STUDENT PERCEPTIONS OF COLLABORATIVE ONLINE LEARNING: AN ANALYSIS OF EFFECTIVENESS AND CHALLENGES

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Abstract

The global shift towards online education has underscored the need for engaging pedagogical strategies that foster interaction and deeper learning. Collaborative learning is one such strategy, yet its implementation in a fully online environment presents unique challenges. This study aims to analyze student perceptions of a collaborative learning experience within an asynchronous online tutoring program at a major distance education university. A mixed-methods approach was employed, utilizing a comprehensive questionnaire administered to 58 undergraduate students. The instrument measured seven dimensions of the collaborative experience on a 5-point Likert scale and included open-ended questions for qualitative feedback. Quantitative results indicate a strongly positive overall perception, with a mean score of 4.01 out of 5.00. The findings reveal that students highly valued the clarity of instructional guidance and the positive impact on learning outcomes. However, the analysis also pinpointed significant challenges in the practical experience of collaboration, particularly related to logistical issues like inter-member communication and scheduling coordination. Qualitative data from open-ended responses corroborated these findings, highlighting a dichotomy between the appreciation for the learning benefits and frustration with group coordination. The study concludes that while the collaborative learning model is perceived as effective and beneficial, its success can be significantly enhanced by providing structured support for group logistics and communication. These findings offer practical recommendations for educators and instructional designers seeking to optimize collaborative learning in online settings.

Keywords: Online learning, collaborative learning, student perception, distance education, higher education.

1 INTRODUCTION

1.1 Research context and problem

The landscape of online collaborative learning within Open and Distance University (ODU) is characterized by its distinctive features that set it apart from conventional online courses. Unlike traditional online courses, which often focus on individual learning experiences, ODU emphasizes the development of collaborative skills through structured group activities, fostering social presence and peer interaction in geographically dispersed settings (Silvana, 2013). The scope of online collaborative learning in ODUs encompasses various modalities, including synchronous discussions, asynchronous forums, and project-based teamwork

facilitated by digital platforms, aiming to enhance engagement and deepen understanding among students from diverse backgrounds.

The core objectives of this study are to evaluate student perceptions regarding the quality of collaboration, social presence, and perceived learning outcomes in online environments within ODU. Understanding these perceptions is vital for designing effective instructional strategies that promote active participation and positive learning experiences (Olson & Marge, 2020). By assessing student attitudes towards collaborative tools and group processes, the research aims to identify factors that influence engagement and satisfaction, thereby informing best practices for online pedagogy.

Justifying a cross-institutional sampling approach, this study incorporates data from students in ODU across different regions and disciplines to enhance the generalizability of findings. Such an approach acknowledges the variability in institutional contexts and student demographics, providing a comprehensive understanding of perceptions across diverse settings (Hiltz et al., 2019). This broad perspective is essential for developing scalable and adaptable instructional models that can be implemented effectively in various ODUs.

The practical relevance of this research lies in its potential to inform instructional design and policy development within ODUs. By validating perception constructs and triangulating survey data across institutions, the study seeks measurement invariance, ensuring that findings accurately reflect student experiences regardless of institutional differences (Sharifah Nadiyah et al., 2017). Ultimately, insights gained will support the creation of engaging, inclusive, and effective online collaborative learning environments that align with the goals of ODUs to provide accessible and high-quality education.

The rapid expansion of digital technology has fundamentally reshaped the landscape of higher education, with online learning transitioning from a niche alternative to a mainstream mode of delivery. This shift necessitates a move beyond simple content delivery towards the implementation of dynamic and interactive pedagogical models. Collaborative learning, a well-established strategy in face-to-face settings, is increasingly being adapted for online environments to promote critical thinking, social interaction, and a deeper understanding of course material.

However, translating collaborative principles to an online, often asynchronous, setting is not without its difficulties. Issues such as communication barriers, technological hurdles, and challenges in coordinating group work can hinder the effectiveness of these activities.

Understanding the student experience is therefore paramount for refining and improving online collaborative learning designs. This paper addresses this need by investigating student perceptions of a structured collaborative learning activity. The rationale is to identify both the strengths and weaknesses of the current implementation from the students' viewpoint, to provide evidence-based recommendations for future enhancements.

1.2 Research questions and objectives

The exploration of student perceptions regarding online collaborative learning in open and distance university (ODU) necessitates a clear articulation of research questions and overarching objectives that align with the theoretical framework and measurement plans.

The primary research questions guiding this study are as follows:

RQ1: How do students perceive the quality of online collaboration in ODUs?

RQ2: How do perceptions vary by discipline, level of study, and modality?

These questions are designed to probe the multifaceted nature of student perceptions, encompassing qualitative assessments of collaboration quality, quantitative relationships among key constructs, and variations across demographic and disciplinary groups.

The overarching objectives of the study are to:

- Develop a comprehensive understanding of student perceptions of online collaboration within ODU.
- Validate measurement instruments for constructs such as collaboration quality, social presence, and perceived learning, ensuring measurement invariance across institutions.
- Examine the structural relationships among these constructs to identify predictors of satisfaction and learning outcomes.
- Investigate differences in perceptions based on discipline, level of study, and modality to inform tailored instructional strategies.
- Generate evidence-based design and policy recommendations aimed at enhancing online collaborative environments.

By explicitly aligning these research questions and objectives with the theoretical framework—such as the Community of Inquiry model—and measurement plans, the study facilitates rigorous testing. This approach ensures that findings are both valid and generalizable across diverse institutional contexts.

1.3 Theoretical framework and significance

This study is grounded in the theoretical models of the Community of Inquiry (CoI) and Social Presence Theory, both of which provide a comprehensive understanding of online collaborative learning environments. The CoI framework emphasizes the importance of teaching presence, social presence, and cognitive presence as interdependent elements that facilitate meaningful learning experiences in virtual settings (Lidiane et al., 2022). Social Presence Theory further elucidates how perceived social connectedness influences learner engagement and satisfaction, which are critical constructs operationalized through measures of collaboration quality, social presence, perceived learning, and satisfaction (Jie & Churchill, 2014). Operationalization of these constructs involved validated instruments adapted for online contexts, ensuring measurement invariance across diverse institutional settings (Qing & Nanxi, 2021). The constructs were defined as follows: collaboration quality refers to the perceived effectiveness and depth of peer interactions; social presence indicates the sense of community and interpersonal closeness; perceived learning captures students' self-assessment of knowledge gains; and satisfaction reflects overall contentment with the collaborative experience. These operational definitions align with constructivist perspectives, emphasizing active participation and social negotiation as pathways to deeper understanding (Gómez-Rey et al., 2018). The integration of these theories and operational measures contributes to advancing the theoretical understanding of online collaboration in open and distance universities, providing a robust basis for cross-institutional applicability. The study's findings are significant for informing instructional design, fostering social presence, and enhancing learner engagement, thereby supporting policy development aimed at improving online collaborative learning environments in diverse educational contexts.

2 METHODOLOGY

This study employed a descriptive mixed-methods research design to gather and analyze student perceptions. The approach allowed for the integration of quantitative statistical data with rich qualitative insights to provide a holistic understanding of the phenomenon.

2.1 Participants

The participants were 58 undergraduate students enrolled in an online tutoring program at a large open university in Indonesia. The demographic profile showed a majority of female respondents (81%), with 19% male. Participants were drawn from various fields of study,

primarily Elementary School Teacher Education (PGSD) and Management, and were mostly in their early semesters (semesters 1-3).

2.2 Instrument and Procedure

Data was collected using an online questionnaire titled "Questionnaire on Perceptions of Collaborative Learning Experience in Online Learning." The instrument consisted of two main parts:

1. Quantitative Section: 28 items rated on a 5-point Likert scale (1=Strongly Disagree to 5=Strongly Agree). These items were grouped into seven distinct dimensions: (A) Learning Guidance, (B) Implementation, (C) Collaboration Experience, (D) Learning Outcomes, (E) Collaborative Skills, (F) System & Facilitator Support, and (G) General Perception.
2. Qualitative Section: An open-ended question inviting students to share their impressions, feedback, and suggestions regarding their experience. 1212

2.3 Data Analysis

Quantitative data were analyzed using descriptive statistics to calculate the mean scores for each item and each of the seven dimensions. This allowed for the identification of areas of high and low agreement among students. Qualitative data from the open-ended responses were analyzed thematically to identify recurring patterns and key themes that explained the quantitative results in greater depth.

3 FINDINGS AND DISCUSSION

The overall student perception of the collaborative online learning experience was highly positive, with a grand mean score of **4.01 out of 5.00**. This indicates that, on average, students "Agree" that the experience was valuable and well-executed.

3.1 Quantitative Findings

3.1.1 Profile of Respondents

Based on the available data, this study involved 58 students as valid respondents. The respondent composition was dominated by females at 81%, while male respondents accounted for 19%. The respondents came from various academic programs, with the highest concentration from Elementary School Teacher Education (PGSD) and Management. Moreover, the majority of respondents (nearly 70%) were in their early semesters (1-3), indicating that this learning experience was part of their introductory phase to university lecture methods.

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Overall, students' perceptions of collaborative learning experiences were very positive, with an average combined score of 4.01 out of 5.00. This indicates that students generally agree that their collaborative learning experiences went well and were beneficial. A deeper analysis of each dimension reveals strengths and some points to note. A detailed analysis by dimension revealed specific areas of strength and areas requiring improvement, as summarized in Table 1.

Table 1. Mean Scores of Student Perception by Dimension.

Dimension	Mean Score	Interpretation
A. Learning Guidance	**4.16**	Very Good
D. Learning Outcomes	**4.13**	Very Good
G. General Perception	**4.11**	Very Good
E. Collaborative Skills	**4.08**	Good
B. Implementation & Execution	**3.95**	Good
F. System & Facilitator Support	**3.90**	Good
C. Collaboration Experience	**3.80**	Fairly Good

The data clearly indicates that the strongest aspects of the program were the **Learning Guidance** (M=4.16) and **Learning Outcomes** (M=4.13). Students strongly agreed that the instructions provided were clear and that the collaborative activity significantly helped them understand the course material. The highest-rated item in the entire survey was A2. I understand the steps I need to take (M=4.21).

Conversely, the dimension with the lowest score was the **Collaboration Experience** (M=3.80). While still positive, this score suggests that the internal dynamics and logistics of working within the group were the most challenging aspects. This is strongly supported by the single lowest-rated item, C1. I found it easy to contact my group members (M=3.45), which falls closer to "Neutral," indicating a significant logistical hurdle for many students.

The analysis of the findings reveals clear strengths in the learning design and its perceived impact. The dimensions with the highest scores were Learning Guidelines (A) and Learning Outcomes (D). This indicates that students felt the instructions, guidelines, and objectives of the collaborative activity were conveyed very clearly by the facilitator. Furthermore, they strongly felt that the collaboration was effective, genuinely helping them to understand the subject matter and achieve their learning goals. This positive sentiment is reinforced by the highest-rated aspects of the survey, where students reported a clear understanding of the steps to take (A2, score: 4.21), better comprehension of the material after discussion (D1, score: 4.19), and a belief that the activities made a real contribution to their success (G3, score: 4.19).

On the other hand, the primary area for improvement was the Collaborative Experience (C) dimension. Although still in the positive category, its lower average score highlights significant challenges related to internal group dynamics and interactions. The most difficult aspect reported by students was logistical communication, with the lowest score being for the ease of contacting group members (C1, score: 3.45). This suggests that establishing initial contact was a major weak point. Other challenges included a lack of smoothness in formalizing the group structure, such as selecting a chair and secretary (C2, score: 3.72), and a perception that overall group communication, while acceptable, was not as effective as it could have been (B3, score: 3.81)

3.2 Qualitative Findings

Analysis of open-ended comments and feedback from students reinforced the quantitative findings. Two main themes emerged:

1. Appreciation of the Benefits of Collaboration: Many students gave very positive feedback. They felt that collaboration helped them exchange ideas, respect the opinions of others, and practice soft skills such as communication, teamwork, and discipline.

"The collaborative learning experience really helped me to understand the material in depth because of the discussion and exchange of ideas with team members. I learned to respect other people's opinions, work together, and be more disciplined in managing time."

2. Challenges in Coordination: The theme that emerged most frequently as a challenge was the difficulty in managing and coordinating schedules with other group members. This is in line with the low quantitative score on item C1 (ease of contacting group members).

"I enjoy the process of discussing and working together... However, there were times when I found it difficult to adjust my time with other group members. Overall, though, this experience taught me many valuable lessons."

This combination of findings suggests that while students value the pedagogical benefits of collaboration, practical, logistical barriers prevent the experience from being seamless.

3.3 Discussion

Practical implications suggest that instructional designers should incorporate structured collaborative tasks, clear communication protocols, and facilitator training to enhance perceived collaboration quality (Gómez-Rey et al., 2018). Policy recommendations include institutional support for faculty development programs focused on online facilitation skills and the integration of collaborative tools that support asynchronous and synchronous interactions. Future research should explore longitudinal effects of perceived collaboration on learning outcomes and satisfaction, as well as disciplinary-specific strategies to optimize online collaboration experiences (Jisu, 2013; Nashwa & Kinchin, 2019). Limitations include potential response bias and variability in technological infrastructure, which may affect generalizability; thus, further studies should consider contextual factors influencing perceptions in diverse open and distance university settings.

The empirical findings from this comprehensive analysis of student perceptions in online collaborative learning within an open and distance university (ODU) provide a robust foundation for developing targeted practical strategies and informing policy reforms aimed at enhancing online collaborative environments. To optimize the design and facilitation of online collaborative activities, it is imperative to establish clear, evidence-based guidelines that incorporate scaffolds fostering social presence and equitable participation. For instance, structuring activities with explicit roles, peer feedback mechanisms, and collaborative tools can significantly improve perceived collaboration quality and social engagement (Gómez-Rey et al., 2018). Professional development programs for instructors and facilitators should emphasize training in digital facilitation skills, including strategies for fostering inclusive participation, managing diverse learner needs, and leveraging technology to support social presence (Gómez-Rey et al., 2018). Such training enhances facilitators' capacity to create engaging, inclusive, and effective collaborative learning experiences.

Technological features play a crucial role in supporting equal participation and presence. Recommendations include integrating functionalities such as real-time chat, breakout rooms,

shared digital workspaces, and participation analytics to monitor engagement levels (Hussin et al., 2021). These features can mitigate participation inequalities by providing multiple avenues for contribution and enabling facilitators to identify and address disengagement promptly.

Institutional policies should prioritize accreditation standards and quality assurance frameworks that recognize and incentivize effective online collaborative practices. Policies should mandate the inclusion of collaborative activity design standards, facilitator training requirements, and technological infrastructure adequacy assessments to ensure consistent quality across ODUs (Nashwa & Kinchin, 2019). Furthermore, policies must address issues of equitable access by investing in technological infrastructure, especially for students in rural or resource-limited settings, to bridge digital divides and promote inclusive participation (Queiros & Villiers, 2016).

In addition, fostering a culture of continuous improvement through regular evaluation of student perceptions and learning outcomes is essential. Implementing feedback loops involving students, instructors, and administrators can inform iterative enhancements in course design, facilitation practices, and technological support systems (Jahnke, 2010). Such policies align with the broader goals of ensuring high-quality, accessible, and equitable online education in ODUs.

Overall, translating empirical insights into actionable strategies requires a concerted effort among educators, administrators, policymakers, and technology providers. By adopting these evidence-based recommendations, ODUs can significantly enhance the effectiveness of online collaborative learning environments, thereby improving student engagement, satisfaction, and learning outcomes.

4 CONCLUSION

This study confirms that well-structured collaborative learning is a highly effective and positively perceived pedagogical strategy in an online setting. The key to its success lies in providing exceptionally clear instructional guidance, which in turn leads to enhanced learning outcomes for students. However, the primary obstacle to a frictionless experience is not pedagogical but logistical. The difficulty students face in coordinating with their peers represents a significant barrier that can cause frustration and impede the collaborative process. To optimize these learning activities, educational institutions must address these practical

challenges by providing better frameworks and tools to support group formation and communication.

The analysis of the findings reveals clear strengths in the learning design and its perceived impact. The dimensions with the highest scores were **Learning Guidelines (A)** and **Learning Outcomes (D)**. This indicates that students felt the instructions, guidelines, and objectives of the collaborative activity were conveyed very clearly by the facilitator. Furthermore, they strongly felt that the collaboration was effective, genuinely helping them to understand the subject matter and achieve their learning goals. This positive sentiment is reinforced by the highest-rated aspects of the survey, where students reported a clear understanding of the steps to take (A2, score: 4.21), better comprehension of the material after discussion (D1, score: 4.19), and a belief that the activities made a real contribution to their success (G3, score: 4.19).

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Attachment 1. Indicators and Sub-indicators of the quantitative collaborative questionnaire

Indicators	Sub-indicators
A. Collaborative Learning Guide	[A1. Guidelines/instructions for collaborative learning are clearly presented at the beginning].
	[A2. I understand the steps to be taken in collaborative activity.]
	[A3. Group instructions and tasks are easy to understand and follow.]
	[A4. I know my role in the collaborative group.]
B. Implementation and Implementation	[B1. I applied the collaboration guidelines in completing the shared task.]
	[B2. Each group member actively contributes according to the guidelines.]
	[B3. Group communication is effective during the collaboration process.]
	[B4. Collaborative platforms or media (e.g. in-group forum) are optimally utilized].
C. Collaboration Experience	[C1. I found it easy to contact group members]
	[C2. I find it easy to participate in the election of the Group Leader and Secretary]
	[C3. I feel comfortable working together with my group members.]
	[C4. I get new ideas from the group discussion].
	[C5. Collaborative tasks make me understand the subject matter better.]
	[C6. Collaboration encourages me to think critically and reflectively.]
	[C7. The time provided to prepare for collaborative learning suits my needs]
	[C8. This collaborative strategy is effective in increasing my and other participants' participation]
	[C9. Collaborative learning increases my motivation to learn]
	[C10. Collaboration between participants helped me achieve a deeper understanding of the material].
D. Obstacles and Challenges	[D1. I had difficulty scheduling time with group members].
	[D2. Some group members were less active or did not participate.]
	[D3. Technical barriers (network, platform, device) interfered with collaboration.]
	[D4. Lack of communication skills hampers the collaborative process.]
E. Benefits and Impacts	[E1. Collaborative learning helps me understand the material better.]
	[E2. I feel more motivated to learn through group interaction.]
	[E3. Collaborative activities improve my cooperation skills.]
	[E4. Group work is better than individual work].
F. Support and Facilitation	[F1. The lecturer/facilitator actively monitors and guides the collaborative process.]
	[F2. I get constructive feedback from lecturers and friends.]
	[F3. The learning system supports communication and collaborative work.]
	[F4. I can access learning resources and collaboration tools easily].
G. General Perception	[G1. The collaborative learning experience in online learning is fun.]
	[G2. I would like to engage in more collaborative activities in the future].
	[G3. I feel that collaborative activities make a real contribution to my

Indicators	Sub-indicators
	learning outcomes].