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Developing a Community of Inquiry using an educational blog in higher education from the perspective of Bangladesh

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Web 2.0 tools such as blogs, wikis, social networking, and podcasting have received attention in educational research over the last decade. Blogs enable students to reflect their learning experiences, disseminate ideas, and participate in analytical thinking. The Community of Inquiry (CoI) framework has been widely used in educational research to understand and enhance online and blended learning platforms. There is insufficient research evidence to demonstrate the impact of educational blogging using the CoI model as a framework. This article explores how blogs can be used to support collaborative learning and how such an interaction upholds CoI through enhancing critical thinking and meaningful learning in the context of higher education (HE). An exploratory sequential mixed-method approach has been followed in this study. A convenience sampling method was employed to choose 75 undergraduate students from Dhaka University for a 24-week blogging project. Every publication on the blog was segmented into meaningful units. Whole texts of posts and comments are extracted from the blog, and the transcripts are analyzed in a qualitative manner considering the CoI framework, more specifically, through the lens of cognitive, social, and teaching presence. In addition, the semi-structured questionnaire is used to collect data from students irrespective of whether blogging expedited students' learning or not. The research findings indicate that cognitive presence, namely, the exploration component, is dominant in blog-based learning activity. Moreover, this research has demonstrated that blogs build reliable virtual connections among students through exchanging ideas and information and by offering opportunities for reflective practice and asynchronous feedback. This study also revealed challenges related to blogging in the context of developing countries, including lack of familiarity with blogs, restricted internet connectivity, limited access to devices, and low levels of social interaction. It is recommended that different stakeholders including policymakers, curriculum developers, and teachers take the initiative to synchronize the utilization of educational blogs with the formal curriculum, guaranteeing that blog activities supplement and improve traditional teaching–learning activities.

KEYWORDS

web 2.0, Community of Inquiry (CoI), blog, collaborative learning, learning outcome

1 Introduction

The prevalence of online learning is rapidly expanding and has become more advanced due to ongoing technological improvements (Seaman et al., 2018). Web 2.0 tools, such as blogs, wikis, social networking, media sharing, and podcasting, allow for self-directed, collaborative, and widespread learning by sharing resources, regardless of physical or geographical constraints (Song and Bonk, 2016). For instance, blogs can be used in online and blended learning platforms to foster students' reflective learning (Milad, 2017), developing learning communities through several strategies like posting students' work, exchanging hyperlinks, and so on (Kerawalla et al., 2009). In this connection, several researchers added that blogging has obvious advantages to form the Community of Inquiry (CoI) framework and to trigger meaningful learning through improving the social, cognitive, and teaching presence (Cameron and Anderson, 2006; Petit et al., 2023). In addition, effective instructional strategies and facilitation of discourse guided by teachers are more significant in creating CoI than any other approach (Garrison and Akyol, 2013). Additionally, Jimoyiannis et al. (2012) argued that properly designed blog activities can help students achieve higher cognitive levels by enhancing their communication and collaboration skills and their critical thinking. However, despite the widespread excitement and curiosity around the learning design framework and online learning environments, there is a lack of research on the educational influence of learning designs (Bower, 2017). Shifting to the reality of the COVID-19 pandemic and the widespread adoption of online learning, the pandemic has initiated a radical and rapid rethinking of the teaching–learning arrangement. The challenge was to provide guidance and support to educators to shift their curriculum to an online environment (Garrison, 2020). The CoI framework may provide a coherent representation of relevant information and the means to navigate between theoretical and practical sources of information (Garrison, 2020). Hence, it is vital to examine how CoI inquiry could be designed and implemented in online environments. Additionally, there is a lack of research evidence to demonstrate the impact of educational blogging when using the CoI model as a framework. Moreover, no research article on the use of educational blogs for a higher education level in Bangladesh has been found yet. The study aims to investigate the potential of the blogging environment in assisting higher education students in their learning process, focusing on key elements of the CoI framework. Hence, the following research questions will be addressed:

- i. What is the nature of the students' interaction in the educational blogging practice?
- ii. How does participating in blog-based learning activity support students' learning experience?
- iii. What problems do the students confront while engaging in educational blogging?

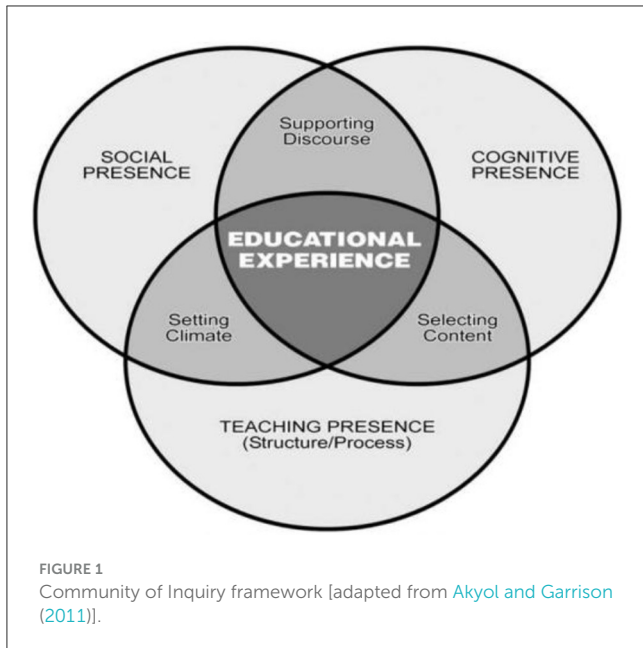
2 Literature review

Blogs can be characterized as a web-based archive displaying contents in reverse chronological entry date. People with little

technical knowledge can publish as well as share their thoughts, opinions, and emotions with others using blogs (Pifarré et al., 2014). The use of blogging technologies by students in educational settings is on the rise globally (Ifinedo, 2017). Blogs are commonly advocated as collaborative tools that facilitate active learning among students (Jimoyiannis and Angelaina, 2012). However, the rate of users' participation can diverge from session to session and blog to blog (Lawrence et al., 2010). Blogs can create an online collaborative portfolio for course-related resources, assignments, calendars, events, teaching experiences, open discussions, students' queries, and so on (Kaya et al., 2012). Hence, blogs can play a vital role in establishing the learning community as well as encouraging interpersonal communication among teachers and students of higher education (Kaçar, 2021).

The analysis of the educational use of blogs often involves various methods and frameworks to understand the dynamics, engagement, and impact of the blog content (Kaul et al., 2018). The CoI model is a framework that is particularly relevant for analyzing the educational aspects of blog posts, especially in online learning platforms (Kim and Gurvitch, 2020). CoI was initially developed as a conceptual framework to guide the practice of collaborative learning through asynchronous communication in online settings (Garrison and Akyol, 2013; Shea et al., 2022). The origin of the CoI model is grounded in Vygotsky's theory of social development (1978) and Dewey's practical inquiry and critical thinking model (1933) (Garrison and Akyol, 2013; Shea et al., 2022). The structure depicted in Figure 1 illustrates the three primary components (teaching, cognitive, and social presence) of CoI and their intersection, which are crucial for comprehending the dynamics of profound and significant online learning experiences (Garrison et al., 2010a). Subsequently, other research studies focused on collating data related to learning design as well as the evaluation process in the online learning experience to the cognitive dimension to identify and measure three constitutional components of the CoI framework, namely, social presence, teaching presence, and cognitive presence (Garrison et al., 2010b; Angeli and Schwartz, 2016).

Among the three elements of the CoI framework, the role of social presence has been investigated most extensively in online educational settings (Garrison and Arbaugh, 2007). Research has claimed that social presence enhances the learner's satisfaction, while the internet is used as a medium to deliver education (Cui et al., 2013). However, the positive social environments including affective expression, open discussion, and group cohesion lead toward a hidden curriculum of the technological aspects of distance or virtual education (Moodley et al., 2022). In addition, Akyol and Garrison (2011) described cognitive presence as the extent to which learners can construct and confirm meaning through sustained reflection and discourse. Cognitive presence is considered a distinctive outcome of higher education since long rooted in Dewey's (1933) construction of practical inquiry and critical thinking (Sadaf et al., 2021). Akyol and Garrison (2011) implemented cognitive presence in terms of a practical inquiry model and established a four-phase process including triggering, exploration, integration, and resolution in the context of educational settings. However, Marshall and Kostka (2020) emphasized the importance of teaching presence to ensure effective online learning rather than interactions among participants.



Teaching presence has been conceptualized to comprise three components: instructional design and organization, facilitating discourse, and direct instruction. Several pieces of literature (Chakraborty and Nafukho, 2015; Chakraborty, 2017; Bhatti, 2020) highlight the significance of teaching presence in online learning platforms to meet the needs of students, to ensure perceived learning, and to certify the sense of community.

Researchers were likely intrigued by the potential of blogs to foster a sense of community and social presence, which are essential elements of the CoI framework. The exploration of CoI in educational blogs is likely driven by a combination of theoretical considerations, gaps in current research, and practical implications. The research design was meticulously constructed to explicitly address these qualities and offer significant contributions to the field of online education.

3 Theoretical framework: Community of Inquiry (CoI) in educational blogs

Several researchers (Pifarré et al., 2014; Jimoyiannis and Roussinos, 2017) have suggested the design of educational blogging activities applying the CoI model as an analysis framework considering students' engagement and presence. The primary approach underlying the design was to integrate an educational blog with both content space and discussion space. The content space encompasses blog posts, articles, multimedia elements, and other sources of information generated by the author or contributors. On the other hand, the discussion space refers to the section of the blog platform where readers and participants can actively participate in conversations, express opinions, ask questions, and offer feedback about the content presented in the content space. This design confirms the collaborative nature of the blog (Jimoyiannis and Angelaina, 2012). Moreover, the CoI model determines indicators to recognize and measure each presence in

an educational blog community. Basic components and indicators of CoI are presented in Table 1 considering educational blogs as a collaborative learning platform.

Table 1 provides a more explicit definition of CoI elements, using both indicators and instances. These characteristics have been employed to unambiguously ascertain social presence, cognitive presence, and instructional presence in a blog-assisted educational context. This mapping has been used in laying the groundwork for this research.

4 Methodology

4.1 Research context

Although technology-mediated learning has been introduced at the higher education level in Bangladesh in recent years (Chowdhury et al., 2018), different online-based technologies have yet to be integrated into the curriculum and assessment process (Arefin et al., 2023). In this study, the educational blog was created using Google Sites considering a project-based learning approach, which combines online and in-person instruction to enhance learning by offering guidance, resources, and feedback. The goal of this blog-based activity was to promote for blogs as additional resources in traditional teaching methods, with a focus on developing engaging and efficient instructional materials that are in line with specific learning objectives. This activity also aimed to foster collaborative learning and effective communication among students. However, there was no correlation between student involvement in the blog-based learning activity and the assessment process. Moreover, the curriculum did not provide any guidance on using alternative online platforms like blogs for instructional activities.

This study employed an exploratory sequential mixed-method approach. A convenience sampling method was employed to choose undergraduate students from Dhaka University for a 24-week blogging project. A total of 75 students enrolled in the "Introduction to Computer Course" of the B.Ed. program were invited to participate in this blog-based activities and were assessed on how collaborative learning opportunities contribute to the achievement of learning outcomes. A total of 65 students actively participated in collaborative blog discussions, contributing by uploading content and/or commenting to promote the discourse and reflection.

4.2 Data collection

This study collected both qualitative and quantitative data as part of an exploratory sequential mixed-method research design. Qualitative data were collected from the blogging activities of students and categorized into the following: content posts (e.g., text, image, audio, and video) and comments (e.g., questions, replies to or explanation of previous posts, and new notions). After completing a thorough analysis of the blog's activity, it was ascertained that there were 20 content postings and 71 comments made on the site during the research period. The low level of

TABLE 1 Indicators to recognize and measure each presence in an educational blog [modified from Garrison and Arbaugh (2007)].

Elements	Indicators		Defining indicators
Social presence	Open communication and free thinking		<ul style="list-style-type: none"> Facilitating the expression of various perspectives Promoting an environment that encourages open discussion and independent thought. Enabling individuals to share their thoughts and ideas without fear of negative consequences
	Group coherence		<ul style="list-style-type: none"> Inspiring collaboration Stimulating cooperation Creating a supportive and connected atmosphere
	Affective/idiosyncratic		<ul style="list-style-type: none"> Expressing feelings and emotions Solidarity Mobilization
Cognitive presence	Triggering event		<ul style="list-style-type: none"> Stimuli or problem that captures the learners' attention. Sentiment of puzzle Sense of enigma
	Exploration	<input type="checkbox"/> Self-opinion <input type="checkbox"/> Explanations <input type="checkbox"/> Scientific Knowledge	<ul style="list-style-type: none"> Seeking and exploring information, perspectives, and ideas Exchanging information Disseminating ideas
	Integration	<input type="checkbox"/> Synthesis <input type="checkbox"/> Conclusion	<ul style="list-style-type: none"> Synthesizing ideas Recognizing patterns Connecting new knowledge to current understanding
	Resolution		<ul style="list-style-type: none"> Proposing solutions or recommendations. Applying new notion
Teaching presence	Design and organization		<ul style="list-style-type: none"> Setting the curriculum and methods Facilitating a coherent and progressive learning experience.
	Facilitation of discourse		<ul style="list-style-type: none"> Initiating and encouraging discussions on relevant topics Keeping the conversation focused on the learning objectives. Providing support and direction to learners as needed
	Instructions		<ul style="list-style-type: none"> Minimizing ambiguity and confusion. Facilitating discussion. Ensuring activities align with the intended outcome.

involvement can be ascribed to students' lack of familiarity with the blogging platform and the optional nature of their participation.

Furthermore, a semi-structured questionnaire, developed on existing research that used the CoI framework in online settings, was employed as an instrument to collect data from the students at the end of the semester to assess whether activities on educational blogs facilitate and contribute to students' learning. The participating students were required to assess quantitative items on a 5-point scale: (1 [strongly disagree], 2 [disagree], 3 [unsure], 4 [agree], and 5 [strongly agree]). They were also asked to provide qualitative responses in an open-text format, expressing their opinions on the effectiveness and challenges of educational blogs.

4.3 Data analysis

To address the first research question, qualitative data (content posts and comments) on the blog were segmented into meaningful units. A meaningful unit refers to a distinct and analyzable segment or component within a content post/comment on the blog. Each meaningful unit is segmented based on the specific characteristics related to cognitive, social, and teaching presence,

as outlined in the CoI framework. Afterward, these meaningful data units were categorized according to 13 indicators associated with CoI elements (specified in Table 1). Both authors attempted to generate meaningful units from content posts and comments. To evaluate the consistency or agreement between the researchers while assessing the meaningful units, interrater reliability was measured (Stemler, 2019). Subsequently, the researchers employed a consensus-building procedure to address and settle any differences, and this entailed collaborative evaluations of complex instances and deliberations to arrive at mutually acceptable decisions (Stemler, 2019).

In the subsequent phase, students' responses were analyzed to address the second and third research questions. Quantitative data of students' responses were analyzed statistically using descriptive statistics methods (frequency, mean, and standard deviation), whereas qualitative data were analyzed thematically. The qualitative data about blog-based activities were integrated with the quantitative data concerning the students' perspective of blogging to have a more accurate comprehension of the research inquiries. Hence, the validity and reliability of the study were enhanced through cross-verification of results by using both qualitative and quantitative data.

4.4 Ethical consideration

Prior to participation as samples, the participants were provided with an informed consent form about the goal of the study. Subsequently, the participants provided written informed consent to ensure their complete understanding and enable them to make voluntary and well-informed decisions regarding their participation. This study used rigorous measures to guarantee absolute confidentiality and anonymity in both data collection and presentation, thereby safeguarding the privacy of the participants' data. There was no requirement for any type of student identification for the questionnaire. Moreover, the blog activities and analysis of blog publication did not need the use of individual student identities.

5 Findings

The findings were organized into three sections: students' engagement patterns on educational blogs, the impact of blog-based learning activities on students' learning, and the challenges associated with using educational blogs.

5.1 Nature of students' interaction in educational blogging

By converting each content posts and comments into distinct and significant components, a total of 100 meaningful units of units were found. In this specific study, the researchers reached a consensus on 90 out of 100 units, indicating a significant degree of interrater reliability. The results obtained by the researchers reveal a strong correlation across all sets of results, indicating a high level of interrater reliability for the test. Subsequently, after resolving the disagreements through a consensus, meaningful units were categorized in [Table 2](#) according to the 13 indicators of the CoI model.

In [Table 2](#), the analysis of dissimilar proportions among three key presence factors—cognitive, social, and teaching—revealed significant variations. Cognitive presence dominated with 71%, surpassing both social presence (17%) and teaching presence (12%). The feeling of belonging enhanced social presence as individuals had a sense of connection to a collective with common interests and objectives. Within the cognitive domain, the aspect of exploration was prominent, accounting for 43% of the overall presence. Analyzing social presence revealed a fair distribution within this group. Teaching presence referred to a focus on the design and organization aspect, which accounts for 8% of this group. The comprehensive analysis of each category of presence offered a nuanced comprehension of the diverse factors influencing the CoI.

TABLE 2 Blog's Community of Inquiry.

Elements (percentage)	Indicators (percentage)
Social presence (17%)	Open communication and free thinking (5%)
	Affective/idiosyncratic (7%)
	Group coherence (5%)
Cognitive presence (71%)	Triggering (5%)
	Self-opinion (26%)
	Explanations (16%)
	Scientific knowledge (1%)
	Synthesis (12%)
	Conclusion (11%)
Teaching presence (13%)	Design and organization (8%)
	Facilitation of discourse (2%)
	Instructions (2%)

5.2 Blog-based learning activities to contribute and facilitate the way of students' learning

The following sections have highlighted students' responses regarding the blog-based experience.

5.2.1 Influencing factors of blogging experience in terms of perceived learning, community of practice and collaborative learning

The quantitative findings were categorized into perceived learning, community of practice, and collaborative learning and presented in the following sections:

- **Perceived learning**

It was revealed that students usually hold a favorable impression of using blogs for learning, exhibiting a strong consensus on statements pertaining to enjoyment, knowledge dissemination, and the efficacy of learning ([Table 3](#)).

As given in [Table 3](#), 84.6% of students reported positive attitudes toward using blogs for educational purposes, with a mean score of 3.97 indicating a moderately positive perception and a low level of variability with a standard deviation of 0.59. Similarly, 81.5% of students derived enjoyment from reading and acquiring knowledge from publications on the blog. A significant majority (89.1%) hold the belief that blog conversations are beneficial for exchanging information and expertise with peers. However, a variation in the reactions to accessing the blog more than required was observed, with a significant number of students expressing a neutral position. The average score ($M = 2.97$) indicated a neutral-to-slightly negative sentiment, and there is a significant range of responses ($SD = 0.98$). In addition, 89.1% of students strongly asserted that using the blog has facilitated their learning,

TABLE 3 Perceived learning of blogs (N = 65).

	SD	D	N	A	SA	Mean	SD
I enjoyed using blog as a method of learning	0.0%	1.5%	13.8%	70.8%	13.8%	3.97	0.59
I enjoyed reading and learning from publication (posts/comments)	0.0%	4.6%	13.8%	67.7%	13.8%	3.91	0.68
The blog discussion helps me share knowledge and experience with peers	0.0%	1.6%	9.4%	71.9%	17.2%	4.05	0.58
I access blog more than required	6.3%	25.0%	39.1%	25.0%	4.7%	2.97	0.98
I think using the blog has helped me learn	0.0%	0.0%	10.9%	70.3%	18.8%	4.08	0.54

demonstrating a constant and favorable influence on their educational experience.

• Community of practice

Table 4 illustrated that students perceived positive perceptions of the impact of blog posts on enhanced connectivity, heightened motivation, and greater interaction.

As given in Table 4, approximately 70.3% of students reported feeling connected when using the blog, suggesting a favorable emotional attachment to the learning environment. The data indicated that a substantial number of students (75.4%) demonstrated a desire to engage with supplementary materials pertaining to the issues mentioned on the blog. This pointed out that the blog can serve as an effective catalyst for encouraging further investigation and study. Approximately 70.4% of students hold the belief that the blog has a role in enhancing the interaction, promoting a feeling of involvement and cooperation within the learning community.

• Collaborative learning

Table 5 demonstrated that the data suggest favorable perceptions regarding the influence of blog posts on the enhancement of skills and the promotion of collaborative learning.

Approximately 79.7% of students concurred that publications (posts/comments) from peers have been beneficial in enhancing their abilities and knowledge. Likewise, a significant majority of students (75.1%) held the belief that blogging enhances collaborative learning among their peers. Nevertheless, opinions differed regarding the idea that collaborative learning is time-consuming; 36.7% of individuals agreed, while 31.3% remained neutral. The average score was somewhat negative ($M = 3.05$), and there was a considerable degree of heterogeneity in the replies ($SD = 1.06$).

• Scale statistics

It was found that students preferred blogs as beneficial for perceived learning use ($M = 19.00$, $SD = 2.078$) in comparison to community of practice ($M = 11.29$, $SD = 1.670$) and collaborative learning platform ($M = 10.63$, $SD = 1.386$). In aggregation, positive experiences were revealed to continue teaching-learning practices using blogs among students (Table 6).

5.2.2 Impact of blogging activities on learning experience

The following sections emphasized students' perception of the impact that blog-based learning activities had on their learning experience.

• Flexibility

It was found that more than 75% of the students have mentioned that it is convenient as blogs are easy to access and flexible in timing based on their personal preference even in leisure. However, some of them were worried about the availability of the internet. According to Student₁,

"I can access blog 24/7 anywhere."

• Collaborative learning

Approximately two-thirds of the students mentioned that blogs give them an opportunity to share learning resources and access different thoughts of a community as well as to develop understanding. Some other students' responses are mentioned below:

"People learn from reading the comments of different respondents." (Student₂)

"Blog helps to develop understanding." (Student₃)

"Blog helps us to know thought of others." (Student₄)

Few students mentioned that blogs were a new way of learning collectively and are very fun and interactive. According to Student₅,

"I think it is new way of learning collectively."

• Feedback

Around half of the students mentioned that they can express themselves through writing, and at the same time, the feedback helps them be motivated as well as accumulate self-confidence. A few of the students reported that they were able to learn many new things through using blogs. According to Student₆,

TABLE 4 Blogs as a community of practice (N = 65).

	SD	D	N	A	SA	Mean	Std. deviation
I feel connected while using blog	0.0%	10.9%	18.8%	62.5%	7.8%	3.67	0.78
I have been motivated to read additional resources related to discussed topics on the blog	0.0%	6.2%	18.5%	56.9%	18.5%	3.88	0.78
Blog helps increase interaction	0.0%	10.9%	18.8%	56.3%	14.1%	3.73	0.84

TABLE 5 Collaborative learning through blogs (N = 65).

	SD	D	N	A	SA	Mean	Std. deviation
Publication (posts/comments) of other members helped me develop new skills and knowledge	0.0%	6.3%	14.1%	64.1%	15.6%	3.89	0.74
Blogging leads toward collaborative learning in our group	3.1%	6.3%	15.6%	68.8%	6.3%	3.69	0.81
I think collaborative learning in my group was time-consuming	6.3%	26.6%	31.3%	28.1%	7.8%	3.05	1.06

TABLE 6 Scale statistics (N = 65).

Scale	Mean	Variance	Std. deviation	No. of items
Perceived learning of blogs	19.00	4.317	2.078	5
Blogs as a community of practice	11.29	2.788	1.670	3
Collaborative learning through blogs	10.63	1.921	1.386	3

“Blog makes us confident as it creates opportunities to learn new things.”

• Motivation

Students also demonstrated favorable attitudes toward emotions of connection, motivation for further reading, and apparent enhancement in engagement when using the blog (Table 4).

• Virtual learning communities

Nearly half of the students concurred that blogs had the potential to foster the development of virtual learning communities, facilitating student connectivity, the exchange of experiences, and the provision of mutual support. According to Student₇,

“Blog promotes discussion.”

• Empowerment

Some of the students expressed the view that blogging enables students to assert their thoughts, communicate their viewpoints,

and participate in discussions, hence fostering a sense of ownership in their learning experience. According to Student₈,

“As blogs have different people with different perspectives, and I have personally found many thought-provoking ideas in different blogs.”

• Access to resources

A number of students contended that blogs could function as a means for disseminating knowledge, references, and supplementary content, thereby offering benefits to students.

5.3 Challenges of using educational blog

While educational blogs offered numerous benefits, there were also challenges associated with their use in the context of developing countries such as Bangladesh. The subsequent sections delineated several obstacles reported by the students during their use of educational blogs in this study:

• Unfamiliarity of blog

Several students expressed a lack of proficiency in using blogs, which impedes their capacity to successfully explore and use instructional blogs. According to Student₉,

“The problem is that blogs are still unfamiliar.”

• Limited internet access

The majority of the students reported that limited and unreliable access to the internet can hinder the students' ability to participate in blog-based activities. According to Student₁₀,

“Blogging activity needs internet, and internet is not available everywhere.”

- **Limited access to device**

The study revealed that several students do not have personal devices such as laptops or smartphones, which presents a difficulty for their involvement in blog activities that require digital interaction. This has the potential to create a digital divide, which could impact the equity of educational opportunities.

- **Decreased socialization**

It was found that blog users sometimes absorb information alone, not actively participating in social interactions. Furthermore, a few students indicated that, unlike face-to-face contacts, blogs may lack personal connection, resulting in a decreased sense of socialization. According to Student₁₁,

“It can reduce the tendency of reading the contents carefully and reduce in-person interactions with people.”

6 Discussion

This study has demonstrated that the integration of cognitive, social, and teaching presence is necessary for meaningful learning in online platforms. The results of this investigation are consistent with the conclusions of a prior study (Fiock, 2020). In addition, this study has confirmed that cognitive presence is highly observed in blogging activities, which is similar to the findings of a previous research (Liu et al., 2022). On the contrary, several studies (Garrison, 2007; Galikyan and Admiraal, 2019) have found difficulties to move toward higher cognitive and inquiry levels in asynchronous online discussions. This study has confirmed that teaching presence is the least observed in blogging activities, which is similar to the findings of previous research (Angelaina and Jimoyiannis, 2011), where they reported that teaching presence is anticipated to be less tangible in blogging activities while analyzing students' posts using the CoI framework, and it cannot be assumed that all students will actively engage with and read the instructor's posts.

In addition, the majority of the students affirmed that they enjoyed using blogs as a learning tool and have been facilitated through blogs to share knowledge and experience with peers. Furthermore, they added that the presence of conducive academic environments for collaborative learning has spurred their inclination to explore relevant supplementary resources. Similarly, Bener and Yildiz (2019) found blogs as a reflective platform where participants can actively deliberate their thoughts about the topics discussed in the blogs. Students have also uttered that blogging leads toward effective collaboration by creating opportunities for diverse perspectives, which reflects the research outcome of a previous study (Zawilinski, 2012).

The current study indicated that blogs are not familiar enough to the students and that ~15% of them are not interested in posting publications. In addition, approximately one-third of the students were found inattentive to take the maximum advantages of collaboration and feedback due to a lack of technological competency. However, Amichai-Hamburger et al. (2016) noted that individuals who only engage in reading rather than not interested in participating in online discussion may still get the opportunity to learn through passive or indirect participation. In addition, this study revealed that students need clear guidelines, argumentative posts, and constant feedback to optimize learning outcomes in the blogging environment. Similar issues have been mentioned by other research also (Hansen, 2016). This study has revealed that providing constructive feedback can effectively steer students toward enhancing their level of engagement and the quality of their contributions. Additionally, Pifarré et al. (2014) used an exploratory sequential multi-method approach to investigate a blogging project in a secondary class and found that collaborative learning as well as a sense of community were important factors in predicting perceived learning in an online setting. The results of their research align with the results of this study. Hence, it is evident that a supportive community can inspire students to actively participate in the blogging environment and have a sense of belonging. Furthermore, one-third of the students worried about the unfamiliarity and technical difficulties of using blogs. It is to be noted here that this research did not provide any training on blogging. Farmer et al. (2008) emphasized conducting a fully scaffold lab session for ensuring enhanced accessibility as well as providing adequate technical support.

7 Recommendations

This study suggests the following recommendations to leverage students' engagement as well as to enhance learning outcomes through blogging activities:

- **Establishing monitoring system:** It is recommended to establish a monitoring system to detect the students who may be encountering difficulties with technology or experiencing a lack of involvement.
- **Offering training, guidelines, and mentorship:** It is imperative to establish comprehensive training programs that focus on technical competency for students, aiming to improve their proficiency in using online platforms. Explicit guidelines or online modules might aid students in comprehending the specific requirements, minimizing ambiguity, and augmenting their capacity to engage actively. Furthermore, offering supplementary aid through individualized guidance, peer mentorship, or supplementary materials can assist these students in surmounting barriers and engaging effectively.
- **Fostering open communication:** It is suggested to foster a positive environment that encourages students to freely voice their viewpoints, inquire, and engage with their peers, which can serve as a beneficial stimulus to promote active participation.

- **Accommodating diverse learning preference:** It is recommended to focus on designing learning activities that accommodate different diverse learning preferences of the students, guaranteeing that both engaged and unengaged participants can benefit from the blogging platform.
- **Redesigning curriculum:** It is recommended to synchronize the use of educational blogs with the formal curriculum, guaranteeing that blog activities supplement and improve conventional teaching techniques.
- **Redesigning assessment process:** It is recommended to establish explicit assessment methods for blog-related tasks, ensuring they are in line with the goals of the course. This study suggests the design of collaborative projects that leverage the interactive features of blogs. Assignments that require group discussions, collaborative projects, or peer evaluations on the blogging platform can enhance collaborative learning and offer exposure to a wide range of ideas.
- **Creating awareness:** As a social media tool, blogs are still underrated and underutilized, so awareness needs to be created focusing on the impact of blogs to enhance teaching and learning practices.

8 Conclusion

Despite that most of the students were unfamiliar with using blogs, they showed enhanced enthusiasm to participate in the blog activities to boost online learning through posting content and resources, discussing ideas, making queries, and so on. Students' participation in educational blogging practices is characterized by asynchronous collaboration, information exchange, reflection, and constructive feedback. Engaging in a wider dialogue and receiving feedback frequently result in a stronger sense of personal responsibility for one's own learning. Using a blended learning philosophy, well-designed blogs can encompass the students' learning arena beyond the classroom boundaries by combining different approaches to learning. Overall, the findings of this study indicate that blogs are perceived by students as an effective collaborative learning tool. Hence, stakeholders and curriculum developers may emphasize aligning this tool with the existing curriculum to maximize and leverage the potential benefits of blogging. The small sample size and exploratory nature of the study are the major limitations of this study. Further research may be conducted to assess student perception with a larger study group to get a detailed idea about how blogs andragogically or pedagogically can be used to support the

creation of a CoI framework that could lead to meaningful and collaborative learning.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

Ethical approval was not required for the study involving human participants in accordance with the local legislation and institutional requirements. Written informed consent was obtained from the individuals for participation in the study and for the publication of any potentially identifiable images or data included in this article.

Author contributions

SC: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Resources, Software, Visualization, Writing – original draft, Writing – review & editing. MS: Conceptualization, Methodology, Project administration, Supervision, Validation, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References

- Akyol, Z., and Garrison, D. R. (2011). Understanding cognitive presence in an online and blended community of inquiry: assessing outcomes and processes for deep approaches to learning. *Br. J. Educ. Technol.* 42, 233–250. doi: 10.1111/j.1467-8535.2009.01029.x
- Amichai-Hamburger, Y., Gazit, T., Bar-Ilan, J., Perez, O., Aharoni, N., Bronstein, J., et al. (2016). Psychological factors behind the lack of participation in online discussions. *Comput. Human Behav.* 55, 268–277. doi: 10.1016/j.chb.2015.09.009
- Angelaina, S., and Jimoyiannis, A. (2011). "Educational blogging: Developing and investigating a students' community of inquiry," in *Research on e-Learning and ICT in Education* (Cham: Springer).
- Angeli, C., and Schwartz, N. H. (2016). Differences in electronic exchanges in synchronous and asynchronous computer-mediated communication: the effect of culture as a mediating variable. *Interact. Learn. Environ.* 24, 1109–1130. doi: 10.1080/10494820.2014.961484

- Arefin, A. S., Chowdhury, S. A., Roy, R. C., Rahaman, M. M., and Cross, B. (2023). Education system in Bangladesh amid COVID-19: traditional scenario, emergency protocols, challenges and a proposed sustainable conceptual framework. *Sustainability* 15, 8126. doi: 10.3390/su15108126
- Bener, E., and Yildiz, S. (2019). The use of blog activities to promote reflection in an ELT practicum. *Aust. J. Teach. Educ.* 44, 38–56. doi: 10.14221/ajte.2019v44n8.3
- Bhatty, M. A. (2020). *Impact of Teaching Presence on Learning Outcomes. A Qualitative Study of Perceptions Through the Lens of Online Teachers*. Moon Township, PA: Robert Morris University.
- Bower, M. (2017). *Design of Technology-Enhanced Learning: Integrating Research and Practice*. Bingley: Emerald Publishing Limited.
- Cameron, D., and Anderson, T. (2006). Comparing weblogs to threaded discussion tools in online educational contexts. *Int. J. Instruct. Technol. Dist. Learn. (ITDL)* 2006, 3.
- Chakraborty, M. (2017). *Learner engagement strategies in online class environment (Doctoral dissertation)*. Texas A & M University, United States.
- Chakraborty, M., and Nafukho, F. M. (2015). Strategies for virtual learning environments: Focusing on teaching presence and teaching immediacy. *J. Online Learn. Res. Pract.* 4. doi: 10.18278/il.4.1.1
- Chowdhury, S. A., Arefin, S., and Rahaman, M. M. (2018). Impacts of ICT integration in the higher education classrooms: Bangladesh perspective. *J. Educ. pract.* 9, 82–86.
- Cui, G., Lockee, B., and Meng, C. (2013). Building modern online social presence: a review of social presence theory and its instructional design implications for future trends. *Educ. Informat. Technol.* 18, 661–685. doi: 10.1007/s10639-012-9192-1
- Dewey, J. (1933). *How We Think. A Restatement of the Relation of Reflective Thinking to the Educative Process*. D.C. Heath and Company.
- Farmer, B., Yue, A., and Brooks, C. (2008). Using blogging for higher order learning in large cohort university teaching: a case study. *Austral. J. Educ. Technol.* 24. doi: 10.14742/ajet.1215
- Fiock, H. (2020). Designing a community of inquiry in online courses. *Int. Rev. Res. Open Distrib. Learn.* 21, 135–153. doi: 10.19173/irrodl.v20i5.3985
- Galikyan, I., and Admiraal, W. (2019). Students' engagement in asynchronous online discussion: the relationship between cognitive presence, learner prominence, and academic performance. *Intern. Higher Educ.* 43, 100692. doi: 10.1016/j.iheduc.2019.100692
- Garrison, D. R. (2007). Online community of inquiry review: social, cognitive, and teaching presence issues. *J. Asynchronous Learn. Netw.* 11, 61–72. doi: 10.24059/olj.v11i1.1737
- Garrison, D. R. (2020). *CoI Emergence and Influence*. Bronx: The Community of Inquiry.
- Garrison, D. R., and Akyol, Z. (2013). The community of inquiry theoretical framework. *Handb. Dist. Educ.* 3, 104–120. doi: 10.4324/9780203803738.ch7
- Garrison, D. R., Anderson, T., and Archer, W. (2010a). The first decade of the community of inquiry framework: a retrospective. *Intern. Higher Educ.* 13, 5–9. doi: 10.1016/j.iheduc.2009.10.003
- Garrison, D. R., and Arbaugh, J. B. (2007). Researching the community of inquiry framework: Review, issues, and future directions. *Intern. Higher Educ.* 10, 157–172. doi: 10.1016/j.iheduc.2007.04.001
- Garrison, D. R., Cleveland-Innes, M., and Fung, T. S. (2010b). Exploring causal relationships among teaching, cognitive and social presence: student perceptions of the community of inquiry framework. *Intern. Higher Educ.* 13, 31–36. doi: 10.1016/j.iheduc.2009.10.002
- Hansen, H. E. (2016). The impact of blog-style writing on student learning outcomes: a pilot study. *J. Polit. Sci. Educ.* 12, 85–101. doi: 10.1080/15512169.2015.1060887
- Ifinedo, P. (2017). Students' perceived impact of learning and satisfaction with blogs. *Int. J. Informat. Learn. Technol.* 34, 322–337. doi: 10.1108/IJILT-12-2016-0059
- Jimoyiannis, A., and Angelaina, S. (2012). Towards an analysis framework for investigating students' engagement and learning in educational blogs. *J. Comp. Assist. Learn.* 28, 222–234. doi: 10.1111/j.1365-2729.2011.00467.x
- Jimoyiannis, A., and Roussinos, D. (2017). Students' collaborative patterns in a wiki-authoring project: towards a theoretical and analysis framework. *J. Appl. Res. Higher Educ.* 9, 24–39. doi: 10.1108/JARHE-05-2016-0034
- Jimoyiannis, A., Tsiotakis, P., and Roussinos, D. (2012). "Blogs in higher education: analysing students' participation and presence in a community of blogging," in *Proceedings of the IADIS International Conference e-Learning 2012* (Lisbon).
- Kaçar, I. G. (2021). "Interpersonal dimensions of EFL pre-service teachers' blog discourse from the perspective of the systemic functional linguistics," in *Challenge, Create, Innovate: Voices of ELT Professionals from the Virtual Classroom*. Paris: Livre de Lyon.
- Kaul, M., Aksela, M., and Wu, X. (2018). Dynamics of the community of inquiry (CoI) within a massive open online course (MOOC) for in-service teachers in environmental education. *Educ. Sci.* 8, 40. doi: 10.3390/educsci8020040
- Kaya, S., Özgür, A. Z., and Koçak, N. G. (2012). "Integrating social media into distance learning" in *4th International Conference on Education and New Learning Technologies* (Barcelona).
- Kerawalla, L., Minocha, S., Kirkup, G., and Conole, G. (2009). An empirically grounded framework to guide blogging in higher education. *J. Comp. Assist. Learn.* 25, 31–42. doi: 10.1111/j.1365-2729.2008.00286.x
- Kim, G.-C., and Gurvitch, R. (2020). Online education research adopting the community of inquiry framework: a systematic review. *Quest* 72, 395–409. doi: 10.1080/00336297.2020.1761843
- Lawrence, E., Sides, J., and Farrell, H. (2010). Self-segregation or deliberation? Blog readership, participation, and polarization in American politics. *Perspect. Polit.* 8, 141–157. doi: 10.1017/S1537592709992714
- Liu, B., Xing, W., Zeng, Y., and Wu, Y. (2022). Linking cognitive processes and learning outcomes: The influence of cognitive presence on learning performance in MOOCs. *Br. J. Educat. Technol.* 53, 1459–1477. doi: 10.1111/bjjet.13193
- Marshall, H. W., and Kostka, I. (2020). Fostering teaching presence through the synchronous online flipped learning approach. *TeSL-EJ* 24, n2.
- Milad, M. (2017). Blended learning approach: integrating reading and writing research skills to improve academic writing. *Arab J. Appl. Linguist.* 3, 23–55.
- Moodley, K., Van Wyk, M., Robberts, A., and Wolff, E. (2022). Exploring the education experience in online learning. *Int. J. Educ. Dev. Using Inf. Commun. Technol.* 18, 146–163.
- Petit, M., Babin, J., and Desrochers, M.-È. (2023). Remote supervision of teacher trainee internships: Using digital technology to increase social presence. *Front. Educ.* 7, 1026417. doi: 10.3389/feduc.2022.1026417
- Pifarré, M., Guijosa, A., and Argelagós, E. (2014). Using a blog to create and support a community of inquiry in secondary education. *E-Learn. Digit. Media* 11, 72–87. doi: 10.2304/elea.2014.11.1.72
- Sadaf, A., Wu, T., and Martin, F. (2021). Cognitive presence in online learning: a systematic review of empirical research from 2000 to 2019. *Comp. Educ. Open* 2, 100050. doi: 10.1016/j.cao.2021.100050
- Seaman, J. E., Allen, I. E., and Seaman, J. (2018). *Grade Increase: Tracking Distance Education in the United States*. Babson Park, MA: Babson Survey Research Group.
- Shea, P., Richardson, J., and Swan, K. (2022). Building bridges to advance the community of inquiry framework for online learning. *Educ. Psychol.* 57, 148–161. doi: 10.1080/00461520.2022.2089989
- Song, D., and Bonk, C. J. (2016). Motivational factors in self-directed informal learning from online learning resources. *Cogent Educ.* 3, 1205838. doi: 10.1080/2331186X.2016.1205838
- Stemler, S. E. (2019). A comparison of consensus, consistency, and measurement approaches to estimating interrater reliability. *Pract. Assess. Res. Eval.* 9:4. doi: 10.7275/96jp-xz07
- Vygotsky, L. (1978). *Mind in Society. The Development of Higher Psychological Processes*. Harvard University Press.
- Zawilinski, L. M. (2012). *An Exploration of a Collaborative Blogging Approach to Literacy and Learning: A Mixed Methods Study*. Stamford: University of Connecticut.