UNIVERSITY DISTANCE LEARNERS' INTERACTION AND ENGAGEMENT IN ONLINE ASYNCHRONOUS DISCUSSION FORUMS

Muhamad T. Hidayat, Institut Pendidikan Indonesia Garut

ABSTRACT

This study investigates student engagement in asynchronous forums in distance learning by focusing on the interactions of 204 students across four classes. It aims to understand interaction evolution and influencing factors over the course of each class. Data analysis reveals an initial high involvement that declines markedly over time for each class. This suggests a need for better pedagogical strategies in online environments to retain student attention. The decline is attributed to limited interaction, fewer collaboration opportunities, and self-regulation challenges for the students. Recommendations include designing courses to be more interactive and collaborative, enhancing instructor presence, and developing students' self-regulation skills. The findings emphasize the complexity of maintaining engagement in online learning and highlight the need for continuous pedagogical innovation.

Keywords: *online learning, distance learning, interaction, engagement, higher education.*

INTRODUCTION

The recent shift toward asynchronous learning platforms has been a defining moment in educational methodologies that has been driven in part by global disruptions such as the COVID-19 pandemic. These platforms are a contrast to traditional, face-to-face classroom settings, and provide a more flexible, learner-centric approach to education (Phillips, 2021). Asynchronous learning caters to many learners by accommodating their diverse schedules and learning preferences. This shift is not just a matter of convenience; it also signifies a fundamental change in how education is delivered and consumed (Joyner & Isbell, 2021). It reflects an understanding that learning can, and should, adapt to the varied challenges of students' lives by offering them the ability to engage with educational content when it best suits their needs.

Asynchronous discussion forums represent a crucial element of this new educational landscape. Unlike synchronous learning environments where classroom interaction is time-specific, these forums allow for delayed interaction (Pather et al.,

2020). This model offers significant advantages in terms of accessibility and inclusivity because it allows students from different time zones and with varying schedules to participate equally. However, asynchronous learning also presents distinct challenges. The lack of immediate feedback and real-time interaction can impact the dynamics of student communication and engagement. Asynchronous forums require students to be more self-motivated and disciplined (Schmidt-Jones, 2020), and they demand a higher level of commitment from educators to design forums that are not only informative but also engaging enough to encourage regular, thoughtful interaction (Heilporn et al., 2021).

The body of literature surrounding online learning is vast, and it has consistently highlighted several key factors that drive student engagement in digital environments. Studies have shown that the design of the course, including its structure and the nature of its content, plays a significant role in influencing student interaction (Aldowah et al., 2020). Interaction quality is another critical factor,

i.e., the frequency and depth of exchanges between students and instructors. This literature review serves as a foundation, offering a comprehensive understanding of how different elements converge to affect student engagement and interaction in online learning.

Theoretical models like the Community of Inquiry (CoI) provide valuable frameworks for understanding engagement in online educational settings. The CoI model, for instance, emphasizes three critical components: social presence, cognitive presence, and teaching presence (Shea et al., 2022). Each element plays a distinct role in fostering a productive online learning environment. Social presence refers to the ability of participants to project themselves socially and emotionally as "real" people. Cognitive presence involves exploring, constructing, resolving, and confirming understanding through collaboration and reflection in a community of learners. On the other hand, teaching presence is the design, facilitation, and direction of cognitive and social processes to achieve personally meaningful and educationally worthwhile learning outcomes. These theoretical perspectives are crucial for educators and researchers in designing and assessing compelling online learning experiences.

The challenges associated with asynchronous discussion forums are multifaceted. Reduced social presence can lead to isolation among students, which can harm their engagement and overall learning experience (Maimaiti et al., 2023). Cultivating a sense of community in a setting where interactions are not happening in real time is a significant challenge. Additionally, the asynchronous nature of these forums means that students must possess strong time management skills to keep up with discussions and coursework. The potential decrease in motivation, stemming from the lack of immediate feedback and interaction, poses another challenge for students and educators in maintaining engagement and enthusiasm for the course material.

The potential of asynchronous discussion forums to positively impact learning outcomes is substantial. When thoughtfully designed and effectively facilitated, these forums can lead to deeper cognitive engagement among students (Giacumo & Savenye, 2020). This deeper engagement manifests in enhanced critical thinking skills, improved analytical abilities, and better retention of course material. These forums provide a platform for students to engage in more reflective and thoughtful discussions, allowing for the exploration of complex ideas and concepts in a more nuanced manner. The asynchronous nature of these discussions can encourage students to delve deeper into topics, research more thoroughly, and formulate more considered responses than might be possible in a time-pressured, synchronous discussion.

However, a notable research gap exists in exploring the role of asynchronous discussion forums in fostering student interaction and engagement. While existing studies have provided insights into various aspects of online learning, focused research on how these forums influence student engagement, what barriers exist to interaction, and how these can be overcome is less prevalent. This gap underscores the need for targeted research to understand better and maximize the effectiveness of asynchronous discussion forums. Such research is essential for advancing educational practices and enhancing the quality of learning experiences in online environments (Fehrman & Watson, 2021). This exploration is significant for academic purposes and has practical implications for designing and implementing online courses, ensuring they are as engaging and effective as possible.

METHOD

In the context of examining student engagement in asynchronous discussion forums within distance education, the methodological approach of this study was meticulously designed to capture a comprehensive understanding of the interaction trends. The study encompassed four distinct classes, each starting with an enrollment of 51 students and spanning over eight sessions. This setting provided a rich ground for analyzing the dynamics of student interaction in virtual learning spaces. The participants in this study were 204 students who were divided equally across the four classes. It is important to note that these students were already familiar with online learning environments, as they were sophomore students enrolled in a distance education university. This prior experience with online learning platforms likely influenced their engagement and interaction patterns within the asynchronous forums. Their familiarity with such educational settings was crucial in selecting them for this study, as it provided a

diverse range of interactions and engagement levels, which were essential for a thorough analysis. This background information about the students' familiarity with online learning adds a critical layer to understanding the nuances of their interaction in the virtual learning space.

The study was conducted in a virtual learning environment and specifically focused on asynchronous discussion forums. This environment was chosen due to its relevance to contemporary online education and its potential to reveal varied aspects of student engagement. The procedure involved tracking in detail the student interactions in the discussion forums across all eight sessions. This tracking was not limited to mere attendance but extended to the depth and quality of the students' engagement in the discussions. Both quantitative and qualitative data were collected. Quantitative data involved recording the number of participating students in each session for every class, as meticulously detailed in Table 1. This data provided a clear, numerical insight into the interaction trends over time. Qualitative data were gathered to capture the essence of these interactions. This process included observations on the nature of discussions, the quality of student contributions, and the general dynamics within the forums.

In terms of data analysis, a robust analytical framework was employed. The quantitative data were statistically analyzed to identify patterns and trends in interaction across different sessions and classes. The qualitative data were scrutinized to understand the underlying factors driving these trends, which provided a richer context to the numbers. A noteworthy aspect of the methodology was its adherence to ethical considerations. Ensuring the anonymity and confidentiality of the participants was paramount, thus informed consent was obtained, and the participants were assured of their privacy, especially concerning the use of their data in the study. This ethical rigour was maintained throughout the data collection and analysis phases. Additionally, this study obtained approval from the Institutional Review Board operating within the academic institution where the study was conducted, further ensuring compliance with ethical standards and guidelines.

Lastly, while the method was comprehensive, it acknowledged certain limitations. The focus on asynchronous forums meant that other elements of the online learning experience were not within the scope of this study. Additionally, the specific participant group and the online environment might limit the generalizability of the findings. Despite these limitations, the methodological approach of this study was crafted to provide significant insights into student engagement in asynchronous discussion forums, a vital component of modern online education.

RESULTS AND DISCUSSION

In the evolving landscape of distance education, understanding student engagement in asynchronous discussion forums becomes critical for educators and instructional designers striving to create effective online learning experiences. This study presents an empirical examination of interaction trends across four classes, each with an enrollment of 51 students over a series of eight sessions. The ensuing discussion, grounded in a robust analytical framework, seeks to decode the patterns observed in these virtual learning spaces. The data outlined in Table 1 captures not only the fluctuations in attendance but also the nuanced dynamics that underpin the student interaction within these forums. Delving into the intricacies of these trends will also reveal the theoretical underpinnings that inform and shape the online educational experience. From the high initial interaction rates to the gradual decline, the data invite a reflection on the pedagogical approaches and learning theories that are at play in such asynchronous settings. These patterns of engagement, characterized by their initial robustness and subsequent ebb, provide fertile ground for discussion on the mechanisms of motivation, the importance of community, and the necessity of scaffolding self-regulated learning in online environments. The subsequent analysis will explore how these theoretical perspectives can illuminate the pathways to fostering sustained engagement in distance learning, offering insights into the strategies that can mitigate the challenges posed by the lack of physical presence and immediacy in asynchronous discussions.

Results

Table 1 details student interaction in asynchronous discussions across eight sessions for four distinct classes, supplemented by total averages and percentages. In Class 1, which commenced with 51 students, a robust start with 46 participants

Class	Total Students	Number of participating students							
		Session 1	Session 2	Session 3	Session 4	Session 5	Session 6	Session 7	Session 8
Class 1	51	46	42	42	40	37	35	36	36
Class 2	51	49	47	48	43	42	40	42	37
Class 3	51	46	40	42	40	41	40	41	36
Class 4	51	40	40	36	37	33	35	35	32
Total Average		45.25	42.25	42	40	38.25	37.5	38.5	35.25
Total Pecentage		89%	83%	82%	78%	75%	74%	75%	69%

in the first session gradually declined, reaching 36 participants by the final session. Class 2, with the same initial student count, demonstrated consistent interaction with a slight dip toward later sessions, culminating in 37 participants in the eighth session. Class 3, despite an initial high of 46 participants, experienced fluctuations throughout sessions and concluded with 36 students. Class 4, starting with 51 students, exhibited a consistent decrease in interaction, completing with 32 students in the eighth session. The total average, fluctuating between 35.25 and 45.25 students per session, and the total percentage values, indicating the proportion of participating students relative to the total class size, reflect a general reduction in interaction across sessions.

This data encourages further investigation into the factors influencing asynchronous discussion engagement within each class. The percentages gradually decrease from 89% in the first session to 69% in the eighth session. These figures suggest a consistent decline in student engagement over the eight sessions. The decreasing trend in both total average and percentage interaction implies that, on average, a smaller proportion of students actively participated in asynchronous discussions as the sessions progressed.

Figure 1 shows the nuanced trends characterizing student interaction in asynchronous discussion forums over eight sessions within four distinct classes. Each class exhibits a unique pattern of engagement, offering valuable insights into the dynamics of student interaction and involvement in the context of distance learning environments. Commencing with Class 1 (Blue Line), the initial session witnessed a commendable level of

Figure 1.
Students' Interaction Trends in Asynchronous Discussion
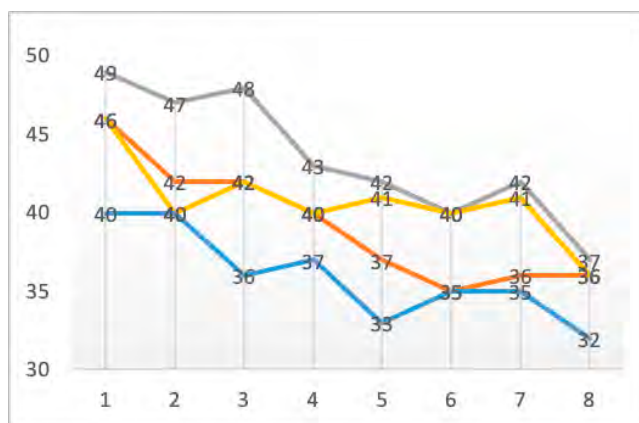
interaction, boasting 46 students actively engaging in the asynchronous discussions. However, this robust start was followed by a discernible drop in the second session, with interaction dwindling to 36 students. The subsequent sessions witnessed fluctuating levels of engagement, ultimately culminating in a notable decline to 32 students in the final session. This class, therefore, demonstrated a prevailing downward trend in interaction over the eight sessions.

Turning to Class 2 (Orange Line), the interaction trajectory unfolded with an initial count of 40 students. A modest increase to 42 students in the second session indicates a relatively stable trend. The class maintained a consistent pattern with minor fluctuations, concluding with 36 students in the last session. While this signifies a slight overall decrease, the stability in engagement sets this class apart from the others. Class 3 (Grey Line) emerged with the highest initial interaction, showcasing 49

students actively participating in the first session. Despite this promising start, the number of students decreased to 43 in the second session, setting the tone for fluctuating patterns in subsequent sessions. The class concluded with 37 students in the final session, pointing towards a general downward trend. It is noteworthy, however, that despite the trend, this class consistently boasted the highest interaction numbers in most sessions.

Class 4 (Yellow Line), beginning with 40 students, experienced a decline to 35 participants in the second session. Like Class 1, this class exhibited fluctuating trends throughout subsequent sessions, culminating in a reduction to 32 students in the final session. The general trajectory aligns with a decrease in interaction over the eight sessions. Collectively, an overarching observation across all four classes reveals a persistent downward trend in student interaction. This trend raises questions about the challenges associated with sustaining engagement over time, the inherent difficulties in maintaining consistent involvement in distance learning environments, or potential external factors influencing student interaction. Despite the fluctuations observed, the prevailing trajectory in each class underscores the need for a deeper exploration of the underlying causes to enhance student engagement in asynchronous discussions within distance learning platforms.

Discussion

The trends observed in Table 1 and Figure 1, depicting the diminishing interaction rates in asynchronous discussion forums, bring to light several implications that are deeply rooted in educational theories, particularly those relevant to the online learning paradigm. The initial surge of student engagement that diminishes as the sessions proceed calls for a strategic reconsideration of how motivation and interest are fostered and sustained in digital learning spaces. Educational theorists argue that motivation is not merely an intrinsic learner characteristic but is significantly influenced by the design and facilitation of the learning environment (Dostert & Müller, 2021). The initial high engagement rates seen across all classes may have been fueled by the initial excitement of learners encountering new content and a novel learning platform. However, as the novelty wears off, the intrinsic motivation may wane unless actively sustained by extrinsic factors such as course design, content relevance, and instructor intervention.

A social constructivist approach to learning posits that knowledge is constructed through social interaction and collaboration (Feyzi Behnagh & Yasrebi, 2020). This perspective emphasizes the creation of meaning through dialogue and collective activity. The data from the current study suggests a possible deficiency in the quality or quantity of meaningful interactions and collaborative learning activities within the classes under study. Without these critical components, students' engagement is likely to deteriorate over time as they might feel less connected to the learning community and the course content. In the asynchronous online learning environment, the absence of real-time feedback and the potential for delayed instructor response can exacerbate the situation, leaving students feeling isolated and disconnected, which can negatively impact their motivation to participate (Selvaraj et al., 2021).

The Community of Inquiry (CoI) framework extends this discussion by identifying three presences critical to a successful online learning experience: social, cognitive, and teaching presence (Honig & Salmon, 2021). Social presence involves the ability of participants to identify with the community, communicate purposefully in a trusting environment, and develop interpersonal relationships. Cognitive presence refers to the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse. Teaching presence, on the other hand, encompasses the design, facilitation, and direction of cognitive and social processes to achieve personally meaningful and educationally worthwhile learning outcomes. The data suggest that these presences may not have been fully optimized, as indicated by the decline in student interaction. This finding may point to a need for instructional designers and educators to more rigorously apply the principles of the CoI framework in developing and facilitating online courses.

Self-regulated learning theory also provides a lens through which to interpret the decline in interaction (Ilishkina et al., 2022). This theory posits that successful learners actively control their learning experiences through goal-setting, self-monitoring, and self-reflection (Cleary & Zimmerman, 2012). In asynchronous learning environments, the

onus is on the learner to regulate their own learning due to the self-paced nature of the courses. The decrease in interaction could imply that students may be struggling with the self-regulation demands of asynchronous learning. This struggle might be due to several factors, including a lack of self-efficacy, which can be remedied by timely instructor feedback and peer interaction, or to the inherent challenges of managing time and learning resources in a self-directed learning environment (Potts, 2019).

The implications of these theories suggest that a multipronged approach is necessary to address the decline in student interaction. Such an approach would involve examining course design to ensure that it promotes sustained motivation and engagement, creates ample opportunities for meaningful interaction and collaboration, and provides support for students to develop their self-regulation skills. These strategies are not independent but rather interconnected components of a cohesive plan to foster a thriving online learning community. For instance, instructors can design activities requiring collaboration and peer feedback, which increase social presence. Simultaneously, they can provide scaffolding for cognitive presence through structured discussion prompts that encourage deeper reflection and discourse. Furthermore, instructors can enhance teaching presence by providing clear guidelines, prompt feedback, and regular communication, thereby supporting students' self-regulated learning strategies.

The trends in student interaction in asynchronous discussion forums reflect the complex interplay of motivational, social, and cognitive factors that influence online learning experiences. The decline in engagement over time underscores the need for a comprehensive approach to online course design and facilitation that aligns with social constructivist principles and the Community of Inquiry framework while supporting the development of self-regulated learning skills among students. Future research must continue to investigate these theoretical implications in practice and explore innovative strategies that can effectively address the challenges revealed through this study's findings.

CONCLUSION

The research into student interaction within asynchronous discussion forums has revealed insightful trends that raise important considerations for the future of distance learning. At the outset, all classes demonstrated a promising degree of engagement, suggesting that the initial appeal of online courses is strong. However, the steady decline in interaction observed through the eight sessions indicates that the allure may be superficial or, at best, short-lived without the support of robust pedagogical underpinnings.This pattern of engagement attrition brings into focus the essential role of motivational strategies in the online learning environment. The initial enthusiasm displayed by students indicates a readiness to engage, yet the faltering persistence underscores a gap between student expectations and course delivery. The data compels educators to move beyond static content delivery and embrace a more dynamic interaction that continuously stimulates learner motivation. This innovation could involve reimagining course design to emphasize relevance, applicability, and interactivity, ensuring that students find sustained value and interest as they progress through the course.

In examining the nature of the learning experience, the study echoes the significance of social constructivism, which advocates for learning as a collaborative, dialogic process. The decline in engagement suggests that the virtual classrooms under scrutiny may not have fully capitalized on the power of community and collaboration, which are hallmarks of a constructivist approach. Therein lies the challenge for educators to create learning experiences rich in dialogue, peer learning, and social connection, even when separated by screens. The Community of Inquiry framework offers a further lens to evaluate the online learning experience, emphasizing the necessity of a balanced interplay between social, cognitive, and teaching presence. The observed decrease in student interaction signals potential shortfalls in these areas, prompting a reevaluation of how these presences are initiated and maintained. It is incumbent upon educators to foster a sense of community, support meaningful cognitive engagement, and maintain a strong teaching presence that guides and sustains learners throughout their educational journey.

Self-regulated learning emerges as another pivotal factor, particularly in the context of asynchronous learning, which demands a high degree of learner autonomy. The challenges students face

in self-directed learning environments may contribute to the decrease in engagement, pointing to the need for instructional strategies that build students' self-regulatory capacities. In response to these findings, the study advocates for a renewed focus on course design that not only attracts but also retains student interaction. It calls for instructors to be actively involved in facilitating learning, providing consistent support, and nurturing a sense of academic community. Future research should delve into the qualitative aspects of engagement, going beyond interaction numbers to understand the depth and quality of student interactions and the impact of various teaching strategies.

Moreover, professional development for educators is essential to equip them with the skills needed to create and sustain vibrant online learning communities. The overarching goal is to align the principles of social constructivism and the Community of Inquiry framework with practical strategies that promote self-regulated learning, ensuring that distance education is both engaging and effective. The findings underscore the importance of a comprehensive approach to online course design and facilitation. By integrating a strong theoretical foundation with practical, interactive strategies, educators can foster a learning environment where student engagement is not just initiated but sustained. Such an approach will be crucial in upholding the integrity and effectiveness of distance learning as a key modality in higher education.

References

Aldowah, H., Al-Samarraie, H., Alzahrani, A. I., & Alalwan, N. (2020). Factors affecting student dropout in MOOCs: A cause and effect decision‐making model. *Journal of Computing in Higher Education, 32*, 429–454. https://doi.org/10.1007/s12528-019-09241-y

Dostert, J., & Müller, R. (2021). Motivational assistance system design for industrial production: From motivation theories to design strategies. *Cognition, Technology & Work, 23*, 507–535. https://doi.org/10.1007/s10111-020-00643-y

Fehrman, S., & Watson, S. L. (2021). A systematic review of asynchronous online discussions in online higher education. *American Journal of Distance Education, 35*(3), 200–213. https://doi.org/10.1080/08923647.2020.1858705

Feyzi Behnagh, R., & Yasrebi, S. (2020). An examination of constructivist educational technologies: Key affordances and conditions. *British Journal of Educational Technology, 51*(6), 1907–1919. https://doi.org/10.1111/bjet.13036

Giacumo, L. A., & Savenye, W. (2020). Asynchronous discussion forum design to support cognition: Effects of rubrics and instructor prompts on learner's critical thinking, achievement, and satisfaction. *Educational Technology Research and Development, 68*, 37–66. https://doi.org/10.1007/s11423-019-09664-5

Heilporn, G., Lakhal, S., & Bélisle, M. (2021). An examination of teachers' strategies to foster student engagement in blended learning in higher education. *International Journal of Educational Technology in Higher Education, 18*, 25. https://doi.org/10.1186/s41239-021-00260-3

Honig, C. A., & Salmon, D. (2021). Learner presence matters: A learner-centered exploration into the community of inquiry framework. *Online Learning, 25*(2), 95–119. https://doi.org/10.24059/olj.v25i2.2237

Ilishkina, D. I., de Bruin, A., Podolskiy, A. I., Volk, M. I., & van Merriënboer, J. J. (2022). Understanding self-regulated learning through the lens of motivation: Motivational regulation strategies vary with students' motives. *International Journal of Educational Research, 113*, 101956. https://doi.org/10.1016/j.ijer.2022.101956

Joyner, D. A., & Isbell, C. (2021). *The distributed classroom.* MIT Press.

Maimaiti, G., Jia, C., & Hew, K. F. (2023). Student disengagement in web-based videoconferencing supported online learning: An activity theory perspective. *Interactive Learning Environments, 31*(8), 4883–4902. https://doi.org/10.1080/10494820.2021.1984949

Pather, N., Blyth, P., Chapman, J. A., Dayal, M. R., Flack, N. A., Fogg, Q. A., Green, R. A., Hulme, A. K., Johnson, I. P., Meyer, A. J., Morley, J. W., Shortland, P. J., Štrkalj, G., Štrkalj, M., Valter, K., Webb, A. L., Woodley, S. J., & Lazarus, M. D. (2020). Forced disruption of anatomy education in Australia and New Zealand: An acute response to the Covid‐19 pandemic. *Anatomical Sciences Education, 13*(3), 284–300. https://doi.org/10.1002/ase.1968

Phillips, H. N. (2021). Reimagining higher education: A cohort of teachers' experiences to face the 'new normal'during COVID19. *International Journal of Educational Research Open, 2*, 100069. https://doi.org/10.1016/j.ijedro.2021.100069

Potts, J. A. (2019). Profoundly gifted students' perceptions of virtual classrooms. *Gifted Child Quarterly, 63*(1), 58–80. https://doi.org/10.1177/0016986218801075

Schmidt-Jones, C. A. (2020). The promise and challenge of online action research: Notes from a study of self-motivated online music learners. *Action Research, 18*(3), 372–386. https://doi.org/10.1177/1476750317698026

Selvaraj, A., Radhin, V., KA, N., Benson, N., & Mathew, A. J. (2021). Effect of pandemic based online education on teaching and learning system. *International Journal of Educational Development, 85*, 102444. https://doi.org/10.1016/j.ijedudev.2021.102444

Shea, P., Richardson, J., & Swan, K. (2022). Building bridges to advance the community of inquiry framework for online learning. *Educational Psychologist, 57*(3), 148–161. https://doi.org/10.1080/00461520.2022.2089989