



Student interaction satisfaction across asynchronous and synchronous online learning in Philippine higher education

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Abstract

The rapid mainstreaming of online education has intensified the need to understand how different delivery formats shape the quality of student learning experiences. This study compared student interaction satisfaction between asynchronous and synchronous online learning formats using a descriptive-comparative survey design. A total of 95 students enrolled during the academic year 2025-2026 from tertiary level participated, completing a researcher-constructed Likert-scale questionnaire organized around content interaction, peer interaction, instructor interaction, real-time interaction, social presence, and instructor immediacy. Results showed that both formats yielded Satisfied ratings overall, with synchronous learning ($M = 4.28$) scoring significantly higher than asynchronous learning ($M = 3.99$), as confirmed by an independent sample t-test ($t(93) = 2.05, p < 0.043$). Asynchronous learners rated content accessibility and self-paced flexibility most favorably, while peer interaction emerged as the weakest dimension. Synchronous learners, by contrast, expressed strong satisfaction with instructor immediacy and social presence, though technical disruptions remained a concern. Across both groups, instructor feedback quality, peer social connection, and internet reliability were identified as the most influential factors shaping satisfaction. The findings are discussed in relation to the Community of Inquiry Framework and Self-Determination Theory, with implications for instructional design, educational policy, and learner support in online environments.

Keywords: asynchronous learning, synchronous learning, online learning satisfaction, student interaction instructor immediacy, social presence, Philippine higher education

Introduction

Background of the Study

The COVID-19 pandemic forced a rapid and largely unplanned shift to online education, compelling institutions around the world to rethink how learning is delivered. What began as a crisis response has, in many ways, become a permanent fixture of modern education. Today, most schools and universities offer some form of online instruction, whether fully remote or as part of a blended setup. However, the expansion of online learning has not come without challenges. Among the most persistent concerns is the variability in student satisfaction, a factor closely linked to learning outcomes, retention, and motivation (Martin & Bolliger, 2018) ^[17].

Online courses generally fall into two broad delivery modes, asynchronous and synchronous. Asynchronous learning allows students to access course materials and complete tasks at their own pace, without real-time interaction. It offers flexibility, which many learners find valuable, particularly those who balance study with work or family responsibilities. Synchronous learning, by contrast, involves scheduled live sessions where students and instructors interact in real time through video conferencing platforms. This format more closely mirrors the structure of traditional face-to-face instruction and may offer stronger social presence (Amiti, 2020) ^[1].

The question of which format better supports student engagement and satisfaction is not simply a matter of preference. Research suggests that the learning environment, including how interactive, structured, and socially connected it feels, plays a meaningful role in shaping students' motivation and their sense of belonging in a course (Kuo *et al.*, 2013) ^[14]. Yet despite the widespread use of both formats, most existing studies treat online learning as a single category rather than distinguishing

between these two modes. This gap, particularly among tertiary learners in a developing country like the Philippines, is especially pronounced at the level of comparative satisfaction research, where few studies isolate asynchronous and synchronous delivery as distinct variables (Borup *et al.*, 2020) ^[11].

In the Philippine context, where internet infrastructure varies widely across regions and educational resources remain unevenly distributed, the choice between asynchronous and synchronous modalities carries added significance (Samillano, 2026) ^[15]. Many students, particularly those in remote or underserved communities, face practical constraints such as limited bandwidth, shared devices, or unreliable power supply, all of which affect their ability to participate in live online sessions (Toquero, 2020) ^[21]. Understanding how these conditions interact with delivery format and satisfaction is essential for developing context-sensitive recommendations.

This study aims to address that gap by directly comparing student interaction satisfaction between asynchronous and synchronous online learning formats. Rather than assuming one mode is universally superior, the study treats satisfaction as a multidimensional construct shaped by factors such as instructor presence, peer interaction, content accessibility, and learner autonomy. The findings are intended to support instructors and curriculum designers in making more informed decisions about how to structure online learning experiences that are both effective and responsive to students' actual needs.

Research Questions

This study is guided by the following inquiries:

1. What is the level of student interaction satisfaction in asynchronous online learning in terms of content interaction, peer interaction, and instructor interaction?

2. What is the level of student interaction satisfaction in synchronous online learning in terms of real-time interaction, social presence, and instructor immediacy?
3. Is there a significant difference in overall satisfaction between students in asynchronous and synchronous online learning formats?
4. What factors do students identify as most influential in shaping their satisfaction with either format?

Theoretical Framework

This study draws on two complementary theoretical foundations: the Community of Inquiry (CoI) Framework and Self-Determination Theory (SDT).

The Community of Inquiry Framework, originally developed by Garrison, Anderson, and Archer (2000) ^[11] and subsequently expanded by later scholars (Garrison, 2017) ^[10], offers a well-established model for understanding the quality of online learning experiences. The CoI framework identifies three overlapping presences, cognitive, social, and teaching, as the essential elements of a meaningful online educational experience. Cognitive presence refers to students' ability to construct meaning through reflection and discourse. Social presence involves the degree to which learners feel connected to one another and to their instructors. Teaching presence encompasses the design, facilitation, and direction of learning activities. Each

of these dimensions is expected to manifest differently depending on whether a course operates asynchronously or synchronously, and the framework provides a useful lens for evaluating satisfaction across both formats (Valverde-Berrocso, 2023) ^[20].

Self-Determination Theory (SDT), developed by Deci and Ryan (1985) ^[7] and applied extensively in educational contexts (Ryan & Deci, 2020) ^[19], focuses on the psychological needs that drive motivated behavior: autonomy, competence, and relatedness. Asynchronous learning tends to support autonomy by allowing students to control the pace and timing of their engagement. Synchronous learning, on the other hand, may more directly address relatedness through real-time social interaction. Both formats can support competence if designed well. Using SDT as a secondary lens allows this study to explore how different delivery modes meet, or fail to meet, students' intrinsic motivational needs, which in turn affects satisfaction.

Together, these two frameworks offer complementary explanations for why satisfaction may differ across delivery modes. The CoI framework provides a structural account of the learning environment, while SDT addresses the motivational and psychological dimensions of student experience.

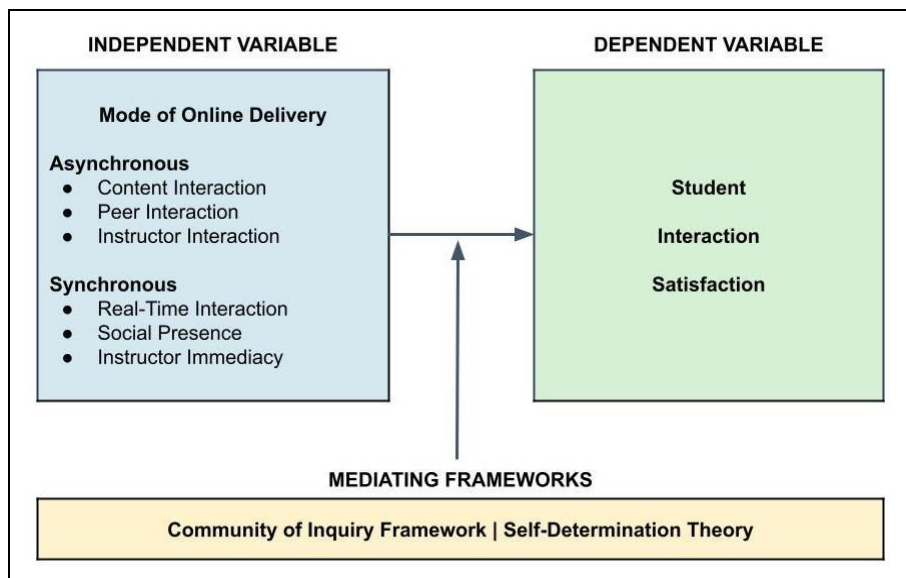


Fig 1: The schematic diagram above illustrates how these theoretical anchors relate to the key variables of the study.

Significance of the Study

This study holds value for a range of stakeholders in education. Students stand to benefit by having their online learning experiences formally recognized, giving them a basis to make more informed choices about the formats that best support their engagement. Instructors and teachers, meanwhile, gain practical, data-driven insights that can guide how they design and facilitate online courses, moving away from generic approaches toward delivery strategies that are actually responsive to how students learn. For school administrators and curriculum designers, the study offers evidence that can shape institutional policies on online learning, particularly as blended and remote instruction become more deeply embedded in mainstream education. The research also contributes to a body of literature that has largely treated online learning as a single

category, offering a comparative perspective that is still underrepresented, especially in developing country contexts such as the Philippines. In this regard, the study's instruments and framework may serve as a useful reference for future inquiries into online learning satisfaction. At the policy level, the findings are particularly relevant to Philippine education authorities seeking to develop guidelines that are grounded in real learner experiences, sensitive to equity concerns, and practical enough to implement across diverse educational settings.

Methodology

Research Design

This study employed a descriptive-comparative research design, using a quantitative survey approach to examine and compare student satisfaction levels between asynchronous

and synchronous online learning formats. A descriptive design was appropriate here because the primary aim was to document students' current perceptions of interaction within each modality, rather than to manipulate variables or establish cause-and-effect relationships (Creswell & Creswell, 2018) [6]. Survey-based research is widely recognized as a practical and efficient method for capturing self-reported attitudes and experiences in educational settings, particularly when respondents are distributed across multiple institutions or learning environments (Cohen *et al.*, 2018) [5].

Respondents and Sampling

The respondents of this study were 95 students enrolled in online courses across different higher education institutions who had direct experience with either asynchronous or synchronous learning formats, or both during the academic year 2025-2026. Selected participants had completed at least one full semester of online instruction, ensuring that their responses reflected a sufficiently developed understanding of the learning format being evaluated. Participants were

recruited through purposive sampling, a non-probability technique that selects individuals based on their relevance to the research questions (Etikan *et al.*, 2015).

Research Instrument

Data were collected using a researcher-made questionnaire divided into three parts. The first part gathered demographic information, including educational level, the type of online learning format experienced, and duration of online study. The second part consisted of Likert-scale items measuring student satisfaction with asynchronous learning, organized around three dimensions: content interaction, peer interaction, and instructor interaction. The third part mirrored this structure for synchronous learning, assessing satisfaction with real-time engagement, social presence, and instructor immediacy. The items were developed by drawing from validated instruments used in prior online learning satisfaction research, including the Online Student Satisfaction Scale (Martin & Bolliger, 2018) [17] and scales adapted from the Community of Inquiry Survey Instrument (Arbaugh *et al.*, 2008) [2].

Table 1: Each item is rated on a five-point Likert scale, the mean scores were interpreted using the scale below

Scale	Range	Descriptive Equivalent	Interpretation
5	4.50 – 5.00	Highly Satisfied	Students are very satisfied with the learning format; interaction is consistently positive.
4	3.50 – 4.49	Satisfied	Students generally find the format effective; most interactions meet their expectations.
3	2.50 – 3.49	Moderately Satisfied	Students have mixed perceptions; some aspects of the format are found adequate but not fully satisfying.
2	1.50 – 2.49	Dissatisfied	Students find the format largely ineffective in supporting their interaction and learning needs.
1	1.00 – 1.49	Highly Dissatisfied	Students perceive the format as failing to support meaningful interaction or learning.

Validity and Reliability

The content of the instrument was subjected to expert review, wherein five specialists in educational technology and online pedagogy evaluated each item for clarity, relevance, and alignment with the study's conceptual framework. Following expert review, a pilot study involving 30 students was conducted to assess instrument reliability. Internal consistency was measured using Cronbach's alpha, yielding a coefficient of 0.84, which was considered good for the purposes of this study (George & Mallery, 2019) [12]. Items falling below the acceptable threshold were either revised or removed before the final questionnaire was administered. These procedures ensured that the instrument produced consistent, credible data capable of supporting valid conclusions.

Data Gathering and Analysis

Data collection was carried out through an online survey platform, Google Forms, which allowed for efficient distribution and organization of responses across geographically dispersed participants. Prior to administering the questionnaire, a letter of permission was secured from relevant school authorities, and all participants were informed of the voluntary nature of their involvement through an informed consent statement included at the beginning of the survey. Confidentiality of responses was maintained throughout the study. Descriptive statistics, specifically mean and standard deviation, were computed to describe the satisfaction levels of students in each learning format. An independent samples t-test was used to determine whether a statistically significant difference existed between the overall satisfaction scores of students in

asynchronous versus synchronous formats, with the significance level set at $\alpha = 0.05$. Frequency analysis of open-ended items was used to identify the factors students most commonly associated with their satisfaction. All statistical computations were performed using SPSS version 29.

Results and Discussion

Student Interaction Satisfaction in Asynchronous Online Learning

Among the three dimensions, content interaction yielded the highest subtotal mean ($M = 4.39$), with the item on self-paced review of recorded lectures scoring the highest at $M = 4.58$, the only item to reach the Highly Satisfied threshold. This pattern is consistent with the literature on asynchronous learning, which repeatedly identifies learner autonomy and flexibility as the format's most compelling strengths (Amiti, 2020; Ryan & Deci, 2020) [1, 19]. Students also rated highly the item about having sufficient time to reflect before completing tasks ($M = 4.39$) and the organization of course materials ($M = 4.33$). These findings suggest that when asynchronous learning is well-structured, students appreciate both the pace it allows and the cognitive breathing room it provides, a benefit that aligns with constructivist views of learning as a reflective, internalized process (Garrison, 2017) [10].

Peer interaction presented a noticeably different picture, posting the lowest subtotal mean of the three dimensions ($M = 3.56$). Two items in this dimension, connectedness with classmates ($M = 3.41$) and the motivating quality of collaborative async tasks ($M = 3.48$), fell into the Moderately Satisfied range, the only items to do so within

the asynchronous data. These results are not unexpected. The absence of real-time contact inherently limits the spontaneity and depth of peer exchange that many students find motivating (Dixson, 2010; Kozan & Richardson, 2014) [8, 13]. Even when discussion boards and group tasks are thoughtfully designed, they often fail to replicate the relational quality of synchronous peer engagement. That said, peer feedback on outputs still garnered a mean of 3.55, suggesting that structured peer interaction mechanisms have some value and should not be abandoned, only improved. Instructor interaction fell between the other two dimensions, with a subtotal mean of $M = 4.02$. Students rated the clarity of embedded instructional guidance in recorded materials ($M = 4.10$) and the regularity of instructor announcements ($M = 4.15$) relatively well, indicating that asynchronous instructor presence, when maintained deliberately, can still be felt by students. The weakest item in this dimension concerned feedback timeliness ($M = 3.88$), a recurring

concern in the online learning literature. Martin and Bolliger (2018) [17] identified timely feedback as one of the most valued engagement strategies among online students, and its relative absence in asynchronous contexts can create a sense of disconnection, even when all other course elements are functioning well. Taken together, the asynchronous results paint a picture of a format that supports independent, content-focused learning effectively, but struggles to deliver the relational richness that many students still seek (Borup *et al.*, 2020; Kuo *et al.*, 2013) [4, 14].

Table 2 presents the satisfaction ratings of students in asynchronous online learning across three dimensions: content interaction, peer interaction, and instructor interaction. The overall mean of $M = 3.99$ ($SD = 0.73$) places the asynchronous format within the Satisfied range, suggesting that students generally found this mode of delivery adequate, though not exceptional across all dimensions.

Table 2: Student Satisfaction with Asynchronous Online Learning

Indicator / Item	Mean	SD	Descriptive Equivalent
Content Interaction			
Course materials were well-organized and easy to navigate.	4.33	0.61	Satisfied
I could review recorded lectures and readings at my own pace.	4.58	0.51	Highly Satisfied
Self-paced study helped me better understand difficult topics.	4.44	0.57	Satisfied
Written instructions and module guides were clear.	4.21	0.68	Satisfied
I had enough time to reflect on content before submitting tasks.	4.39	0.59	Satisfied
Subtotal Mean	4.39	0.59	Satisfied
Peer Interaction			
Discussion boards allowed me to exchange ideas with classmates.	3.74	0.83	Satisfied
I felt connected to my classmates through online activities.	3.41	0.92	Moderately Satisfied
Group tasks through async platforms were manageable and fair.	3.62	0.87	Satisfied
Peer feedback on outputs was helpful for my learning.	3.55	0.89	Satisfied
Collaborative asynchronous tasks motivated me to participate.	3.48	0.91	Moderately Satisfied
Subtotal Mean	3.56	0.88	Satisfied
Instructor Interaction			
Instructor feedback on submitted work was timely.	3.88	0.79	Satisfied
Instructor guidance embedded in recorded lectures was clear.	4.10	0.68	Satisfied
I could reach the instructor with questions through messaging tools.	3.95	0.76	Satisfied
The instructor provided enough guidance for self-directed tasks.	4.02	0.74	Satisfied
Instructor announcements kept me informed and on track.	4.15	0.70	Satisfied
Subtotal Mean	4.02	0.73	Satisfied
Overall Asynchronous Satisfaction	3.99	0.73	Satisfied

Student Interaction Satisfaction in Synchronous Online Learning

Within the real-time interaction dimension (subtotal $M = 4.11$), the ability to interact directly with the instructor during live sessions received the highest rating ($M = 4.51$), while active involvement in live class activities also scored well ($M = 4.36$). Students clearly appreciated the immediacy of live engagement, the opportunity to ask, respond, and be heard in the moment. These findings align with Amity (2020) [1] characterization of synchronous learning as particularly well-suited for tasks requiring complex discussion, quick clarification, and high social engagement. The lone item that pulled the real-time subtotal down considerably was the acknowledgment of technical disruptions ($M = 2.81$), which was the lowest-rated item in the entire study. This result reflects the well-documented infrastructure challenges that affect online learners in developing country contexts, where unstable connectivity can undermine the most pedagogically sound live sessions (Toquero, 2020; Mishra *et al.*, 2020) [21].

Social presence produced a strong subtotal mean of $M = 4.29$, with all five items falling comfortably in the Satisfied range. Notably, the item measuring students' reduced sense of isolation during live classes ($M = 4.44$) and the motivating effect of real-time peer interaction ($M = 4.35$) both rated highly. Two additional items reinforced this pattern: students reported that seeing and hearing classmates made learning feel more real ($M = 4.28$), and that live group activities helped build trust and rapport ($M = 4.19$). These findings strongly support the social presence dimension of the Community of Inquiry Framework, which argues that the experience of being connected to others in a shared learning environment is foundational to meaningful online education (Garrison, 2017; Valverde-Berrocso, 2023) [10, 20]. When students feel genuinely present with one another, they tend to participate more actively and invest more in the quality of their contributions.

Instructor immediacy was the standout dimension of the synchronous data. The prompt responsiveness of instructors during live class ($M = 4.52$) and their evident care for student participation ($M = 4.45$) both approached or reached

the Highly Satisfied range. The item measuring the impact of live feedback on correcting misunderstandings ($M = 4.41$) and the use of varied instructional strategies to sustain attention ($M = 4.33$) further reinforced the picture of synchronous instruction as a format where instructor behavior has an outsized influence on how satisfied students feel. This is well-supported by research on teacher immediacy, which has consistently shown that instructor behaviors that reduce psychological distance, verbal affirmation, eye contact, responsiveness, are among the strongest predictors of student motivation and satisfaction in live learning environments (Baker, 2021; Martin & Bolliger, 2018) [16, 17]. The implication here is that the effectiveness of

synchronous online learning is not simply a function of having students meet at the same time, it hinges substantially on how instructors use that shared time.

Table 3 presents the satisfaction data for synchronous online learning across three dimensions: real-time interaction, social presence, and instructor immediacy. The overall mean of $M = 4.28$ ($SD = 0.65$) places the synchronous format firmly in the Satisfied range and meaningfully above the overall mean reported for asynchronous learning. Instructor immediacy emerged as the strongest dimension overall, registering a subtotal mean of $M = 4.44$, which approaches the Highly Satisfied threshold.

Table 3: Student Satisfaction with Synchronous Online Learning

Indicator / Item	Mean	SD	Descriptive Equivalent
Real-Time Interaction			
Live sessions allowed me to ask questions and get immediate answers.	4.47	0.58	Satisfied
Real-time discussions helped me understand the lesson more deeply.	4.39	0.64	Satisfied
I was able to interact with the instructor directly during class.	4.51	0.56	Highly Satisfied
Live class activities made me more actively involved in learning.	4.36	0.63	Satisfied
Technical difficulties disrupted the flow of live sessions.	2.81	1.04	Moderately Satisfied
Subtotal Mean	4.11	0.69	Satisfied
Social Presence			
I felt a sense of community and belonging during live classes.	4.21	0.72	Satisfied
Interacting with classmates in real time was motivating.	4.35	0.66	Satisfied
I felt less isolated compared to when I study on my own.	4.44	0.61	Satisfied
Seeing and hearing classmates made the learning feel more real.	4.28	0.69	Satisfied
Live group activities helped build trust and rapport among peers.	4.19	0.73	Satisfied
Subtotal Mean	4.29	0.68	Satisfied
Instructor Immediacy			
The instructor responded to questions and concerns promptly.	4.52	0.55	Highly Satisfied
The instructor's presence during live sessions kept me engaged.	4.48	0.57	Satisfied
Live feedback helped me correct mistakes or misunderstandings quickly.	4.41	0.60	Satisfied
The instructor used varied strategies to maintain attention in class.	4.33	0.63	Satisfied
I felt that the instructor genuinely cared about my participation.	4.45	0.59	Satisfied
Subtotal Mean	4.44	0.59	Highly Satisfied
Overall Synchronous Satisfaction	4.28	0.65	Satisfied

Significant Difference in Satisfaction Between Asynchronous and Synchronous Formats

As shown in Table 4, the independent samples t-test revealed a statistically significant difference in overall satisfaction between students in asynchronous and synchronous online learning formats, $t(93) = 2.05$, $p <$

0.043. Students in the synchronous group ($M = 4.28$, $SD = 0.65$) reported significantly higher overall satisfaction than those in the asynchronous group ($M = 3.99$, $SD = 0.73$). On this basis, the null hypothesis, that no significant difference in satisfaction exists between the two formats, is rejected.

Table 4: Independent Samples t-Test: Asynchronous vs. Synchronous Overall Satisfaction

Variable	Mean	SD	t-value	df	p-value
Asynchronous Satisfaction	3.99	0.73			
Synchronous Satisfaction	4.28	0.65	2.05	93	0.043

A mean difference of 0.29 on a five-point scale may seem small numerically, but it carries practical significance when considered in terms of the dimensions driving it. The gap was widest on the social and relational aspects of learning, social presence and instructor immediacy, where synchronous learning holds a structural advantage by enabling real-time, face-to-face-like interaction. Asynchronous learners, despite generally positive content satisfaction scores, could not match the social richness that live sessions made available. This is consistent with arguments by Amity (2020) and Kozan and Richardson (2014) [1, 13], who contend that the two formats are not interchangeable substitutes but rather serve different learning functions, with synchronous modes better supporting social motivation and asynchronous modes better supporting cognitive depth and autonomy.

It is also worth considering the demographic profile of the respondents in interpreting this finding. Students at the tertiary level, who made up the bulk of this study's sample, tend to have less experience with independent, self-directed learning and may consequently find the structure and accountability of live sessions more supportive (Kuo *et al.*, 2013) [14]. Younger online learners, in particular, have been found to value the feeling of 'being in class' that synchronous sessions provide, even when the medium is a screen rather than a physical room (Simsek *et al.*, 2021) [16]. Future studies could explore whether this satisfaction gap narrows or reverses among more experienced or graduate-level learners who may be more comfortable navigating asynchronous formats independently.

Factors Influencing Student Satisfaction in Each Format

Table 5 summarizes the factors that students most frequently identified as influential in shaping their satisfaction with each delivery format. The rankings reveal both shared priorities and format-specific patterns that reflect the structural differences between asynchronous and synchronous learning.

Table 5: Ranked Factors Influencing Student Satisfaction by Delivery Format

Factor	Async Rank	Sync Rank	Combined Rank
Instructor feedback quality and responsiveness	2nd	1st	1st
Peer interaction and social connection	4th	2nd	2nd
Flexibility and self-paced access to content	1st	5th	3rd
Internet connectivity and technical reliability	3rd	3rd	3rd
Clarity and organization of course content	2nd	4th	4th
Sense of belonging and classroom community	5th	2nd	4th
Opportunities for reflection before responding	1st	6th	5th

Instructor feedback quality and responsiveness emerged as the top-ranked factor overall, first in the synchronous group and second in the asynchronous group. This finding is consistent with a substantial body of research identifying instructor engagement as the single most influential driver of online learner satisfaction (Martin & Bolliger, 2018; Baker, 2021) ^[3, 17]. What is particularly telling is that students in both formats prioritized this factor despite experiencing it very differently: in synchronous settings, feedback arrives in real time during class; in asynchronous settings, it comes through written comments on submitted work. The convergence of both groups on this factor suggests that what students ultimately want is not a particular form of feedback, but the assurance that their instructor is present, attentive, and invested in their progress.

Flexibility and self-paced access ranked first among asynchronous learners but dropped to fifth in the synchronous group, a gap that reflects the fundamentally different affordances of each format. For students balancing school with part-time work, caregiving, or unstable schedules, the ability to engage with course content on their own terms is not merely a preference but a practical necessity (Ryan & Deci, 2020; Simsek *et al.*, 2021) ^[16, 19]. Opportunities for reflection before responding also ranked first in the async group and sixth in the sync group, reinforcing the idea that asynchronous learning serves a different cognitive function, one that privileges depth over speed. These findings carry direct implications for educators designing for mixed or diverse student populations, when learners cannot reliably attend live sessions due to life circumstances, withholding asynchronous options can reduce both access and satisfaction (Samillano, 2026) ^[15].

Peer interaction and social connection ranked second overall and first within the synchronous group, a finding supported by the strong social presence scores reported in Table 3. Students in live sessions consistently described real-time peer engagement as motivating and community-building, whereas asynchronous learners, even with access to discussion boards and collaborative tasks, rated this dimension more moderately. The literature suggests that this gap is not purely a technical one: it reflects the difficulty of replicating the informal, relational texture of in-person or live interaction through asynchronous platforms alone (Dixon, 2010; Kozan & Richardson, 2014; Garrison, 2017) ^[8, 10, 13]. Internet connectivity and technical reliability ranked third across both groups, a shared concern that underscores how access-related barriers affect satisfaction regardless of whether the course format is live or self-paced. This finding

reinforces calls for institutional investment in student internet support, particularly in contexts where infrastructure inequality continues to shape who benefits from online education and who does not (Toquero, 2020; Mishra *et al.*, 2020) ^[18, 21].

Conclusion

This study found that both asynchronous and synchronous online learning formats produced generally satisfactory experiences among students, though each format earned its ratings through very different means. Asynchronous learning performed well in areas tied to independence and content access, students valued the ability to revisit recorded lectures, work through materials without time pressure, and reflect before submitting tasks. These qualities made the format feel manageable and learner-controlled. However, the same flexibility that made asynchronous learning convenient also made it feel distant. Peer interaction consistently came out as the weakest dimension, with students expressing only moderate satisfaction with how connected they felt to classmates and how motivating they found collaborative tasks. Instructor feedback timeliness was another recurring concern, suggesting that even a well-organized asynchronous course can feel impersonal when there is no one on the other end responding in real time. Synchronous learning, by contrast, drew its strength from exactly those dimensions. Instructor immediacy was the highest-rated aspect of the entire study, with students appreciating how promptly their instructors responded, how adaptive their teaching was during live sessions, and how genuinely invested they seemed in student participation. Social presence was also a clear strength, with students describing live classes as motivating, community-building, and more humanizing than self-paced alternatives. The one notable weakness was technical disruptions, which pulled scores down and served as a reminder that no amount of good teaching can fully compensate for unreliable internet access.

The significant difference in overall satisfaction favoring synchronous learning does not mean that live instruction is always the better choice. What it reflects, more precisely, is how this particular group of students responded to the two formats given their stage of learning, their appetite for social connection, and the kinds of tasks they were asked to complete. Students at the tertiary level tend to rely more heavily on structure, immediacy, and the sense of being in class with others, conditions that synchronous delivery naturally supports. Asynchronous learning, meanwhile, asks more of students in terms of self-direction and independent

motivation, which can be a strength for experienced learners but a source of disengagement for those who are still developing those capacities. What brought both groups together, however, were the factors they ranked as most influential in shaping their satisfaction: the quality of instructor feedback, the strength of social connection with peers, and the reliability of their internet access. These three factors cut across format lines, and their convergence points to something important, that student satisfaction in online learning is not primarily a question of which platform or schedule a course uses, but whether students feel taught, connected, and able to participate.

Taken together, the results of this study lead to a straightforward but often overlooked conclusion: online learning works best when it is designed with intention rather than chosen out of habit or convenience. Asynchronous and synchronous modes each carry real strengths, and the mistake many institutions make is treating them as equivalent alternatives when they are actually built for different purposes. Courses that depend on reflection, independent content processing, and schedule flexibility are well-served by asynchronous design. Courses that require discussion, immediate feedback, and the kind of belonging that comes from learning alongside others are better matched to synchronous delivery. In either case, what students consistently pointed to as the foundation of their satisfaction was not a feature of the format itself, it was the presence of a responsive instructor, peers they could actually connect with, and a stable enough connection to make any of it possible. Meeting those needs is not a matter of picking the right technology. It is a matter of building online education around the actual conditions and expectations of the people who have to learn inside it.

Recommendations

Based on the study's findings, educators and institutional leaders are encouraged to adopt a strategically blended approach to online course design, one that does not default to a single delivery format but instead deploys asynchronous and synchronous elements according to their respective pedagogical strengths. Asynchronous components work best for content-heavy, reflective, and independently paced tasks, and should be supported by well-organized materials, clear written guidance, and timely instructor feedback that compensates for the absence of live interaction; structured peer activities such as moderated discussion forums and peer review tasks can also help address the social isolation that asynchronous learners frequently report. Synchronous sessions, meanwhile, should be reserved for purposes that genuinely benefit from real-time engagement, complex discussions, immediate clarification, collaborative problem-solving, and community-building, while instructors are encouraged to cultivate immediacy through responsive communication, inclusive participation strategies, and consistent visible presence during live class. Institutions, for their part, have a responsibility that goes beyond curriculum design: providing students with reliable internet access, device support, and basic technical assistance is not a supplementary concern but a prerequisite for equitable online learning, particularly in resource-constrained settings where infrastructure gaps continue to shape who benefits from digital education and who is left behind. Future research should build on these findings by examining satisfaction differences across specific disciplines, learner

age groups, and socioeconomic contexts, and by exploring the long-term effects of delivery mode preferences on academic performance and course completion rates.

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