors (McCombs, 2015).

Previous research has identified various learner-centered instructional strategies that have proven effective in promoting student engagement and learning performance (e.g., Cheng et al., 2021; Mahmood, 2021; Orr et al., 2021; Wang et al., 2021). For instance, Orr et al. (2021) highlighted innovative practices such as case-based instruction, gamification, interactive simulations, and multimedia presentations, all of which have been found to increase student engagement in online courses. Effective use of digital technologies and careful management of technology in online learning settings are also important factors in ensuring student engagement (Orr et al., 2021). Wang et al. (2021) discovered that online instructional strategies optimized with smart interactive tools, including cloud-based video conferencing, online teaching platforms, and messaging tools, are more effective than traditional teaching methods in terms of fostering student engagement and motivation. These tools provide opportunities for active learning, personalized feedback, and collaboration, thus enhancing learner-centeredness (Wang et al., 2021). Besides, Mahmood (2021) emphasized the importance of effective instructional design (e.g., providing clear and well-organized materials) for engaging online students. Additionally, instructors may consider incorporating both synchronous and asynchronous approaches in a course to offer flexibility and cater to diverse learning needs (Mahmood, 2021). In sum, the opportunities and approaches that facilitate learner-centered instruction are many and varied.

Given the many pedagogical opportunities available to online instructors and the connection between learner-centeredness and active learning, it is helpful to understand how online instructors use different pedagogical activities and assess student engagement, as well as whether their approaches and beliefs vary by teaching modality and the degree to which they value learner-centeredness. To investigate these issues, the following research questions frame our study:

1. What pedagogical activities have online instructors used most frequently? Do learner-centeredness and modality matter?
2. What indicators do online instructors use to identify active learning? Do learner-centeredness and modality matter?
3. How do online instructors perceive students' interaction with instructors and peers? Do learner-centeredness and modality matter?

Method

This study adopted a sequential explanatory mixed-method approach to understanding instructors' perceptions of active learning and learner-centered instruction in online courses. This approach is appropriate when researchers use quantitative data as their primary data source and supplement it with qualitative data to help explain their findings (Creswell, 2009). In this study,

quantitative data were collected via an online survey and qualitative data were collected through interviews.

Participants

Participants in this study are higher education instructors with experience teaching online, whether asynchronous, synchronous, or in both modalities. A total of 101 higher education faculty completed the online survey, 11 of whom participated in a follow-up interview. Convenience sampling was used, and participants were recruited through social media posts. Participation was voluntary, and the study was approved by the researchers' Institutional Review Board.

Table 1 provides an overview of the sample's demographic characteristics. The average length of teaching experience was 12.56 years ($SD = 9.32$) and the average length of online teaching experience was 6.46 years ($SD = 6.35$). Approximately half of the instructors taught in either education (32.7%) or humanities (26.7%). Most of the participants have taught both synchronous and asynchronous courses (43.6%) and were from North America (75.2%).

Table 1

Overview Information of Participants (N = 101)

Demographic Variables	Min.	Max.	M (SD)
Years of teaching	1	40	12.56 (9.32)
Years of online teaching	0.5	25	6.46 (6.35)
Demographic Variables	N	Percentage	
Discipline			
Teacher Education	33	32.7%	
Humanities	27	26.7%	
Social Sciences & Business	18	17.8%	
Natural Sciences	17	16.8%	
Others (e.g., Interdisciplinary)	6	5.94%	
Country/Region			
North America	76	75.2%	
Asia	19	18.8%	
Europe	6	5.9%	
Course Modalities			
Synchronous	29	28.7%	
Asynchronous	28	27.7%	
Both	44	43.56%	

Instruments

The primary instrument used in this study was an online survey. This survey consisted of demographic questions (see Table 1 for an overview of those items), a learner-centeredness scale, and sections about strategies for student engagement, indicators of student engagement, and perceptions of interaction.

Learner-centeredness. To measure learner-centeredness, a modified version of the Assessment for Learner-Centered Practices (ALCP) developed by McCombs (2015) was employed. In this study, we adopted the short version of ALCP, which consists of three scales (i.e., learner-centered beliefs, non-learner-centered beliefs—learners, and non-learner-centered beliefs—teach & learn) and 15 statements in total. Participants were asked to choose the option that best matches their online teaching experiences (1 = strongly disagree to 5 = strongly agree) (Ware, 2006). The Cronbach's alpha for the three scales in McComb's (2015) study was 0.86, 0.76, and 0.71. In our research context, the alphas were 0.788, 0.740, and 0.714, respectively, indicating a high level of internal consistency for our specific sample (Cronbach's Alpha > 0.7).

Strategies for student engagement. Participants were asked to rate the frequency with which they use specific pedagogical activities (e.g., lecture, discussion, presentation) in synchronous or asynchronous lessons (1 = never to 5 = very frequent). Items appear in Table 3.

Indicators of student engagement. For each modality they have previously taught, instructors were asked to choose from a list of indicators they have used to determine whether students were actively engaged. The indicators were adapted from Cerezo et al. (2016), Kim et al. (2016), and Shi et al. (2023), and appear in Tables 6 and 7.

Perceptions of interaction. Participants were asked to indicate their agreement with the importance of different types of interactions and interaction-related actions in their classes using a 5-point scale (1 = strongly disagree to 5 = strongly agree). The items were based on Moore's (1993) interaction framework. Specific items appear in Table 8.

Interview. Interview participants were recruited via a separate form at the end of the survey. Interviews followed a semi-structured protocol and were conducted over Zoom. The interview questions focused on eliciting information about the participants' perceptions of and strategies for student engagement in online learning. Sample interview questions include:

- a) How do you define active and passive participation in online learning?
- b) How do you define learner-centeredness?
- c) How do you determine whether students are actively participating?
- d) How do you engage passive students?

Data Analysis

Based on the nature of our research questions, we used descriptive analyses and analyses of group differences for all three research questions. To describe the sample's responses, frequencies and measures of central tendency were used. To address possible group differences, we conducted a Kruskal-Wallis test, because the normality assumption is not satisfied. Data was analyzed using SPSS (Version 26), and two-tailed p -values < 0.05 were significant.

To score the learner-centeredness scales, we used the guidance from McCombs (2015) to first determine if participants exhibited learner-centered beliefs on each of the three scales. Then, continuing with this guidance, we classified participants into four types based on the aggregate number of learner-centered scale scores they received (range = 0 - 3; see Table 2). The non-learner-centered group had very few participants compared with the other three groups. Consequently, this group was combined with the low learner-centered group. The three resulting

groups presented in Table 2 were used to determine group differences based on learner-centeredness.

Table 2
Instructor Groups based on ALCP Scales

Type	Number of Participants	Description
Low learner-centered	44	learner-centered on 0–1 scales
Medium learner-centered	36	learner-centered on 2 scales
High learner-centered	21	learner-centered on all 3 scales

All eleven interviews were transcribed by the research team. To protect the identity of the interviewees, pseudonyms were used during the transcription process. We employed a triphasic coding process to analyze the interview. Commencing with an immersive reading and re-reading of the transcripts, our objective was to familiarize ourselves thoroughly with the raw data. Subsequently, in alignment with our research questions, we adopted an open coding approach to analyze the transcripts line by line from the interviews (Maguire & Delahunt, 2017). This approach was selected due to the absence of pre-existing codes, allowing us to cultivate and adapt the codes progressively as we navigated through the coding process (Maguire & Delahunt, 2017). Three researchers individually coded the transcripts, assigning codes to every text segment pertinent to our research question. To increase the validity, the researchers checked the accuracy of each other's transcriptions and had regular meetings to discuss the disagreements. In the final stage, the codes were examined for thematic relationships, and several were subsequently amalgamated into distinct themes. Interview data was coded and analyzed using Microsoft Excel.

Results

Frequently Used Pedagogical Activities

Participants were asked to indicate the frequency with which they allocated class time to specific activities (e.g., lecturing, class discussion, student presentation) in both synchronous and asynchronous courses, using a scale ranging from 1 (never) to 5 (very frequent). Mean scores were calculated to determine the frequencies of these activities (see Table 3). In the synchronous online course, class discussion emerged as the most frequently used strategy ($M = 3.99$, $SD = 0.905$), followed by live lectures ($M = 3.77$, $SD = 0.979$), group discussion ($M = 3.67$, $SD = 1.042$), and student presentation ($M = 3.11$, $SD = 0.859$). Similarly, in the asynchronous course, discussion ($M = 4.19$, $SD = 1.016$) was reported to be more frequent than pre-recorded lectures ($M = 3.67$, $SD = 1.187$). Aligning with the indicator of active engagement in the asynchronous course, reading assignments were the most commonly employed strategy ($M = 4.26$, $SD = 1.088$). In contrast, student presentations were less commonly used in asynchronous courses ($M = 2.82$, $SD = 1.211$).

Table 3

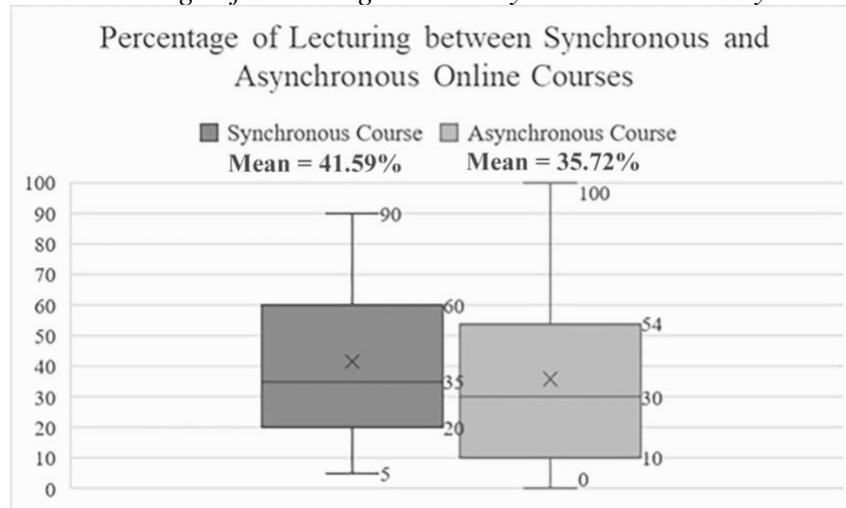
Frequencies of Pedagogical Activities Allocated in Synchronous and Asynchronous Online Courses

Context	Instructional Strategies	Frequency	
		<i>M</i>	<i>SD</i>
Synchronous online course	Class discussion	3.99	0.905
	Live lectures	3.77	0.979
	Group discussion	3.67	1.042
	Student presentation	3.11	0.859
Asynchronous online course	Reading assignments	4.26	1.088
	Discussion	4.19	1.016
	Pre-record lectures	3.67	1.187
	Collaborative activities	3.32	1.362
	Quiz	3.03	1.321
	Student presentation	2.82	1.211

Instructors were asked to indicate the percentage of class time that was allocated to lecturing, whether live or pre-recorded, using a sliding scale from 0 to 100%. Instructors reported a longer duration of live lectures in synchronous courses ($M = 41.59\%$) than of pre-recorded lectures in asynchronous courses ($M = 35.72\%$) (see Figure 1), indicating that faculty are more likely to adopt lecturing and to lecture for more of the instructional time when teaching synchronously.

Figure 1

The Percentage of Lecturing between Synchronous and Asynchronous Online Courses



This study further compared different types of pedagogical activities across high learner-centeredness, medium learner-centeredness, and low learner-centeredness instructors. The outcomes are displayed in Table 4, Table 5, Figure 2, and Figure 3. These show the comparative statistical analysis of test results among different learner-centeredness levels of instructors. The Kruskal–Wallis Test showed no significant differences (see Table 4 and Table 5) among the pedagogical activities adopted in synchronous and asynchronous courses. Unexpectedly, as shown in Figures 2 and 3, high learner-centered instructors allocated a slightly greater percentage

of time for lecturing in their online classes than medium and low learner-centered instructors regardless of modality.

Table 4
Hypothesis Test Summary

Items	p-value	Decision
<i>Synchronous</i>		
Live lectures	0.271	Accept the null hypothesis
Class discussion	0.775	Accept the null hypothesis
Breakout rooms	0.312	Accept the null hypothesis
Student presentations	0.546	Accept the null hypothesis
<i>Asynchronous</i>		
Pre-recorded lectures	0.980	Accept the null hypothesis
Discussion	0.645	Accept the null hypothesis
Student presentations	0.556	Accept the null hypothesis
Reading assignments	0.435	Accept the null hypothesis
Collaborative activities	0.128	Accept the null hypothesis
Quiz	0.946	Accept the null hypothesis

Note. The null hypothesis is there is no significant difference among the three learner-centeredness groups of instructors in terms of pedagogical activities used in synchronous and asynchronous online courses

Table 5
Hypothesis Test Summary

Items	p-value	Decision
Synchronous live lectures	0.360	Accept the null hypothesis
Asynchronous pre-record lectures	0.281	Accept the null hypothesis

Note. The null hypothesis is there is no significant difference among the three learner-centeredness groups of instructors in terms of the percentage of lecturing used in synchronous and asynchronous online courses

Figure 2
Percentage of Live Lecturing in Synchronous Courses among Three Groups

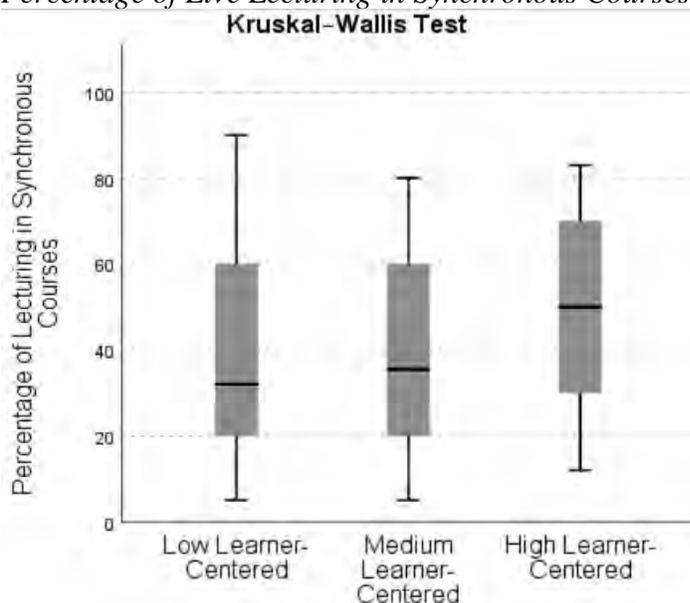
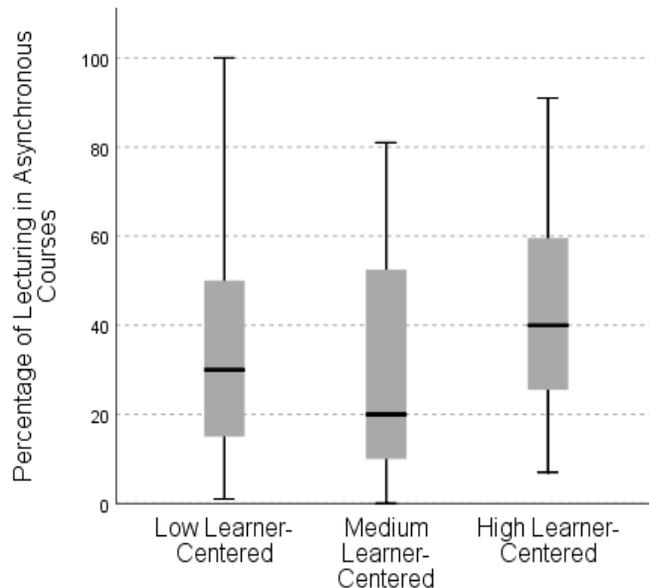


Figure 3

Percentage of Pre-record Lecture Videos in Asynchronous Courses among Three Groups
Kruskal-Wallis Test



The greater use of lecturing among high learner-centered instructors is surprising. However, during interviews, most of whom declared themselves to be learner-centered, indicated that when they use lectures it is interactive, drawing upon tools like Kahoot to provide opportunities for learners to interact during lectures. Additionally, they reported coupling lectures with discussion activities. In other words, an activity labeled “lectures” might not just be a one-way transmission of information from the instructor to the learners but is likely to engage learners in the practice of using that information while they are learning it.

Interview participants further shared that learner-centeredness revolves around granting student ownership in their learning process, offering choices in learning activities, and fostering students' self-efficacy as well as motivation. Specifically, one of the interviewees stated that learner-centeredness refers to decentering herself as an instructor and creating an environment that encourages students to actively contribute and share their stories.

I think it's [learner-centeredness] more a matter of de-centering myself, and it is a matter of centering them right, so de-centering myself so we're all learners in an environment where we're all going to be able to contribute unique things. Right, everybody has something that they bring to the table, they have work experience, a life experience, a kind of literacy I don't have. (P1, 2-year online teaching experience)

Indicators of Active Learning

In synchronous courses, instructors most often reported using responses from activities, posts in chat, student attendance, and quality of student posts as indicators of active learning (see Table 6). Replies to peers, use of webcams, and length of posts were least commonly used as indicators. Frequencies varied by learner-centeredness, but a Chi-square test showed that only one indicator, responses from class activities, had significant differences by learner-centeredness

($\chi^2 = 5.719$, $p = 0.045$). The post hoc test showed that high learner-centered instructors significantly differed from low learner-centered instructors in their choice of this active indicator ($\chi^2 = 5.907$, $p = 0.017$).

Table 6*Indicators of Active Synchronous Engagement among Three Learner-centeredness Groups*

Indicators	Overall (N = 73 ^a)	Low LC (N = 28)	Medium LC (N = 28)	High LC (N = 17)	χ^2 (df)
Responses from class activities (e.g., polling, quiz)	59 (80.8% ^b)	20 (71.4% ^c)	22 (78.6%)	17 (100.0%)	5.719 (2)*
Frequency of students communicating in the chat	51 (69.9%)	21 (75.0%)	17 (60.7%)	13 (76.5%)	1.187 (2)
Percentage of student attendance	50 (68.5%)	19 (67.9%)	18 (64.3%)	13 (76.5%)	0.736 (2)
Quality of posts in discussion forums or collaborative tools	48 (65.8%)	19 (67.9%)	16 (57.1%)	13 (76.5%)	1.870 (2)
Number of posts in discussion forums or collaborative tools	44 (60.3%)	17 (60.7%)	16 (57.1%)	11 (64.7%)	0.014 (2)
Frequency of students speaking on the main audio channel	42 (57.5%)	16 (57.1%)	15 (53.6%)	11 (64.7%)	0.540 (2)
Number of replies to peers	36 (49.3%)	14 (50.0%)	12 (42.9%)	10 (58.8%)	1.087 (2)
Percentage of students turning on the webcam	24 (32.9%)	8 (28.6%)	11 (39.3%)	5 (29.4%)	0.849 (2)
Length of posts in discussion forums or collaborative tools	14 (19.2%)	7 (25.0%)	4 (14.3%)	3 (17.6%)	1.070 (2)

Note.

^a the number of instructors responding to synchronous online questions.

^b the percentage of instructors who selected the specific indicator as the active engagement indicator.

^c the percentage of instructors in different Learner-Centeredness groups who selected the specific indicator as the active engagement indicator.

* $p < 0.05$

In asynchronous courses, instructors most often reported using indicators such as assignment completion rates, frequency of logins, and activities related to discussion board use (e.g., number and quality of posts, number of replies; see Table 7). The least frequently used indicators were post length, duration of logins, and emails to the instructor. Chi-square tests indicated that differences among learner-centeredness groups were not significant.

Table 7*Indicators of Active Asynchronous Engagement among Three Learner-centeredness Groups*

Indicators	Overall (N = 72^a)	Low LC (N = 33)	Medium LC (N = 24)	High LC (N = 15)	χ^2 (df)
Completion rate of assignments or quizzes	64 (88.9% ^b)	30 (90.9% ^c)	22 (91.7%)	12 (80.0%)	1.524 (2)
Quality of posts in discussion forums or collaborative tools	61 (84.7%)	28 (84.8%)	18 (75.0%)	15 (100.0%)	4.458 (2)
Frequency that students log in to course activities	48 (66.7%)	20 (60.6%)	17 (70.8%)	11 (73.3%)	1.033 (2)
Number of replies to peers in discussion forums or collaborative tools	48 (66.7%)	19 (57.6%)	18 (75.0%)	11 (73.3%)	2.277 (2)
Number of posts in discussion forums or collaborative tools	47 (65.3%)	20 (60.6%)	14 (58.3%)	13 (86.7%)	3.856 (2)
Grades of assignments or quizzes	34 (47.2%)	17 (51.5%)	12 (50.0%)	5 (33.3%)	1.479 (2)
Length of posts in discussion forums or collaborative tools	27 (37.5%)	14 (42.4%)	7 (29.2%)	6 (40.0%)	1.093 (2)
Duration that students are logged in to course activities	26 (36.1%)	10 (30.3%)	9 (37.5%)	7 (46.7%)	1.277 (2)
Frequency of exchanging emails with the instructor	25 (34.7%)	10 (30.3%)	10 (41.7%)	5 (33.3%)	0.808 (2)

Note.

^a the number of instructors responding to synchronous online questions.

^b the percentage of instructors who selected the specific indicator as the active engagement indicator.

^c the percentage of instructors in different learner-Centeredness groups who selected the specific indicator as the active engagement indicator.

Interviews reinforced the survey responses, suggesting that instructors seek ways to engage learners and indicators of that engagement. For example, one instructor discussed using multiple tools to engage learners and to see which learners were active:

Being the person who's going to talk on Zoom and seeing them involved in different activities, I think that's one of the nice things about using a Padlet or a Jamboard or even an LMS. You can see who's in there and who's working and what's going on. (P2, 2 years online teaching experience)

Another instructor (P6, 2 years online teaching experience) indicated they might integrate multiple choice questions in their pre-record lecture videos to increase active engagement.

Course discussions, regardless of modality, are a space where instructors confirm they can assess student engagement because students are expected to post messages in their own words. However, instructors shared that they are concerned with more than just having students fill space with words in class discussions:

Active engagement would seem to me as if they are producing something. And they're producing something that you can see or that you can hear . . . I think just producing text or producing words that they're saying is not a sufficient condition to determine active engagement, because they're perfectly capable of talking and writing without thinking at all. (P1, 25 years online teaching experience)

Much like how P1 emphasized that some visible indicators of student presence could have little meaning, P6 looks for quality of engagement:

I do look at how detailed their responses are to discuss board posts. I have several engagement activities in my classes, and they can be answered in a variety of different ways. But if a student writes one sentence, versus a student writes a thoughtful paragraph, I'm going to assess those differently in terms of engagement. So, typically when I'm looking at engagement, I'm more fully focused on the quality of the work that students are submitting rather than some of those other indicators that you mentioned (the quantity). (P6, 2 years online teaching experience)

Finally, P4 (30 years online teaching experience), suggested that to be active requires “Engaging not only in the content, but the other participants in the environment.” Per the instructors, students who are focused on course outcomes, such as earning credit hours, over learning are less visible throughout a course than their learning-focused peers. These students are the passive learners in the course.

Some people don't go along with the modules. They push it back and procrastinate. They're not really interested in the course, so they don't really see the value in it. So they're not going to really do anything but they need the credit. So once the end is coming near, they turn in all and rush through things. For me, the people who are rushing at the end, or providing very little information on their assessments, tend to be engaging more passively in the course. (P7, 1 year online teaching experience)

These students are either passive or outright absent until the moment when their grade is in jeopardy.

Perceptions of Interactions Among Instructors and Peers

The results indicated the importance of different forms of student interaction using a Likert scale ranging from 1 (Strongly disagree) to 5 (Strongly agree). As shown in Table 8, in both modalities instructors felt most strongly that students need to know how to use the course communication tools ($M = 4.45$ for synchronous, $M = 4.64$ for asynchronous), followed by interacting with peers ($M = 4.36$ for synchronous, $M = 4.51$ for asynchronous) and instructors ($M = 4.33$ for synchronous, $M = 4.35$ for asynchronous).

According to one interviewee, P4 (30 years of online teaching experience), learning from peers can be more beneficial because students can gain diverse perspectives and insights from their fellow learners. This perspective highlights the value of collaborative learning and the idea that knowledge and understanding can be enriched through interactions with peers. Conversely, another participant, P1 (25 years of online teaching experience) highlighted the limitations of relying solely on the instructor for knowledge and expertise. They emphasized the significance of engaging with peers who bring their own unique life experiences and perspectives to the learning environment. The interviewee acknowledged that while course materials can be revisited for deeper engagement, the opportunity to interact with peers is distinct and offers a valuable learning experience.

Table 8*Instructor's Perceptions Toward Student Interaction in Online Courses*

Items	M	
	Synchronous	Asynchronous
It is important to me that...		
students speak in my online class	3.86	-
students post messages in my online class.	3.84	4.44
students interact with each other in my online class.	4.36	4.51
students interact with me in my online class.	4.33	4.35
students have their webcams on in my online class.	3.16	-
students know how to use online tools to actively communicate in my online class.	4.45	4.64

Kruskal-Wallis tests were used to determine if there were significant differences in perceptions between learner-centered groups (see Table 9). For most items, there were no statistically significant differences. However, there were statistically significant differences in responses on two items: "It is important to me that students speak in my synchronous online class" ($p < 0.05$) and "It is important to me that students post messages in my synchronous online class" ($p < 0.05$). A post-hoc test used Dunn's Kruskal-Wallis multiple comparison p -values adjusted with the Bonferroni method. The multiple pairwise comparisons indicated that high learner-centered and medium learner-centered instructors perceived student engagement through speaking and posting messages as more important than low learner-centered instructors.

Table 9*Summary of Kruskal-Wallis Test Findings for Comparing Perceptions by Instructor Learner-centeredness*

Items	Test Statistic	p-value	Decision
<i>Synchronous</i>			
It is important to me that students speak in my synchronous online class.	6.963*	.031	Reject the null hypothesis
It is important to me that students post messages in my synchronous online class.	17.858***	.000	Reject the null hypothesis
It is important to me that students interact with each other in my synchronous online class.	1.350	.509	Accept the null hypothesis
It is important to me that students interact with me in my synchronous online class.	0.865	.649	Accept the null hypothesis

It is important to me that students have their webcams on in my synchronous online class.	3.411	.182	Accept the null hypothesis
It is important to me that students know how to use online tools to actively communicate in my synchronous online class.	0.980	.613	Accept the null hypothesis
<i>Asynchronous</i>			
It is important to me that students post messages in my asynchronous online class.	3.955	.138	Accept the null hypothesis
It is important to me that students interact with each other in my asynchronous online class.	0.581	.748	Accept the null hypothesis
It is important to me that students interact with me in my asynchronous online class.	1.938	.380	Accept the null hypothesis
It is important to me that students know how to use online tools to actively communicate in my asynchronous online class.	2.658	.265	Accept the null hypothesis

Note. The null hypothesis is there is no significant difference among the three learner-centeredness groups of instructors in terms of the perceptions of peer and instructor interaction in synchronous and asynchronous online courses.

Discussion and Implications

Pedagogical Strategies

The first research question investigated the pedagogical strategies employed by instructors and explored their variations based on course modalities and learner-centeredness. The findings showed that the most prominent are activities that present information to students (e.g., lecturing, readings) and have students explore course content discursively with others. Although individual practices and proportions of use varied, this finding holds true across modalities and different learner-centered beliefs. Lecturing has historically been considered non-learner-centered (Boyd, 2012), but these findings suggest that even in a learner-centered class students need to engage with learning content, presumably so they are then able to engage with each other in ways that support learning that content. Again, Hrastinski's (2009) assertion that in online courses learner engagement is tied to learning outcomes comes to mind. One does not get the full picture of how online learning occurs by considering individual activities in isolation. Instead, it is the combination of activities that allows learners to encounter and explore content that supports learning. This finding is aligned with current trends in education such as the flipped classroom approach (e.g., Palmero et al., 2023), and new approaches such as LecturePlus (Hashim et al., 2023), in which lecture or another form of information dissemination precedes opportunities to engage in practice and feedback. Of course, there are also inquiry-oriented learning strategies in which learners must seek the content they need to learn, but this marriage of instructor provided content and subsequent discursive interaction is more prevalent and, in many instances, more efficient. From the student perspective, other studies have found that students rate lectures more highly than discussions in part because they trust the quality more (Berlin & Weaver, 2021), and learner-content interactions as defined by Moore (1993) remain salient in the online learning context.

Interestingly, in this study instructors with high learner-centeredness reported a slightly higher rate of lecturing use compared to those in the medium and lower learner-centered groups, which is counter to expectations. However, they still used and valued discussion and, as indicated in interviews, ensured that their lectures included points of interaction. This data set does not indicate whether instructors who value learner-centeredness truly are more learner-centered in practice, but the overall similarities across learner-centered groups may be endemic to the larger issues facing the implementation of active learning in higher education. Børte et al. (2020) found that among the major barriers to implementing active learning in higher education is the focus on technology use over pedagogy in professional development. As instructors grapple with the intersection of technology and pedagogy, for some instructors their online design and facilitation may reflect what they can do or what they have been trained to do more than what they value.

Indicators of Engagement

The second research question examined how instructors rely on various course indicators to know that students are engaged. Not surprisingly, popular synchronous learning indicators were predicated on active learning at the moment and appear to acknowledge limitations of real-time interaction, such as shared airspace. In contrast, popular asynchronous indicators convened around notions of quantity and quality of interactions, long heralded as ideals for asynchronous learners (Dennen, 2005). In online learning, synchronous and asynchronous instructional settings possess distinct characteristics (Fabrizz et al., 2021). Instructors should acknowledge these differences and tailor their approaches to effectively evaluate students' active or passive engagement. For synchronous online courses, instructors should leverage real-time interaction capabilities and prioritize creating a supportive and interactive learning environment, encouraging students to actively engage in class activities and maintain frequent communication (Murphy et al., 2011).

Various tools and platforms can be employed to facilitate real-time interactions and track attendance, ensuring consistent student involvement. By emphasizing these indicators, instructors can ensure active engagement and maximize the benefits of synchronous online sessions for students. Regarding asynchronous online courses, real-time interaction is limited, and learners have greater autonomy over their learning with reduced dependence on instructors (Murphy et al., 2011). Consequently, in comparison to synchronous courses, learner-content interactions via learning materials hold greater prominence in asynchronous settings than learner-instructor interactions (Alqurashi, 2019). Therefore, instructors place greater emphasis on evaluating the completion of assignments. By assigning meaningful and relevant tasks, instructors can encourage students to demonstrate their understanding of the course material and engage in critical thinking.

Although instructors used the same indicators in roughly the same proportions regardless of learner-centeredness, this does not mean that they used the indicators in the same way. Instead, it means that in general instructors are similarly attuned to the indicators that are available to them. Instructors who are looking not only at activity levels but also at the content of learner responses and who simultaneously value learner interaction with peers are likely to naturally foster conditions for meeting several of the APA's (1997) Learner-Centered Principles in their online courses. Alternatively, instructors who are low learner-centered might use these

indicators mechanically, to simply note presence or absence, and perhaps even punitively, deduct grade points from students who appear to be inactive.

Finally, in the survey, instructors were only asked about indicators related to individual student actions rather than collaborative or interdependent ones. Active engagement through the posting is a baseline action needed to support discursive learning processes such as intersubjectivity, which remains somewhat elusive as a construct but is established when learners engage to develop mutual understanding (Dennen et al., 2023). Through interviews, instructors acknowledged the importance of peer engagement from a structural perspective but did not go so far as to delve into ideas like collaborative knowledge instruction. This area is ripe for future research, to explore the degree to which instructors value and know how to design and facilitate activities that foster this deep level of collaborative learner engagement.

Instructor and Peer Interaction

The third research question focused on perceptions of instructor and peer interactions. The findings reaffirm that from the instructor's perspective, both learner-learner interaction and learner-instructor interaction play a vital role in online instruction. Cycling back to findings from the first research question, which showed the continued relevance of lectures in online learning (i.e., learner-content interaction), Moore's (1993) work on distance learning interaction remains important.

Some of the survey items explored perceptions of conditions for interaction. The ability to use interaction tools was rated more important than actually using those tools. This finding suggests that even more than actually having learners interact instructors wanted to make sure that learners could interact. In other words, instructors want to ensure that learners who want to communicate may do so and are not passive because they lack technology-based communication skills. Technology self-efficacy is connected to learning outcomes (Wang et al., 2013), and is among the skills that online instructors are expected to support (Dennen & Jones, 2022).

In synchronous learning contexts, where webcam use has been highly debated, instructors seem to not connect cameras to interaction. This is similar to Belt and Lowenthal's (2023) findings, which indicated camera use was unnecessary for instructor interaction and could introduce its own problems. Trust and Goodman (2023) found that although cameras are beneficial from a social perspective, students have personal reasons for turning them off. Learner-centered instructors would ideally be flexible in this regard and allow learners to self-regulate.

Limitations and Future Research

This study is limited by its sample, due to sample size and sampling procedures. The sample is not representative of the overall population of online instructors. Future research should explore these factors in large samples and diverse contexts to provide a more comprehensive understanding of online instruction practices. Additionally, the question about the proportion of class time devoted to the lecturing did not specify whether the lecturing solely referred to one-way communication or could also include moments when an instructor was simultaneously disseminating information in a planned manner and engaging students in discussion. More research could be done in this area to determine if there are differences in the

interactive nature of lectures delivered by learner-centered and non-learner-centered instructors as well as differences by modality.

Conclusion

In conclusion, this study explored the practices and perspectives of online instructors regarding instructional strategies, indicators of active engagement, and instructor and peer interaction. Additionally, it considered whether differences exist based on teaching modality or instructor learner-centeredness. The findings show that as much as the modalities differ, underlying components of teaching and learning remain similar. In other words, although synchronous and asynchronous learning experiences are qualitatively different, instructors still seek to foster interactions among themselves, learners, and course content. This finding holds true regardless of an instructor's degree of learner-centeredness, although learner-centeredness and reliance on multiple indicators of learner engagement go hand in hand.

Learner-centeredness does not negate the need for or use of lectures, nor does it lead to learning environments where all students are highly visible and provide continuous evidence of their presence. Learner-centered instructors can deftly combine lecture and interaction into an engaging format and do so in ways that not only require learner action but also actively involve learners in shaping their learning processes and developing an understanding of course material. Essentially, learner-centered instructors know that active learning requires more than just making one's presence known in a course and seek ways to discursively engage their students with class content and each other.

Declarations

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