The Use of Community of Inquiry Framework-Informed Facebook Discussion Activities on Student Speaking Performances in a Blended EFL Class

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Abstract

Students' extensive use of Facebook in their daily lives has led researchers to investigate the affordances of Facebook for educational purposes. To further the research into the use of Facebook to improve language teaching, we conducted a convergent parallel mixed-methods study to examine the use of Community of Inquiry-informed Facebook discussion activities on the speaking performances of undergraduate students in a blended EFL speaking class in Bangladesh. A Facebook group was maintained for both the treatment and control conditions; however, the discussion activities were required only by the treatment condition. We found a statistically significant difference between the initial and post-test speaking scores for the treatment and control conditions. While no difference was observed in post-test scores between the two conditions, students' and the instructor's comments on the Facebook group and student interview data revealed that Facebook was helpful for both conditions in improving their performances, but in different ways.

Keywords: language teaching, foreign language speaking, technology-enhanced language teaching, Facebook, Community of Inquiry

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Social media is widely used by young people in their daily lives (Auxier & Anderson, 2021; Chaffey, 2022) and has been used for educational purposes (Almuwayshir, 2021; Awada, 2016; Li et al., 2021). Facebook, the most widely used social media platform (Social Media—Statistics & Facts, 2021), has been shown to have the potential to improve students' learning (e.g., Nazir & Brouwer, 2019; Ozturk, 2015). It has also been used in English language classes where students improved their language skills using Facebook as a platform (Ahmed, 2016; Ping & Maniam, 2015).

Social media is part of an ever-changing online environment, and their use for education will be more valuable if a framework guides activities to make them meaningful (Conole et al., 2011). The Community of Inquiry (CoI) framework (Garrison et al., 2000) is widely used by researchers and instructors to understand the online learning environment (Garrison et al., 2010), yet only a few studies have investigated the effectiveness of using the CoI framework to guide the use of Facebook group: instructional media design (Kazanis et al., 2018), community service (Keles, 2018), information studies (Nazir & Brouwer, 2019), and education philosophy (Ozturk, 2015). The findings of these studies support the use of the CoI framework on Facebook platforms for these areas of studies to facilitate learning.

Although several intervention studies have been conducted on the use of Facebook for English language learning (Ahmed, 2016; Ping & Maniam, 2015; Shukor & Noordin, 2014), no studies have investigated the effectiveness of the CoI framework in Facebook groups to improve English speaking performances. Ultimately the competitive advantage of English proficiency in the job market (Doan and Hamid, 2019; Khamkhien, 2010; Nair et al., 2012) requires further examination of the design and implementation of social media, including design frameworks such as the CoI, for the English proficiency development process. Therefore, this study will provide insights into the use of CoI-informed Facebook discussion activities on improving students' speaking performances in an English as a Foreign Language (EFL) speaking class.

Background

Importance of English-Speaking Skills and Technology Used to Teach Speaking Skills

To enhance language proficiency, speaking is one of the four macro skills along with reading, writing, and listening, that is included in language curricula (Khamkhien, 2010). Fluency in spoken English is highly important for academic and professional success (Khamkhien, 2010). Moreover, learning English is crucial for undergraduate students in some countries as they are likely to apply for jobs that require English proficiency after completing their degrees. For instance, sufficient English proficiency is often a requirement to apply for jobs in the Australian job market for Bangladeshi graduates (Roshid & Chowdhury, 2013), the Vietnamese job market (Doan & Hamid, 2019), the Malaysian job market (Nair et al., 2012), and Nepalese job market in engineering fields (Shrestha et al., 2020).

Beyond the traditional face-to-face classroom experiences, varying digital tools and platforms have been used to teach speaking skills over the years: video blogging (Marzuki & Nurpahmi, 2019; Rakhmanina & Kusumaningram, 2017), visual media (Baidawi, 2016), instant messaging apps (Mustafa, 2018), and social media platforms (Hurt et al., 2012). These tools have been shown to be effective in enhancing language skills in these studies.

Social Media in Education

Integrating social media into education can be beneficial in creating meaningful interaction (Hamid et al., 2015). For example, studies have shown that social media can be used as a learning tool (Mao, 2014) and for collaborative platforms (Liu, 2010). Social media can also help students establish academic connections (Aijan & Hartshorne, 2008). In addition, students have shown positive perceptions regarding using social media in education (Aydin & Ozdemir, 2019; Lim & Richardson, 2016). It can also be used to facilitate teaching and learning as an alternative learning platform (Kabilan et al., 2010; Mabuan & Ebron, 2017). Instructors have

also perceived social media positively for the purpose of education (Balcikanli, 2015; Yu, 2014). Koehler and Vilarinho-Pereira (2021) found five broad types of affordances social media offers through their analysis of literature: association (e.g., interaction and collaboration with peers and instructors), visibility (e.g., students can view the comments and number of likes), preservation (e.g., student posts can be accessed long after it is posted), searchability (e.g., searching specific content with keywords), and identity creation (e.g., through profile creation and interaction pattern).

Theories related to language learning have provided insights into how language learning can be facilitated effectively. Sociocultural theory and interaction hypothesis are two such theories. According to sociocultural theory, interaction is considered the genesis of language development (Lantolf & Thorne, 2006). Similarly, in the interaction hypothesis, interaction plays a prominent role in the second language learning process (Long, 1996). The interactive features of social media can be instrumental in facilitating language learning as these two prominent theories related to language development/learning—Sociocultural Theory (Vygotsky, 1986) and Interaction Hypothesis (Long, 1996)—consider interaction as the basis for language development (Ellis, 1999; Lantolf & Thorne, 2006).

Different social media have been used in facilitating language learning over the years: Facebook (Ahmed, 2016; Ping & Maniam, 2015), Twitter (Almuwayshir et al., 2021; Alhajaji et al., 2020), WhatsApp (Awada, 2016; Minalla, 2018), Skype (Dirjal et al., 2020; Kato et al., 2016), Instagram (Eraslan, 2019), and YouTube (Hamad et al., 2019). These studies have found significant results favoring the use of social media for language learning (see Table 1).

Table 1Studies that Used Different Social Media and Their Findings

Social Media Used	Study	Main Findings
Facebook	Ahmed, 2016	Undergraduate students' English grammar and essay writing skills have been improved.
	Ping & Maniam, 2015	Pre-tertiary students' English writing skills have been improved.
Twitter	Almuwayshir et al., 2021	Undergraduate senior level female students' English summary writing skills have been improved.
	Alhajaji et al., 2020	Undergraduate students' English vocabulary skills have been improved.
WhatsApp Awada, 2016		Sophomore students' critique writing skills in English have been improved.
	Minalla, 2018	First year undergraduate students' English verbal interaction skills have been improved.
Skype	Dirjal et al., 2020	Undergraduate students' English listening skills have been improved.
	Kato et al., 2016	Undergraduate students' English listening and speaking abilities have been improved.
Instagram	Eraslan, 2019	Undergraduate students' general English language skills have been improved.
YouTube	Hamad et al., 2019	Undergraduate students' English-speaking skills have been improved.

Facebook in Education

Of the 4.2 billion people worldwide to actively use social media, Facebook has the highest number of users (Social Media–Statistics & Facts, 2021). Facebook has also been shown to have the potential to be used for educational purposes (Kabilan et al., 2010; Omar et al., 2012; VanDoorn & Eklund, 2013; Wang et al., 2012) and as a meaningful online learning environment (Camus et al., 2016; Kabilan et al., 2010). On Facebook, instructors can create groups for their students (Keles, 2018; Ozturk, 2015) and use these groups for the following interactive purposes:

- Instructors and students can upload both text-based (Kazanidis et al., 2018) and multimedia content (Keles, 2018);
- Instructors and students can comment on any content posted by any member of the group and thereby participate in interactive discussion activities (Jin, 2015);
- Apart from commenting, instructors and students can also give reactions (i.e., like, love, care, haha, wow, sad, angry) in the forms of emojis in response to any post (Nazir & Brouwer, 2019).

Because of these features, researchers have also indicated the potential of social media as an alternative learning management system (Dabbagh & Kitsantas, 2012). Several intervention studies have examined the use of Facebook for English learning in higher education and reported supportive findings. For example, Ahmed (2016) found that a treatment group using the Facebook platform for developing grammar and essay-writing skills outperformed the control group in different areas of essay writing (i.e., ideas and content, organization, style, and voice). The students in the treatment group used the discussion feature of the Facebook group for three months for giving feedback on each other's essays and asking grammar and essay-related questions to their peers and teachers. Ping and Maniam (2015) observed similar results for a pretertiary English course using Facebook discussion activities on students' writing. The students engaged in Facebook discussion activities for three weeks where they responded to topics in writing (one topic per week) posted by the instructors. They brainstormed ideas, contributed to the topics, and read and commented on their peers' posts. However, Shukor and Noordin (2014) did not find any significant difference between the experimental group and the control group in terms of improving different aspects of argumentative writing (i.e., content, organization, vocabulary, language use, mechanics). The six-week writing activities on argumentative writing ran on Facebook for the experimental group, and the students in the control group followed a conventional face-to-face method for collaboration. However, these studies did not use a wellestablished framework to guide Facebook discussion activities.

A Framework to Guide Facebook Activities

Numerous frameworks have been developed to guide teaching and learning practices in an online learning environment. Design frameworks provide instructors with specific ways of achieving instructional goals (Conole et al., 2011). Since Facebook is an online learning environment, the use of Facebook for educational purposes can be made more effective by using a framework that is specific to online education. To this end, the CoI framework (Garrison et al., 2010) serves as a suitable online learning framework consisting of three interconnected components: teaching presence, cognitive presence, and social presence.

The three CoI components work coherently to construct a meaningful online learning environment. Cognitive presence is "the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse in a critical community of inquiry" (Garrison et al., 2010, p. 89). Social presence is the social and emotional attachment that learners in an online community feel for each other (Swan et al., 2009). Teaching presence consists of three elements: how instructors or/and instructional designers design the learning environment, how instructors and/or students facilitate the learning activities in that environment, and how instructors and/or students provide direct instruction in that environment (Garrison et al., 2000).

Although abundant studies have used the CoI as a framework to investigate the online learning environment, only a few studies have explored the use of Facebook for educational activities through the lens of the CoI framework. These studies support the usefulness of the CoI framework for the effective integration of Facebook for education. Keles (2018), for instance, investigated the use of Facebook in a blended community services practice course for prospective teachers at the undergraduate level and found that the student and instructor interactions in the Facebook group created higher levels of teaching and social presence. Ozturk (2015), after examining six Facebook groups for a compulsory blended Education Philosophy course at the undergraduate level, found significant correlations between the three presences of the CoI framework and concluded that Facebook can be used as an online learning environment. Nazir and Brouwer (2019) concluded after studying six online courses of an information studies program that Facebook platforms can generate a strong perception of a community of inquiry for students if the course activities are appropriately designed following the CoI framework. Finally, Kazanidis et al. (2018) found that the Facebook platform generated more social presence than a traditional learning management system after implementing activities in a blended instructional media design course.

Purpose of the Study

Studies have been conducted on the perceptions of students and teachers on the use of Facebook, the influence of Facebook use on students' learning outcomes, and the effectiveness of the CoI framework in guiding discussion activities in Facebook groups (e.g., Aydin & Ozdemir, 2019; Ping and Maniam, 2015). However, to the best of our knowledge, no study has examined the use of Facebook discussion activities using the CoI framework for improving the English-speaking performances of students. Therefore, this study investigated the use of CoI-informed Facebook discussion activities on the speaking performances of students. Specifically, this study sought to answer the following questions:

- RQ 1: How did the instructor and students' participation in the Facebook discussion activities reflect the CoI framework?
- RQ2: What are the effects of Facebook discussion activities informed by the CoI framework on the speaking performances of students?
- RQ3: What were students' experiences participating in the treatment and control Facebook groups?

Method

Research Design

The study used a convergent parallel mixed-methods design (Creswell, 2017) where quantitative and qualitative data were given equal importance, collected, and analyzed separately, and later triangulated to address research questions. A quasi-experimental design was utilized for the quantitative part. Thematic analysis was used for the qualitative part by applying inductive and deductive methods for social media interactions and student interviews respectively (Saldana, 2016). We chose this design to use the strengths of both quantitative and quantitative data, and we believed that a more comprehensive understanding of the scenario could be achieved if we used both forms of data in our analysis (Creswell, 2017).

Research Context and Participants

The setting was two blended undergraduate EFL speaking sections during the fall semester in 2019 taught by the same instructor at a Bangladeshi private university. All students in the university must take at least three English courses during their undergraduate program. The course lasted for sixteen weeks, and it was delivered primarily in an in-person format blended with a Facebook group for announcements and discussions throughout the course duration.

The university did not have a formal Learning Management System (LMS) then, and this Facebook group served as an LMS. Of these two sections, one section served as the treatment condition (n = 25, 14 male and 11 female students), and another served as the control condition (n = 28, 11 male and 17 female students). Students were from engineering, business, social science, pharmacy, and natural science departments. Of the 25 participants in the treatment group, 3 had incomplete data and were excluded from the analysis, leaving a final count of 22 (12 male and 10 female students) students in the treatment condition and 28 (11 male and 17 female students) in the control condition.

 Table 2

 Student Demographics in the Treatment and Control Condition

	Initial			Incomp	lete		Final		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Treatment Condition	14	11	25	2	1	3	12	10	22
Control Condition	11	17	28	0	0	0	11	17	28

Col-Informed Facebook Discussion Activities

Facebook discussion activities were designed before the course following the CoI framework to generate social, cognitive, and teaching presences:

 Table 3

 CoI Framework Component and Description

Col Framework Component	Description
Teaching Presence	The discussion activities were designed with the purpose of generating participation among students regarding the posted presentations. The design also included involving the instructor and students to suggest ways of improvement to make the posted presentations better (Anderson et al., 2001).
Cognitive Presence	The discussion activities prompted students to identify the strengths and weaknesses of their peers' presentations through critical analysis and reflection (Garrison et al., 2010). The students were given specific instructions on providing feedback and explained the rubric in the class.
Social Presence	Apart from the teaching and cognitive aspects, the Facebook group allowed students to interact by reacting and commenting in the Facebook group, thereby creating social engagement and emotional attachment (Swan et al., 2009).

Students in both the treatment and control conditions were required to first deliver and record spoken presentations in class and later post those recorded presentations in the Facebook group. In the treatment condition, participation in the Facebook discussion activities was required. In the control condition, participation in the discussion activities was not mandatory. The Facebook group was still maintained for the control group not to take away the benefits of Facebook as an LMS, but the discussion activities were made optional. The students in the treatment condition were divided into six commenting groups (4 or 5 students per group). They were engaged in two Facebook discussion activities during the course. Each group member commented on the posted presentations of the other members of their commenting groups. After students commented, the instructor commented on the strengths and weaknesses of their presentations (see Figure 1 for an example). However, for the control condition, no commenting group was formed, and commenting was not mandatory. It was observed at the end of the course

that no students from the control condition commented on peers' presentations. However, a retrospective look at the group revealed that they viewed and reacted to the presentations.

Figure 1A Sample Group Discussion from the Treatment Condition



Procedures and Data Sources

Students in both the treatment and control conditions took a speaking assessment three times during the course: mid 1, mid 2, and final assessment. To maintain internal consistency, an instructor-developed rubric was used to score students' presentations for each assessment. There were 20 possible points for each presentation (see Appendix A). One of the researchers randomly checked the presentations using the same rubric for reliability purposes. The interventions for the treatment group took place between the mid 1 and mid 2, and the mid 2 and final assessment. The procedures and data sources for this study are described in the table below:

Table 4 *Procedures and Data Sources*

No.	Condition	Course Phase	Research Phase	Week and Duration of Presentations	Description of the Phase	Type of Data Source
1	Treatment and Control	Mid 1	Initial Test	4 th /5 minutes	The assessment had the students talk about everyday topics (e.g., family, college life) in pairs. It also included narrating a story that they had read.	Speaking performance Assessment Points (RQ2)
2	Treatment	Discussion activities 1	Intervention 1	6 th /2 minutes	The students presented their experiences with the course individually, recorded their presentations in class, and posted those to Facebook. The instructor and peers commented.	The comments of the instructor and students in the Facebook group (RQ1)
3	Control Treatment and Control	Mid 2	tivities are option Mid Test	8 th /5 minutes	The students spoke in pairs about everyday topics (e.g., personal experiences, opinions on a subject matter). They also narrated a story that they had read.	Speaking performance Assessment Points (RQ2)
4	Treatment	Discussion activities 2	Intervention 2	10 th /4 minutes	Students presented on a topic/person in pairs (e.g., Leonine Messi, Life as a nomad), recorded their presentations in class, and posted those to Facebook. The instructor and peers commented.	The comments of the instructor and students in the Facebook group (RQ1)
-	Control		tivities are option		G. 1	G 1:
5	Treatment and Control	Final assessment	Post Test	16 th week/5 minutes	Students answered questions in pairs related to their course experience in the form of an interview.	Speaking performance Assessment Points (RQ2) Student responses to final assessment questions (RQ3)

Data Analysis

To address the first research question about how the participation in the Facebook discussion activities reflected the CoI framework, the comments of the instructor and students in response to the posted videos in the Facebook group were analyzed thematically using the deductive coding method (Saldana, 2016). The three components of the CoI framework and their subcomponents were used to frame the coding process. Therefore, the deductive codes were social presence (affective expression, group cohesion, open communication), teaching presence (design and organization, facilitating discourse, direct instruction), and cognitive presence (triggering event, exploration, integration, resolution). Every comment posted by the instructor and students was coded at the sentence level and categorized into one or more of the three presences and their subcomponents. For instance, if students started the comment with a greeting (e.g., "hey there"), we categorized it as social presence. If the students commented on their peers' current presentations by reflecting on their previous presentations (e.g., "You have done far better than in your previous presentation"), we put it under cognitive presence. If the instructor and students indicated specific improvement points (e.g., "I think you should work on your conclusion"), we put it under teaching presence. The codes were randomly checked by a second coder, and any disagreements were resolved.

In addressing the second research question, we used the Wilcoxon rank-sum test to investigate if there was a significant difference between the respective assessments of the treatment and control conditions. We used Friedman's test to examine if there was a significant difference between the initial, mid, and post-tests within the treatment and control conditions. These non-parametric tests were used as the response variables (assessment scores) did not follow the normality assumption (see Table 7). We also conducted the Shapiro Wilk test to see whether the response variable followed normal distributions. We found that the p-value was less than 0.05, indicating the variable distribution was not normal.

Table 5Skewness and Kurtosis for Scores for Each Assessment and Condition

Condition	Assessment	Skewness	Kurtosis
Treatment	Mid 1	-1.3	6.0
	Mid 2	-2.4	9.8
	Final	-2.7	12.1
Control	Mid 1	-0.2	1.8
	Mid 2	0.1	1.6
	Final	0.2	1.8

Students' final assessments in both the control and treatment conditions were conducted in pairs (14 pairs and 11 pairs in the control and treatment conditions, respectively) in an interview format. We generated transcripts from the recordings of students' final assessments. These final assessment responses were transcribed and analyzed thematically to address the third research question. Two cycles of coding were involved in the analysis of the interview data (Saldana, 2016). The first cycle of coding involved inductive coding that emerged from the data about student experiences of participating in the Facebook groups. Some of the example codes were "overcoming mistakes," "video recording allows a close observation," and "Students' inability to judge peers' work." The outcome of the second cycle of coding was to arrive at themes and patterns, which was done through revisiting the data and the first cycle of coding. The analysis process produced four themes: general experience, how the Facebook group was helpful in learning, challenges, and the future of the group. The lead author conducted the initial two cycles of coding, and a second coder checked them for reliability purposes. Disagreements were resolved through discussions.

These qualitative and quantitative findings were compared to see if they were supportive or contradictory to each other. This is how the convergence of data has been ensured in this convergent parallel mixed method design.

Results

Students' and Instructor's Participation in the CoI Informed Discussion Activities Social Presence

Social presence for our purpose is divided into three categories in alignment with the CoI framework: affective expression (i.e., expression of personal emotion), open communication (i.e., building and sustenance of group commitment), and group cohesion (i.e., learner interaction) (Swan et al., 2009). We observed "affective expression" first and foremost with the videos posted by presenters serving as an indicator of rich media. Similarly, the peer responses and then presenter responses to peers captured the indicator of emphasis to stress a point or just to come across as friendly when delivering feedback. Examples we observed for the cohesive category were found in the peer comments, where students began comments with a greeting or salutation and addressed the presenters by name ("Hi," Hey there," and "Hello"). For open communication the most common examples we observed were acknowledgement and approval. For example, presenters thanked their peers and the instructor for feedback and making a commitment to incorporate feedback into their next presentations. An informal response to their peers: "Thank you bro. Next time I will try my best," and a more formal response to the instructor: "thank you so much sir for the comments and I'll definitely try to rectify my mistakes and do my best in the upcoming presentation." We also noticed that all students started with a positive aspect of the presenters' presentations in general and then touched on more specific positive and improvement points which also signifies approval and encouragement. Before concluding, many students again reemphasized the positive aspects of the presentations. Some of the examples were "Next time, you will do better. Best wishes," "but otherwise you did a good job."

Cognitive Presence

Cognitive presence is operationalized through the Practical Inquiry model, which has four phases: triggering event (e.g., sense of puzzlement), exploration (e.g., information exchange), integration (e.g., connecting ideas), and resolution (e.g., apply new ideas) (Garrison et al., 2000). After being "triggered" by the instructor to comment on their peers' presentations, students' responses to their peers' presentations yielded instances from the "exploration" and "integration" phases through our analysis.

We found many instances when students identified specific aspects of different presentations by "exploring" their peers' presentations. For instance, one student identified specific aspects of one of their peer's presentations:

You had enough eye contact and you have movements. Day by day you're developing a lot. One thing I like about your presentation is you're not very nervous. If you so, you tackle it so easily.

We found instances of "integration" in the events when students compared their peers' previous presentations with the current presentations and stated how the peers' presentations helped shape their presentations. For example, one student wrote:

You are far better than your previous presentation. I can clearly see that you are trying so hard to improve your fluency. Like Jannat [another student] said you missed some instructions of sir.

Sometimes students' comments focused on the positive aspects: "And today your speech helps me a lot to prepare my one." Sometimes the comments focused on the improvement aspects "you are fluent but it's not enough," "All i [I] can say sometimes you got stuck while speaking due to nervousness which i totally can understand."

Teaching Presence

Teaching presence refers to "the design, facilitation and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes" (Anderson et al., 2001). Therefore, teaching presence has three components: design and organization (e.g., design and development of learning activities), facilitating discourse (e.g., guiding discussion), and direct instruction (e.g., offering corrections) (Anderson et al., 2001). The "design and development" component of teaching presence was maintained by creating discussion activities following the CoI framework (see the CoI-informed Facebook Discussion Activities" in the Method section).

The "facilitating discourse" component was mostly exhibited by the instructor. This occurred when the instructor asked for more clarification on aspects of students' presentations: "This is quite ok. Don't you think you could make your starting a bit more interesting by interacting with your audience?" "Something went wrong towards the end. What happened? Did you forget? Did nervousness come upon you?" "In fact, your presentation was very short. Can you explain why?" "I have found several grammar errors in your speech. Can you identify them all?"

We found instances of "direct instruction" both from the students and instructor. Some examples from students were, "I think if you practice in front of mirror, it's definitely helpful for you. But your body movement and speaking style is good," "I would like to see you to engage your audience with a bit of interaction. You could do thi[s]," "I think you should work on your conclusion," "I think if you add more words, it will be better," and "Use more words for explaining you journey."

The instructor's response was more comprehensive in nature. For example: I must tell that you are very clear and loud in your presentation. And I also think you have tried a lot to overcome your nervousness. Fear and nervousness are something that almost every speakers' experience in the beginning. But I am glad to see that you have taken these difficulties as challenges to overcome. Let me point out to some of the things: first of all, you should interact with your audience in this presentation. You started directly without any engagement with your audience. A few grammar mistakes I have noticed. In the first sentence you said, "I am talk about." I think you should say "I am going to talk about." And a very common mistake that everybody else make like you. That is, the word "response" is used wrongly. We say, "try to respond" and not "try to response." Although you are still nervous but I am hopeful that you are going to be confident towards the end of the course.

Differences in Speaking Performance by Conditions

Through the Wilcoxon Rank Sum Test, we did not find any significant difference in initial test scores between the control and the treatment condition (see Table 6). This indicates that the students performed similarly at the beginning. We also did not find any significant differences in mid-test and post-test scores between the control and the treatment condition. All p-values were greater than 0.05 (see Table 6), indicating no significant difference.

Table 6Wilcoxon Rank Sum Test Between Control Condition and Treatment Condition

	Mean (SD)				
	Control	Treatment	W	p-value	
Initial test	16.32 (0.84)	16.41 (1.12)	314.5	0.52	
Mid-test	16.41 (1.12)	16.43 (0.60)	306.5	0.59	
Post-test	16.61 (1.11)	16.75 (0.48)	305.5	0.76	

In addition to the Wilcoxon rank-sum test, we conducted Friedman's test to investigate if there was a statistically significant difference between the tests in the treatment condition. As the p-value was less than 0.05 (see Table 7), we can conclude that at least one pair's score distribution was significantly different. Then, we investigated which pair of exam scores were significantly different using multiple comparison tests. We found that the difference between the initial test and post-test was statistically significant (p < 0.05). However, there was no statistically significant difference between the initial and mid-test, and mid-test and post-test.

Similarly, through Friedman's test, we investigated whether there was any significant difference between the tests in the control condition. As the p-value was less than 0.05 (see Table 7), we can conclude that at least one pair's score distribution was significantly different. Then, we investigated which pair of exam scores were significantly different using multiple comparison tests. We found that the difference between the initial and the post-test was statistically significant (p < 0.05). However, there was no statistically significant difference between the initial and mid-test, and mid-test and post-test.

Table 7Friedman's Test in Control Condition and Treatment Condition

	Mean (S	SD)			
	Initial test	Mid 2	Post-test	c ² (df)	p-value
Control Condition	16.32 (0.84)	16.41 (1.12)	16.61 (1.11)	32.91 (2)	< .01
Treatment Condition	16.24 (0.63)	16.43 (0.60)	16.75 (0.48)	37.80(2)	< .01

Student Course Experience Theme 1: General Experience

Treatment Condition. Most of the students in the treatment condition mentioned that providing and receiving feedback on their presentations in the Facebook group was a unique experience for them. They did not use it for educational purposes before, and they benefited from it. One student said:

It was very learning, and we came to like overcome our mistakes cause our friend classmates and our friends was there. Like they pointed out our mistakes and our flaws which helped us to overcome all our flaws and what mistakes we were doing.

Control Condition. The students in the control condition also mentioned that the course provided great opportunities to improve their speaking skills. One student mentioned that it helped them overcome some of their problems with speaking: "My first problem was how to present something, then what to say in the presentation, and how to say, but after completing this course, I think I have overcome my problem." Another student talked about how the course helped them learn:

I started the class, I was so, so much nervous because I was not good in English, but when I continue the class, I realized that it was very good for us and we can learn many things.

Theme 2: How the Facebook Group Was Helpful in Learning

Treatment Condition. The students opined that receiving feedback in the Facebook group was immensely helpful for them to identify the aspects of their presentations that they need to improve: "My partners commenting on my posts, and they gave me the negative sides and the positive sides." The students also thought that listening to other presenters' recording was also helpful: "after listening I think I also improve, my some lackings by listening there and I can pick some good points of their speaking." The students also found recording their presentations helpful for self-evaluation:

Yeah, so I like video recording is very helpful, helpful for us because in video recording, we also see that our eye contact and our body language or what we present in our presentation.

The video recording was also helpful to measure how much progress they made between two presentations:

when I listen my middle one [Mid 1] recording, I found so many mistakes and in mid two, I want to overcome this problem and I want to go reduce my all problems. So what I have faced in mid one recordings then I think after listening Mid 2 recording I found some development on it.

Control Condition. In answering questions related to the usefulness of the Facebook group, most of the participants in the control condition mentioned the benefits of using Facebook. One participant said, "It's useful for us and we upload it in our Facebook group. So, as you can see, my friends, all the group members they can see how I talk, and they can get my mistake." They also talked about the benefits of watching their recorded presentations: observing their body language and comparing their presentation with others. One of them mentioned:

They didn't comment in my recording in the Facebook group, but they told me that that was the mistake you have done in your recording.

Comments like this one illustrate that though participants in the control condition did not directly participate in the Facebook group, they informally gave feedback to their peers.

Theme 3: Challenges

Treatment Condition. Most of the participants mentioned that listening to the video or audio recordings to comment was challenging as that required a significant amount of effort.

But little bit difficult because I have to, I have to listen the recording or watch the video twice or thrice and I have to know what he did and what he presents in and what day, what mistakes he did, what good things they have done.

Another challenge was making it correct the first time they were recording, as the second attempt was not allowed. Some participants mentioned giving feedback on their peers' presentations as the toughest challenge. Such participants were not sure how perfect their feedback was. One participant voiced:

Commenting on others' posts is not good because when I supposed to comment, I'm thinking that what should I write on his post because I can't on judge anyone and I am not so good in English, so I feel bad.

This participant shared the feeling of inadequacy to judge the work of his peers due to his shortcomings.

Control Condition. Although commenting was not mandatory for the control condition, they were encouraged to comment or self-evaluate. One of the participants mentioned that evaluating oneself is challenging: "When it comes to the scoring, then it was quite difficult. How could I score myself on my mistakes?"

Although participants in both groups faced or perceived challenges in evaluating their peers, they carried ahead with commenting either online or in person.

Theme 4: The Future of the Facebook Group

Treatment Condition. When asked if they would like to continue the group, all the participants replied that they would like to continue the group. They would like to continue learning English, and they would like to connect with their other classmates. One of the participants shared:

Because in the next semesters, I will be not in the same course. And it [this group] will be very cool.

When asked if they would support adding the next semester's students to the group, all the participants also replied affirmatively. When a researcher pointed out that new students might laugh at their mistakes, one of the participants mentioned, "let them laugh, because everyone makes mistakes, and we learn from our mistakes." These statements indicate that participants are appreciative of the use of Facebook activities.

Control Condition. When asked the same question, all the participants in the control group also replied that they would like to remain in the Facebook group. They would like to discuss topics related to the English language, and the group was like a family to them. Regarding adding the next semester's students and allowing them to see their mistakes, one participant said:

I would love to accept that because if nobody tells me about my mistakes, I couldn't get my mistakes and I couldn't solve that.

Discussion

The study explored the students' and the instructor's participation in the CoI-informed discussion activities in the Facebook group. The study also investigated if the use of Facebook discussion activities using the CoI framework had any effect on the speaking performances of students. The study additionally explored the student experiences of participating in the Facebook groups.

Students' and Instructor's Participation in the CoI Informed Discussion Activities

We found instances of all three presences of CoI in the Facebook group for the treatment condition through our thematic analysis. On the other hand, through a retrospective look at the Facebook group for the control condition, we found that although students did not comment on the posted presentations of students, they gave reactions by hitting the "like" or "love" button on the Facebook group. Therefore, we can conclude that the social presence component of the CoI was clearly present in the control condition. As they did not comment on the treatment condition, teaching presence and cognitive presence components for this group could not be determined from the Facebook group. However, in their interviews, many students mentioned they informally provided feedback to each other in person. Therefore, those two presences may have occurred in person. The studies conducted on blended learning and CoI favor this finding. For instance, Akyol et al. (2009) found that there were significant differences in the presences between a blended course and a fully online course, and the in-person component of the blended course accounts for much of the increase in the presences in the blended format.

We found all three instances of the CoI in the Facebook group for the treatment condition. First, the students' greetings, the initial and concluding positive remarks, and the use of emojis were all considered instances of social presence as those helped build an emotional attachment among students (Swan et al., 2009). This finding is in line with Keles (2018), which found that Facebook groups supported social presence. Second, the students' cognitive presence instances have been found through their identification of more specific aspects of their peers' presentations, comparing their peers' presentations at two different points, and how some presentations helped them improve their presentations. This reflective part of cognitive presence is confirmed in the literature as Garrison et al. (2010) defined cognitive presence as "the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse in a critical community of inquiry" (p. 89).

Finally, the students' and the instructor's specific suggestions regarding improving the students' performances were considered the teaching presence component of the CoI. This goes with two of the three subcomponents of the CoI framework: facilitation and direct instruction (Anderson et al., 2001). The remaining component of the teaching presence "design" has been maintained through designing these Facebook discussion activities informed by the CoI. Therefore, instances of strong teaching presence were found in the Facebook group. This finding again resonates with Keles (2018) as they also found that a Facebook group supports the teaching presence of the CoI. All in all, we have found a strong presence of the CoI through its three components in the Facebook group for the treatment condition. This is similar to the studies conducted by Ozturk (2015) and Nazir and Brouwer (2019) that observed a significant relationship between three presences and found a strong CoI respectively in a Facebook group.

Differences in Speaking Performance by Conditions

We found no significant differences in students' speaking performances between the treatment and control conditions. Although there was a significant difference between the initial test and post-test for both the treatment and control conditions, there was no significant difference between the initial test and mid-test, and mid-test and post-test for the groups. Although the mean post-test scores of the treatment condition were slightly higher than that of the control condition, the students of both groups showed statistically significant improvement from the initial test to the post-test. The non-significant finding in post-test scores between the treatment condition and control condition was interesting as students in the treatment condition took part in intensive discussion activities guided by the CoI twice during the semester, which the students in the control condition did not. The findings contradict the studies that implemented a Facebook intervention (Ahmed, 2016; Ping & Maniam, 2015). However, in these studies, the students in the control condition did not have any exposure to Facebook. We believe that both conditions having exposure to a Facebook group was a major reason why we found similar performances.

Student Course Experience

The analysis of students' final assessment responses that focused on their course experience generated further insights. Control group participants' replies to many questions, including the Facebook group's future, were similar to the treatment condition. Participants wanted to continue learning through the Facebook group beyond the course duration. This indicated that though not being the direct beneficiaries of the group through the mandatory discussion activities like the treatment condition, they may have indirectly benefited from the group and improved their performances. Some of the earlier studies conducted on the general efficacy of Facebook for education (Aijan & Hartshorne, 2008; Lim & Richardson, 2016; Mao, 2014) also found that the use of Facebook for general purposes such as sharing resources and using it as a learning management system itself can be beneficial in learning and generating positive perceptions about its use for learning purposes among students. The findings of this study resemble that of Shukor and Noordin (2014), where although the treatment condition improved in the overall scores, they did not find any significant difference in post scores between

the control and treatment conditions. Nevertheless, they considered Facebook an effective platform for improving students' language skills. Additionally, although not on Facebook, they received feedback from the instructor in the class and office hours. Considering all these, it was not surprising that we did not find a significant difference between the treatment and control condition, and the Facebook group played a major role in facilitating their improved performances.

As stated in the assessment interviews, students benefited from the Facebook groups both in the treatment and control conditions. It resembled the findings from the previous studies regarding the general efficacy of Facebook for educational purposes (Kabilan et al., 2010; Omar et al., 2012; VanDoorn & Eklund, 2013; Wang et al., 2012). In more specific terms, the presence of a CoI been observed in both the treatment and control groups either directly or indirectly.

A question can be asked about what is so different between a Facebook platform and a traditional learning management system (e.g., Blackboard, Canvas, Moodle). The fact that students significantly use Facebook and other social media in their daily life can potentially make these platforms both a communication and learning tool for them, which in turn can bring more engagement in educational activities as evidenced by many studies. Kazanidis et al. (2018) made a comparison between Facebook and Moodle as learning management platforms and found that Facebook platform could generate more social presence than Moodle, although students perceived teaching and cognitive presence similarly in these platforms. Future research can investigate more if social presence is a mediating factor in accounting for the differences in learning outcomes between Facebook and traditional learning management systems. In the case of this study context, the instructor used Facebook since a traditional learning management system was not available.

Conclusions

The study has both theoretical and practical implications. Theoretically, it enhances our understanding of the application of the CoI framework in a social media platform in general. More specifically, the study also provides insights into the efficacy of the CoI framework in facilitating language learning on Facebook. From a practical standpoint, the study provides ideas to instructors on how Facebook discussion activities can be structured considering the CoI framework to teach speaking skills. It also presented student experiences using these features, which will make instructors aware of the potential benefits and challenges of Facebook for language learning purposes.

There were a few limitations to this study. First, it was a blended course (a predominantly in-person course with an online Facebook component); students also interacted with their classmates and instructor in physical classrooms. Therefore, the in-person interactions may serve as a confounding factor in the analysis. Next, the audio and video recording experience were relatively new to the students, and it may have caused anxiety and stress among them, which may have subsequently affected their performances. Then, the study used a small sample size (22 for the treatment condition and 28 for the control condition), which makes the study statistically underpowered. Both the conditions had access to a Facebook group, and the difference between the two conditions was mandatory discussion activities for the treatment condition versus the optional discussion activities for the control condition. The use of a small sample size and both conditions having access to a Facebook group may have been a factor in not being able to detect differences between conditions. Lastly, as students' final speaking assessments were conducted in an interview format and about their course experiences, we used these assessment interviews as one of our qualitative data sources. As they were primarily formal assessments conducted by the instructor, the students may not have been completely honest about their experiences.

Future research should include a control group in which students only complete activities in person without the influence of a Facebook group and the treatment group completes the same activities within Facebook. This may provide a more nuanced understanding of the effect of a Facebook intervention. Future lines of research can also investigate if the discussion activities can be implemented to improve other language skills (e.g., reading, writing) or in other disciplines. Future research should also incorporate a larger sample size to improve the statistical power for analysis.

Declarations

Ethical concerns were addressed through approval of this research project from the Institutional Review Board (IRB) of the university.

The authors have no conflicts of interest to disclose.

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Appendix A
Rubric for Presentations
Course: ENG 100 (Section: 3): Improving Oral Communication Skills

1.	FLUENCY 3
	Good fluency 3
	Quite fluent with occasional hesitation and pause 2.5
	Fragmentary 1.5
	Limited fluency 2
2	Very poor 1
2.	PRONUNCIATION 3
	Excellent command over pronunciation and word stress and sentence intonation 3
	Good command with occasional pauses 2.5
	Poor, sometimes even incomprehensible 1.5
	Quite faulty 2
3.	Very poor 1 LISTENING COMPREHENSION 3
3.	Can follow conversation easily 3
	Good command, repetition is required often 2.5
	Can barely follow conversation 1.5
	Understands only familiar fragments 2
	Very poor 1
4.	BODY LANGUAGE 2
т.	Positive, with relevant gestures and expressions 2
	Quite ok with occasional irrelevant expressions 1.5
	Negative/arrogant/nervous 0.75
	Not up to the level 1
	Very poor 0.5
5.	ACCURACY 5
	a) Vocabulary 2.5
	Good use of appropriate words 2.5
	Overall vocabulary range is satisfactory 2
	Very poor choices of words 1
	Frequent use of inappropriate words 1.5
	Very poor 0.5
	b) Grammar/Structure 2.5
	Errors are ignorable 2.5
	Fair command, Main weaknesses:2
	Meaning is incomprehensible due to errors 1.5
	Inadequate command 1
	Very poor 0.5
6.	CONTENT 4
	Rich and relevant 4
	Fair command with occasional variation 3
	Poor 1.5
	Can't communicate properly due to lack of knowledge 2
	Very poor 1
	7. STRENGTHS (at least two)
	iiiii
	8. WEAKNESSES (at least two)
	i
Total N	farks (20): Instructor's Signature:
1 Otal IV	instructor's digitature.

Appendix B Final Assessment Questions for Both Control and Treatment Group

- 1. What is your overall experience with the ENG 100 course?
- 2. What is your experience with commenting on Facebook?
- 3. Were there any challenge or difficulties?
- 4. What is your experience of recording on mobile devices?
- 5. What was your experience on listening to your own recording and your peers' recording?
- 6. Some people say it is a speaking course. Why should we write? What is your opinion on this?
- 7. Do you think it would be better to post audio comment rather than textual comment?
- 8. If given a choice, would you do an audio recording or video recording?
- 9. Our course is over today. What do you think we should do with our group? Should we shut down this group?
- 10. What about including other people in the group?