

Perceived collaborative engagement in open and distance learning: a study of teacher trainees at Himachal Pradesh University, India

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Abstract

Purpose – (1) Is there a significant difference in peer connection between students who perceived their learning environment as collaborative and those who did not? (2) Does perceived collaboration impact learner motivation? (3) Are perceived learning benefits enhanced through perceived collaborative engagement.

Design/methodology/approach – A quantitative, cross-sectional research design was adopted. A structured questionnaire was administered to 362 teacher trainees enrolled in a distance teacher education program across various regions in India. Independent samples *t*-tests were performed using the Social Science Statistics online calculator (<https://www.socscistatistics.com/>).

Findings – The analysis revealed no significant difference in peer connection between distance learners in Group A and Group B. This result was somewhat unexpected, as existing literature suggests that collaborative activities typically enhance peer interaction and connectedness, particularly in traditional face-to-face learning environments (Vygotsky, 1978; Garrison & Anderson, 2003). However, in the context of distance education, learners often accept a higher degree of individual responsibility and autonomy, which may reduce the effect of community engagement. For motivation, no statistically significant difference was observed between learners who perceived their classes as collaboratively engaging and those who did not. This finding contrasts with prior studies that associate collaborative engagement with increased motivation (Ryan & Deci, 2000) and suggests that, in structured ODL teacher education programmes, motivational outcomes may be influenced more strongly by programme design, assessment structure, and instructor guidance than by perceived collaboration alone. For perceived learning benefits, no statistically significant difference was found between the two groups, although mean scores were slightly higher for Group A. This suggests that while collaborative environments may enhance the affective aspects of learning (motivation, sense of belonging), they may not automatically translate to perceived academic gains.

Research limitations/implications – The study was confined to learners enrolled in the Centre for Distance and Online Education (CDOE), Himachal Pradesh University. As institutional structures, learner demographics, and support mechanisms vary across universities, the findings may not be fully generalizable to all distance education institutions in India. Focus is given on one programme only, i.e. Bachelor of Education. These limitations suggest that the findings should be interpreted with caution and primarily within the context of CDOE, HPU. However, they also open avenues for future research involving longitudinal designs, multi-institutional samples and inclusion of multiple stakeholders.

Practical implications – The findings of the study suggest that in distance education contexts, such as the Centre for Distance and Online Education, Himachal Pradesh University, enhancing peer connection does not necessarily depend on increasing the number of collaborative activities but rather on the quality of facilitation and learner support. Well-managed Personal Contact Programmes (PCPs) and skilled resource persons can foster a sense of engagement and connectedness even in the absence of intensive peer interaction. The results indicate the need for instructional designs that respect learner autonomy while offering flexible, need-based opportunities for collaboration. For administrators and policymakers, the study underscores the importance of context-sensitive policies, capacity building of teacher educators and strengthening student support services to improve the overall effectiveness of distance education programs.

Originality/value – I have not checked. But it is my original work.

Keywords Open and distance learning, Perceived collaboration, Peer interaction, Teacher trainees, Learning motivation, Perceived learning and collaboration

Paper type Research article



1. Introduction

Open and Distance Learning (ODL) has emerged as a transformative model in the landscape of higher education, particularly in developing nations like India, where geographical, economic

and social constraints pose challenges to conventional educational access. ODL provides a flexible, learner-centered framework that accommodates diverse learner needs. However, concerns around learner isolation, lack of peer interaction and disengagement persist.

Recent research advocates the infusion of collaborative and interactive pedagogies to humanize ODL experiences (Bozkurt & Sharma, 2020). The incorporation of collaborative discussions, group tasks and peer-led dialogues within online classes can foster deeper learning, enhance motivation, and develop a sense of academic community. These elements are crucial for teacher trainees who are not only learners but also future facilitators of inclusive classrooms.

The present study aims to examine whether the perception of collaborative engagement in ODL classes correlates with improved peer connection, motivation and perceived learning benefits. Instead of tracking formal collaborative interventions, this research focuses on how students felt about the nature of discussions and engagement in their classes.

The rationale for this study also draws from a growing recognition that student perception is a strong predictor of learning outcomes and engagement (Scherer & Teo, 2019). In contexts where instructional formats may be standardized but implementation varies, the learners sense of belonging and perceived interaction often shape their academic journey more significantly than formal structures. Therefore, evaluating the perceived presence of collaborative elements provides a practical lens to assess classroom inclusivity and community engagement.

2. Theoretical foundation

The theoretical foundations of collaborative learning stem from Vygotsky's (1978) sociocultural theory, which emphasizes the role of social interaction in cognitive development. Within ODL contexts, collaborative learning is often operationalized through discussion forums, group assignments, peer feedback and co-construction of knowledge (Anderson, 2004; Rovai, 2002). Garrison, Anderson, and Archer (2000) proposed the Community of Inquiry (CoI) model. The Community of Inquiry (CoI) framework conceptualizes meaningful online learning as the intersection of teaching presence, cognitive presence and social presence. Among these, social presence emphasizes learners' ability to perceive others as real, accessible and engaged participants in the learning process. In distance education contexts, social presence is closely linked to interaction, dialogue and learners' sense of belonging. The present study draws specifically on this dimension of the CoI framework to examine course-level community engagement as perceived through collaborative discussions and participatory classroom practices, rather than attempting to operationalize the full CoI model. Later, Garrison and Anderson (2003) elaborated that these presences support critical thinking, sustained engagement and deep learning outcomes. Learner engagement and satisfaction are positively associated with collaborative and participatory teaching strategies (Scherer & Teo, 2019), while Ryan and Deci (2000) noted that intrinsic motivation and autonomy are strengthened through peer interactions in learner-centered environments. Tinto (1997) emphasized the importance of both academic and social integration for student persistence.

Although collaborative learning is generally associated with positive outcomes, several studies suggest that its effectiveness depends on structure, facilitation and learner readiness. Arbaugh (2008) cautioned that once a basic level of social presence is established in online learning environments, additional collaborative strategies may yield diminishing returns unless they are intentionally structured and pedagogically aligned. In the Indian context, Sharma and Mishra (2021) documented informal learner initiatives like WhatsApp study groups that supplement formal instruction. Studies have also underscored the gap between content delivery and peer engagement in asynchronous platforms (Kushariyadi, Permatasari, Fitriani, & Faridah, 2024). While collaboration enhances inclusivity by providing multiple means of participation (Florian & Spratt, 2013), even technologically enabled inclusive strategies rely on how learners perceive social connectedness and collaborative opportunity

(Navas-Bonilla, Guerra-Arango, Oviedo-Guado, & Murillo-Noriega, 2025). Verma and Katoch (2024) provided initial highlights that teacher educators often rely on a limited set of collaborative strategies, rarely using them in an informed, structured manner, underscoring the need for capacity-building and pedagogical innovation in teacher training programs.

Therefore, an effective ODL strategy should go beyond digital tools and infrastructure to include instructional practices that foster perceived collaboration and community, particularly for learners navigating remote and autonomous study environments.

3. Need for the study:

A substantial body of research has established principles for designing effective distance education courses, including the integration of collaborative discussions, peer interaction and community-building activities. However, much of this literature focuses on instructional design intentions rather than learners' lived classroom experiences. In practice, distance education courses often operate within standardized curricular structures, while the actual level and quality of collaboration varies across instructors, sessions and learner participation. This creates an important empirical gap: it remains unclear whether learners who perceive their ODL classrooms as a more collaboratively engaging experience measurably different academic or motivational outcomes compared to those who do not, particularly in structured teacher education programs that already provide multiple forms of instructional and social support. While collaboration is widely assumed to enhance engagement and learning, fewer studies have explicitly examined whether learner-perceived collaborative richness differentiates outcomes within the same institutional context.

The present study addresses this gap by empirically examining whether perceived collaborative classroom experiences are associated with differences in peer connection, motivation and perceived learning benefits among teacher trainees enrolled in an open and distance learning program. Rather than assuming the effectiveness of collaborative practices, the study adopts an exploratory approach to determine whether variations in perceived participation and engagement meaningfully influence learner experience in a real-world ODL setting.

4. Research questions:

- (1) Is there a significant difference in peer connection between students who perceived their learning environment as collaborative and those who did not?
- (2) Does perceived collaboration impact learner motivation?
- (3) Are perceived learning benefits enhanced through perceived collaborative engagement?

4.1 Objectives of the study

- (1) To assess whether perceived collaborative learning environments enhance a sense of connection among teacher trainees.
- (2) To explore the impact of perceived collaboration on learner motivation.
- (3) To measure differences in perceived learning benefits based on learners' perception of collaboration.

4.2 Hypotheses:

- H1. There is no significant difference in peer connection scores between students who perceived collaborative learning and those who did not.
- H2. There is no significant difference in motivation scores between the two groups.
- H3. There is no significant difference in perceived learning benefit scores between the two groups.

5. Methodology

The participants of the study were teacher trainees enrolled in an open and distance teacher education program offered through the Centre for Distance and Online Education (CDOE), Himachal Pradesh University (HPU), India. The program follows a blended ODL structure comprising self-learning materials and mandatory Personal Contact Programmes (PCPs) both in online mode and offline mode.

A total of 362 teacher trainees voluntarily participated in the study. All participants were actively attending academic sessions during the data collection period. As the study aimed to examine learner perception within a shared institutional context, participants were drawn from the same university to ensure curricular and structural consistency.

Participants were categorized into two groups based on their response to a screening item assessing perceived collaborative classroom experiences. Group A ($n = 300$) consisted of trainees who perceived their classes as collaboratively engaging, while Group B ($n = 62$) included trainees who did not perceive sufficient collaborative or discussion-based activities. The sample included a higher proportion of female participants ($n = 253$) compared to male participants ($n = 109$), reflecting the gender composition commonly observed in teacher education programs. In terms of age, the majority of respondents were between 25 and 30 years ($n = 233$), followed by those aged 30–35 years ($n = 58$). Smaller proportions of participants were below 25 years ($n = 27$), between 35 and 40 years ($n = 26$) and above 40 years ($n = 18$), indicating a predominantly early-career adult learner population. Regarding marital status, the sample was almost evenly distributed, with 191 married and 171 unmarried participants. These demographic characteristics provide contextual background to the study; however, the present analysis does not examine differences across age, gender or marital status, as such subgroup comparisons are beyond the scope of the current investigation and are recommended for future research. A quantitative, cross-sectional research design was adopted.

Data were collected using a structured self-report questionnaire developed specifically for the present study. A Google Form link was shared in WhatsApp groups of PCP centers after taking permission of PCP coordinator of B.Ed. program. The instrument was designed to capture learners' perceptions of collaborative classroom experiences and their associated peer connection, motivation and perceived learning benefits within an ODL context. After five days, 371 responses were collected, out of which 362 were completely filled and they were analyzed further.

The questionnaire consisted of two parts. Part one was demographical information (age, gender, employment status) and part two consisted of items regarding peer connection (4 items), part three had items regarding motivation (2 items) and part four was related to items regarding perceived learning benefits (2 items). Eight Likert-type items rated on a five-point scale ranging from Strongly Disagree (1) to Strongly Agree (5) were developed. Items were developed based on constructs commonly discussed in collaborative learning, social presence, and learner engagement literature. Peer connection items focused on learners' sense of interaction, comfort in discussion and perceived connectedness with peers. Motivation items assessed learners' enthusiasm and willingness to engage with course activities, while perceived learning benefit items captured self-reported understanding and usefulness of instructional experiences in daily life.

To establish content validity, the initial item pool was reviewed by 1 teacher educators experienced in distance education, and minor revisions were made to improve clarity and relevance. Internal consistency reliability was assessed using Cronbach’s alpha, yielding acceptable values for peer connection ($\alpha = 0.72$), motivation ($\alpha = 0.68$) and perceived learning benefits ($\alpha = 0.70$), indicating adequate reliability for exploratory analysis. Reverse-coded items were appropriately adjusted.

The data were cleaned and analysed using independent samples *t*-tests and descriptive statistics.

Independent samples *t*-tests were performed using both Microsoft Excel and the Social Science Statistics online calculator <https://www.socscistatistics.com/>. Minor variations in decimal values were observed, but both tools produced consistent results regarding statistical significance. The tests compared group means for peer connection, motivation and perceived learning benefits. Given the exploratory nature of the study and the use of a brief perception-based instrument, the findings are interpreted cautiously, with emphasis on identifying patterns rather than establishing causal relationships.

Social Science Statistics is a freely accessible web-based tool commonly used in educational research for quick and reliable hypothesis testing. It offers a user-friendly interface and generates outputs including *t*-values, degrees of freedom, *p*-values and interpretation guidance. While not as robust as SPSS or R, it remains widely used in academic contexts, particularly for preliminary analysis or when access to licensed software is limited (Watkins, 2016).

6. Analysis and findings

Objective 1: To study the effect of perceived collaborative classroom experiences on peer connection.

H1: There is no significant difference between peer connection of distance learners of Group A and Group B.

Table 1 presents the comparison of peer connection scores between learners who perceived their classes as collaboratively engaging (Group A) and those who did not (Group B). The *t*-value of 1.57 with a *p*-value of 0.117 indicates statistical nonsignificance at $p < 0.05$ level. Therefore, Hypothesis 1 is not rejected.

Objective 2: To study the effect of collaborative activities on learner motivation.

H2: There is no significant difference between motivation of distance learners of Group A and Group B.

Table 2 summarizes the comparison of motivation scores between Group A and Group B to examine whether perceived collaborative engagement differentiates learner motivation. The *t*-value of 1.29 with a *p*-value of 0.199 indicates statistical nonsignificance at $p < 0.05$ level. Therefore, Hypothesis 2 is not rejected.

Objective 3: To study the effect of perceived collaboration on perceived learning benefits.

Table 1. Comparison of peer connection scores between learners who perceived their classes as collaboratively engaging (Group A) and those who did not (Group B)

Group	N	Mean	SD	t-value	p-value	Significance
Group A	300	4.09	2.76	1.57	0.117	Not Significant
Group B	62	3.94	3.22			

Table 2. Comparison of motivation scores between learners who perceived their classes as collaboratively engaging (Group A) and those who did not (Group B)

Group	N	Mean	SD	t-value	p-value	Significance
Group A	300	4.18	1.79	1.29	0.199	Not Significant
Group B	62	3.96	1.99			

H3: There is no significant difference between perceived learning benefits of distance learners of Group A and Group B.

Table 3 reports the comparison of perceived learning benefit scores between the two groups based on their perception of collaborative classroom experiences. The *t*-value of 0.81 with a *p*-value of 0.418 indicates statistical nonsignificance at $p < 0.05$ level. Therefore, **Hypothesis 3** is not rejected.

Though results were not statistically significant ($p > 0.05$), participants of collaborative sessions consistently reported higher mean scores across all constructs.

7. Discussion

The discussion synthesizes the findings across the three examined constructs to interpret how perceived collaborative engagement functions within a structured open and distance teacher education context as follows:

Objective 1: The analysis revealed no significant difference in peer connection between distance learners in Group A and Group B in **Table 1**. This result was in contrast to existing literature that suggests collaborative activity role in enhancing peer connectedness, particularly in traditional face-to-face learning environments (Vygotsky, 1978; Garrison & Anderson, 2003). However, in the context of distance education, learners often accept a higher degree of individual responsibility and autonomy, which may reduce the perceived need for peer interaction (Moore, 1993).

It is important to note that grouping was based on students' perceived experience of collaborative richness rather than formal instructional design, which further underscores the role of student interpretation in shaping their sense of community. In this regard, Arbaugh (2008) suggests that once a foundational level of social presence is established in online environments, additional collaborative strategies may yield diminishing returns in enhancing peer connection.

An alternative explanation for this finding could be the quality of engagement facilitated during Personal Contact Programs (PCPs). If resource persons are skilled at managing student interactions and creating a supportive environment, learners may feel adequately connected and engaged without needing additional peer support (Rovai, 2002). Furthermore, the structure of the B.Ed. program itself, which includes practical components such as micro-teaching sessions in small groups (typically around 20 students over a 10-day period), likely

Table 3. Comparison of perceived learning benefits scores between learners who perceived their classes as collaboratively engaging (Group A) and those who did not (Group B)

Group	N	Mean	SD	t-value	p-value	Significance
Group A	300	4.25	1.83	0.81	0.418	Not Significant
Group B	62	4.07	2.01			

fosters interpersonal relationships that mitigate feelings of isolation commonly associated with distance learning (Tinto, 1997).

Objective 2: For motivation, no statistically significant difference was observed between learners who perceived their classes as collaboratively engaging and those who did not, as shown in Table 2. This finding contrasts with prior studies that associate collaborative engagement with increased motivation (Ryan & Deci, 2000) and suggests that, in structured ODL teacher education programs, motivational outcomes may be influenced more strongly by program design, assessment structure and instructor guidance than by perceived collaboration alone.

Objective 3: as shown in Table 3, with respect to perceived learning benefits, no statistically significant difference was found between the two groups. These findings indicate that perceived collaboration alone may be insufficient to produce differentiated academic or motivational outcomes in structured ODL contexts. While the Community of Inquiry framework emphasizes the importance of social presence for meaningful learning, Garrison and Anderson (2003) also noted that learning outcomes emerge through the interaction of multiple presences. Several factors may explain the present results. Learners' academic satisfaction often depends on clarity of content, assessment quality and instructor feedback, all of which may operate independently of collaborative formats. Additionally, perceived learning is inherently subjective and shaped by learner expectations, prior experience and cognitive style.

8. Implications for future research

The findings of the present study should be interpreted as exploratory and context-specific, offering important implications for both distance teacher education practice and future research. The absence of statistically significant differences across peer connection, motivation, and perceived learning benefits suggests that collaborative and community-oriented practices do not exert uniform or automatic effects within structured open and distance learning (ODL) programs. From a practical standpoint, this underscores the need to move beyond assumptions that increased collaboration alone will enhance learner outcomes. For distance education practitioners, the results highlight the importance of focusing on the quality, purpose and facilitation of collaborative activities rather than their frequency. Collaborative engagement appears most meaningful when it is intentionally designed, clearly aligned with learning objectives, and supported by effective instructional facilitation. In programs where learners already receive academic and social support through structured instructional formats, additional collaborative activities may require careful differentiation to add pedagogical value. The findings have particular relevance for the Centre for Distance and Online Education (CDOE), Himachal Pradesh University. The lack of significant differences suggests that existing program components – such as Personal Contact Programmes (PCPs), small-group instructional sessions and guided academic activities may already provide a baseline level of social presence and learner engagement. Accordingly, CDOE–HPU may benefit from strengthening these existing structures by emphasizing reflective dialogue, practice-oriented peer feedback and structured discussion during PCPs rather than expanding generic collaborative requirements. Faculty development initiatives may focus on enhancing facilitation strategies that support purposeful engagement, especially within teacher education contexts.

With respect to future research, the study can be viewed as an initial phase within a broader inquiry into learner engagement in ODL teacher education. Future studies may adopt mixed-methods or longitudinal designs to examine how perceptions of collaboration and community engagement evolve over time and interact with learner autonomy, instructional design, and instructor facilitation. Qualitative investigations could further illuminate why perceived

collaborative engagement does not always translate into measurable academic or motivational differences. Comparative research across institutions and program types, as well as subgroup analyses based on demographic variables, may also contribute to a more nuanced understanding of collaboration in diverse ODL contexts.

9. Conclusion

This study examined whether teacher trainees' perceived collaborative classroom experiences within an open and distance learning program were associated with differences in peer connection, motivation, and perceived learning benefits. Contrary to dominant assumptions in collaborative learning literature, the findings revealed no statistically significant differences across these constructs. Rather than indicating a limitation, these results highlight the context-dependent nature of collaborative engagement in structured ODL teacher education programs.

The findings suggest that when learners operate within well-defined instructional frameworks that include academic guidance, periodic face-to-face interaction and structured learning support, perceived collaboration alone may not be sufficient to produce differentiated learner outcomes. This challenges linear interpretations of collaboration as a universally effective strategy and underscores the importance of examining how program structure, learner autonomy and facilitation practices shape engagement.

By adopting a perception-based and exploratory approach, the study contributes to the literature by questioning taken-for-granted assumptions about collaboration in distance education and emphasizing the need for more refined, context-sensitive understandings of learner engagement. As ODL continues to expand in teacher education, future research must move beyond prescriptive models to examine when, how and for whom collaborative practices meaningfully enhance the learning experience.

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