Exploring blended learning experiences through the community of inquiry framework

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Abstract

It is widely accepted that effective blended learning initiates students into constructivist learning experiences by integrating face-to-face approaches with online technology. The Community of Inquiry (CoI) framework combines teaching, social, and cognitive presences to explore students' blended learning experiences from the perspectives of collaboration, critical thinking, and knowledge construction (Garrison & Vaughan, 2008). *The present study draws upon the CoI framework to explore students' learning experiences in an ESP blended course, English for Agriculture and Forestry, with the aim of assessing the interrelationship among the teaching, social, and cognitive presences of CoI and the impact of the blended learning mode on students' learning processes. Data was collected using the Community of Inquiry Survey Instrument* (Arbaugh et al., 2008) *and students' evaluations. The data was quantitatively analysed by multiple linear regression (MLR) and descriptive statistics, and qualitatively by thematic analysis* (Braun & Clarke, 2006). *The results of the study indicate that the teaching, social, and cognitive presences are correlated, and that social and cognitive presences have a high correlation. Furthermore, students' motivation towards learning specialised English was activated in the blended learning process. The study has wider implications for exploring a constructivist blended learning mode for ESP and General English courses.*

Keywords: *Blended Learning, Community of Inquiry Survey Instrument, ESP, Motivation*

Language(s) Learned in This Study: *English*

Introduction

Compared with traditional classroom learning, blended learning combines online and face-to-face instruction with the aim of optimising students' learning environment, achieving thoughtful reflection, and enabling personalised instruction. Garrison and Vaughan (2008) define blended learning as "the organic integration of thoughtfully selected and complementary face-to-face and online approaches" (p.148). Thoughtfulness can be further understood as the grounded practice of integrating classroom learning and online learning, so as to avoid solely depending on face-to-face class activities which result in students not having sufficient time to reflect on the learning content and share their ideas with others (Vaughan, Cleveland-Innes, & Garrison, 2013). From this point of view, blended learning does not simply integrate online learning and face-to-face instruction but also combines individual learning with collaborative inquiry. In this regard, the Community of Inquiry (CoI) framework, proposed by Garrison, Anderson, and Archer (2000), provides students with a means to construct knowledge by integrating individual reflections with shared understandings (Garrison & Kanuka, 2004; Garrison & Anderson, 2003; Garrison & Vaughan, 2008; Garrison, 2017). CoI has been widely accepted as a framework that has considerable potential to explore students' blended learning experiences in terms of teaching, social, and cognitive presences, which provide a means of measuring the effectiveness of the blended learning process from the aspects of teaching design, collaborative reflection, and problem solutions (Akyol, Garrison, & Ozden, 2009; Akyol & Garrison, 2011; Garrison, 2017; Vaughan et al., 2013; Shea & Bidjerano, 2010; Szeto, 2014).

A number of researchers have conducted surveys and other empirical studies to understand the function and usefulness of CoI in relation to online or blended learning. Akyol et al. (2009) focus on the differences in teaching, social, and cognitive presences in a course delivered in both online and blended learning forms, as demonstrated by a CoI survey and online discussion analysis. Their findings suggest that, in regard to social presence, a higher level of affective expression is found in online course delivery and group cohesion increases in the face-to-face session. Akyol and Garrison (2011) also explore differences between online and blended learning from the perspective of CoI. Their findings show that students in their blended course highly value learning satisfaction, as well as cognitive, teaching, and social presences. Mo and Lee (2017) investigated the relationships among teaching, social, and cognitive presences in an EFL online learning community and the effects of the community on students' perceptions of L2 proficiency and confidence. The findings indicate that the three presences are interrelated and have a positive impact on students' perceptions, which enhance their L2 proficiency and confidence. Up to this point, there have been few studies on applying the CoI framework to explore students' blended learning experiences in an ESP context, in which the CoI initiates the students into a disciplinary community requiring students' general disciplinary knowledge and related academic skills.

This study draws attention to the students' learning experiences in an ESP blended course, English for Agriculture and Forestry, which combines online learning and face-to-face classroom instruction. By utilising the CoI framework to explore students' blended learning experiences, the interrelationship of the three presences (teaching, social, and cognitive) has been determined. In addition, the impact of the blended learning paradigm on students' learning processes was explored. It was found that cognitive presence is influenced by teaching and social presences, and social presence is correlated with teaching presence, which is needed to maintain the sense of community in the ESP blended course.

Community of Inquiry Framework

Evaluating the effectiveness of blended learning depends on its ability to create and sustain a CoI that provides students with a collaborative learning environment in which students negotiate their individual thinking with shared understanding to acquire higher-order learning outcomes (Garrison & Kanuka, 2004; Garrison 2017; Lipman, 2003; Vaughan, Cleveland-Innes, & Garrison, 2013).
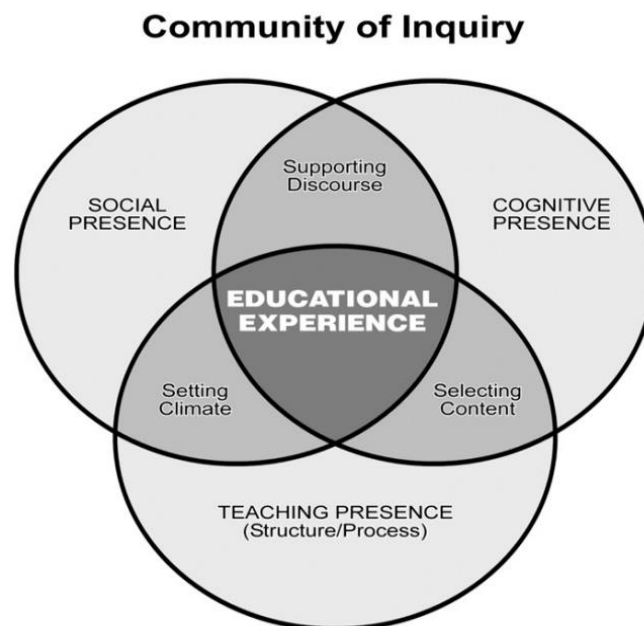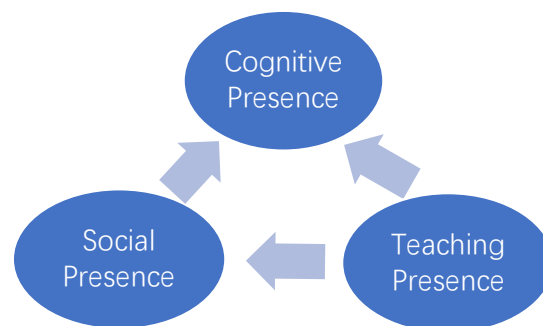

Figure 1. Community of inquiry framework (Garrison et al., 2000)

The CoI framework encompasses three dimensions—teaching, social, and cognitive presences (Garrison et al., 2000) (see Figure 1). Teaching presence refers to "the design, facilitation and direction of cognitive and social processes for the purpose of realising personally meaningful and educationally worthwhile learning outcomes" (Anderson, Rourke, Garrison, & Archer, 2001, p. 5). It aims at facilitating a community of inquiry to achieve the intended learning outcomes while respecting students' learning needs and encouraging their engagement in learning activities. Teaching presence consists of three sub-dimensions (Garrison et al., 2000): *Design* and *organisation*, *facilitating discourse*, and *direct instruction*. Design refers to both learning content and teaching approaches, while organisation refers to any adjustment made for design changes; facilitation enables and encourages personal thinking confirmed from shared understanding; the purpose of direct instruction is to deal with specific issues like illustrating difficult points, diagnosing misconceptions and misunderstandings, and providing feedback (Garrison, 2017). To sum up, teaching presence conceptualises the complex cycle of identifying learning materials, organising learning activities, clarifying misunderstandings, providing feedback, and helping to establish a CoI.

Social presence refers to the creation of 'a climate that supports and encourages probing questions, skepticism and the contribution of explanatory ideas' (Garrison, 2017, p. 37). The function of social presence is to foster a sense of belonging that supports an environment in which students can openly communicate with each other to negotiate different perspectives and confirm mutual understandings. There are also three sub-dimensions constituting social presence (Garrison et al., 2000): *Affective expression*, *open communication*, and *group cohesion*. Affective expression indicates emotional expression. In the CoI, it is argued that the group identity takes priority over the individual identity in the purposeful, academic environment (Garrison & Vaughan, 2008). As for open communication, a learning climate of trust and comfort is required for students to express agreement and disagreement, while respect, self-esteem, and acceptance are key factors in the critical reflection process (Tolu, 2013; Garrison, 2017). Group cohesion helps to sustain a sense of community in which students regard themselves as a group member so that they can collaborate with each other and share understandings to achieve learning outcomes (Garrison, 2017). Therefore, social presence directly supports academic inquiry and may lead to successful cognition.

Cognitive presence is defined as "the exploration, construction, resolution and confirmation of understanding through collaboration and reflection in a community of inquiry" (Garrison, 2007). It is closely related to critical thinking in so far as it is interpreted as "reasoning, evaluation and judgment, and these in turn have to do with the improvement of thinking" (Lipman, 2003, p. 3). Cognitive presence is characterised by four phases (Garrison et al., 2000): A *triggering event* for engendering curiosity and questions, an *exploration* phase for gathering information and ideas, an *integration* step to construct meaningful solutions or explanation, and a final *resolution* stage, in which the effectiveness of the problem-solving process is examined. Cognitive presence has been considered as the core of the CoI, and it demands social and teaching presences as preconditions (Garrison et al., 2000; Garrison & Vaughan, 2008; Tolu, 2013). In light of the discussion above, the level of critical inquiry needed to achieve cognition needs to be realised by social presence, while course materials, teaching approaches, and learning activities that facilitate knowledge construction also need to be guaranteed by teaching presence. Thus, a dynamic process of educational experiences can be conceptualised as shown in Figure 2.


Figure 2. The dynamic framework of community of inquiry

The Research Context: Designing a Blended Learning Course

English for Agriculture and Forestry is an ESP course mainly designed for graduate students majoring in Agriculture and Forestry. It was open to graduate students in 2014 and the study was conducted in 2017. However, observations from the initial offering showed that traditional classroom teaching with lectures, video presentations, text-related exercises, and paper writing were failing to engage students. To implement the revised curriculum, and optimise the ESP teaching and learning environment, the course instructor developed an innovative blended learning paradigm based on Garrison et al.'s (2000) CoI framework.

In the blended learning course, there are two teaching periods (four hours) for the course each week and 22 periods over the course of a semester, as set by the institution. According to the timetable, one period per week is set aside for students to learn online autonomously outside of the classroom, and one period is for classroom interaction. The online teaching materials consist of instructor-made video lectures, online websites, and academic articles. All these teaching materials are related to agriculture and forestry disciplines. The online and in-class activities are designed in regard to students' professional study. An example is shown in Figure 3.
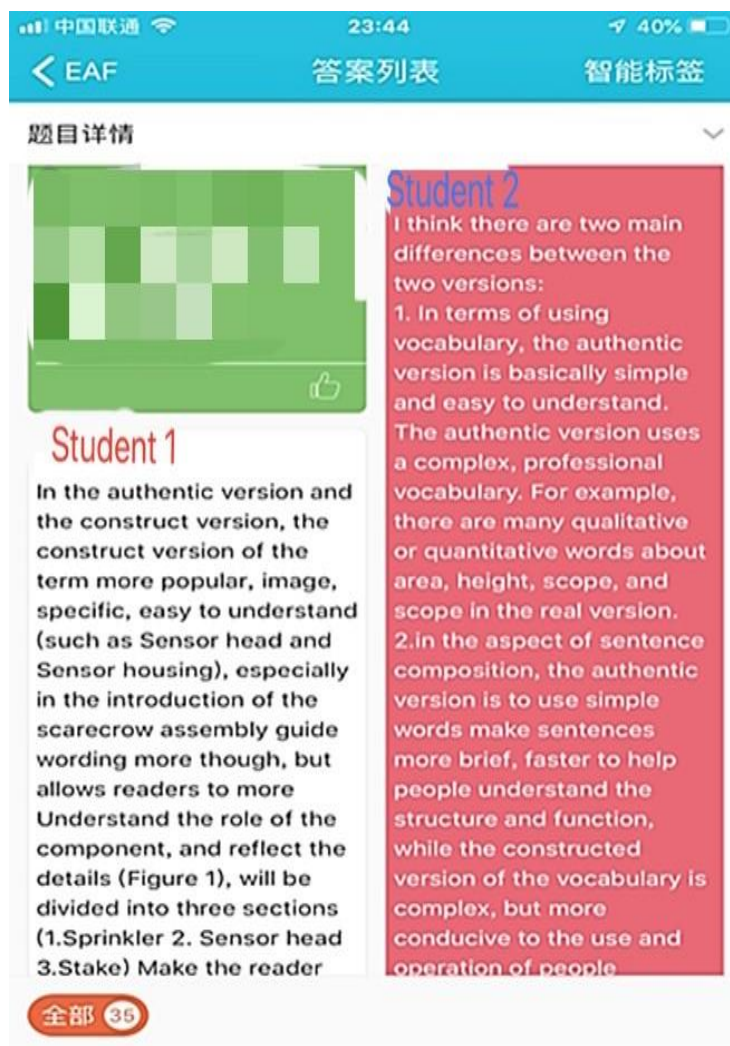
Figure 3. Reflection on a class assignment. These students' reflections are shown in Appendix A.

Student notes in figure 3, combined with class discussion, is indicative of the development of   more

sophisticated language in response to an activity that required comparing authentic and non-authentic texts on a technical subject with the purpose of fostering students' critical thinking in the process of their disciplinary reading. The two texts deal with the same subject-matter—an instruction manual on how to set up a sprinkler. One is the original, authentic version and the other is a constructed version adapted by a textbook writer. Students bulleted their understanding of the difference between these two versions, comparing the difficulty in vocabulary and complexity of sentence patterns. They can see each other's reflections in the Mosoink platform and share and evaluate their understanding. In the in-class session, students discussed and exchanged their viewpoints based on their reflections. Some students made tables to show the differences between these two versions and it was noticeable that the students actively engaged with the task. The task prompted positive peer pressure whereby students not only interacted with the learning content (i.e. they conjectured and refuted during the process of discussion), but also encouraged each other to move forward in their disciplinary learning process.

Another example of a classroom activity is the academic presentation, shown in Figure 4. In this activity, students developed academic presentations to be given at the end of the term, after they learned about academic article writing and how to make presentations in an academic conference. In a simulated academic conference, each group prepared and presented a PPT and handouts, as in a real conference. There was a student moderator, and each presentation included time for a question and answer session. Students organised their group members according to their major and research interest, and they had three periods (six hours) in the in-class session to discuss their presentation content, make their PPT slides, and rehearse. They could also ask the instructor when they had problems. Figure 4 shows one of the groups presenting their research on genes in upland cotton. After her presentation, her classmate asked about data, which was not clearly illustrated. The presenter explained further, and the procedure demonstrated good rehearsal practice in that students are aware that they will be required to question, think over, and defend their research in an academic conference. The activity also shows the three dimensions of CoI. With the instructor's facilitation, the students applied their knowledge in the presentation (resolution) and exchanged perspectives (open communication).

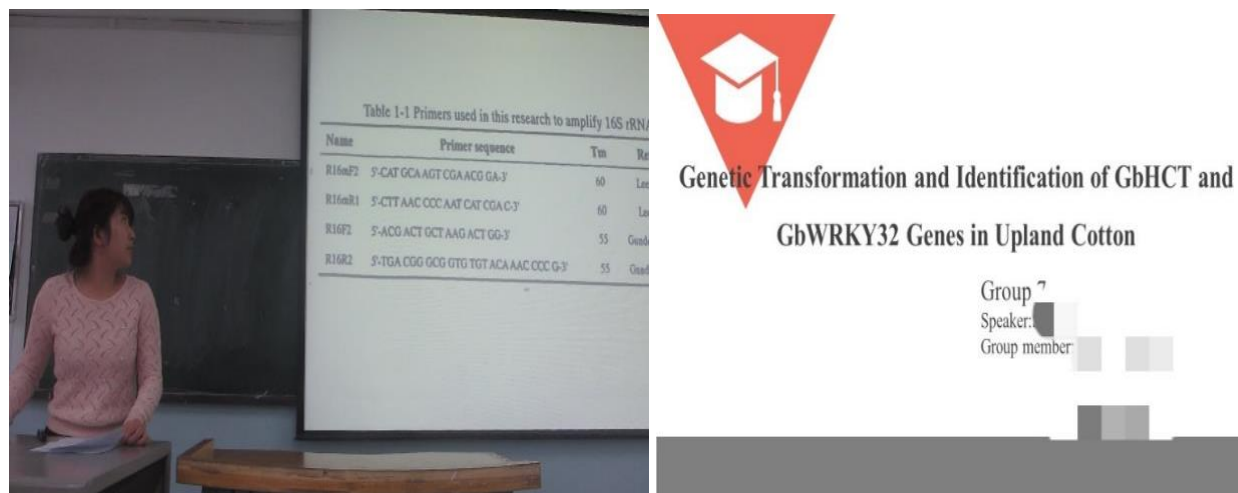*Figure 4.* Academic presentation

As Garrison and Kanuka (2004) argue, in blended learning it is essential to facilitate a community of inquiry and develop critical thinking. In the following sections of this article, the development of the CoI in the blended learning course and the impact of the blended learning mode on students' learning experiences are analysed both quantitively and qualitatively.

Methods and Materials

The participants in the present study were 88 first-year graduate students majoring in Agriculture and Forestry in a Chinese technical university. These students are from two classes, one class of 42 students and the other of 46 students. Their face-to-face sections are at different times. They took the blended learning course taught by this researcher in the second semester of 2017. Data was collected both through a questionnaire survey and through students' evaluation. The questionnaire adopted the CoI Survey Instrument (Arbaugh et al., 2008) with a modification of items 3, 22, 28, 34 to make the survey more appropriate to the blended course (see Appendix B). The adapted version of the questionnaire was piloted among 20 students and it was decided that no items needed to be further revised. There were 34 items in the questionnaire, which covered aspects of teaching presence (13 items), social presence (9 items), and cognitive presence (12 items). The items were in the form of a 5-point Likert-type scale ranging from one, s*trongly agree* to five *strongly disagree*.

Eighty-three students responded to the survey delivered in Mosoink, a response rate of 94.3%. The reliability of the questionnaire was measured by Cronbach's Alpha. The reliability coefficients for the three presences are: Teaching presence .890, social presence .904, and cognitive presence .948. A coefficient between .6 and .7 is acceptable, between .7 and .9 is good, and above .9 represents excellent internal consistency (Kline, 2000). Therefore, the internal consistency of the questionnaire is good, and the questionnaire has a high reliability. Multiple Linear Regression (MLR) was used for the statistical interpretation of the interrelationship among the three presences. In addition, the students' evaluation conducted at the end of the semester covered topics like learning mode, instructor's behavior, and self-assessed involvement. Thematic analysis (Braun & Clarke, 2006) was used to analyse the content and identify recurring motifs in students' learning experiences. Both research methods were used to address the research questions:

1. What is the interrelationship among teaching, social, and cognitive presences of CoI in the students' blended learning experiences?
2. How does blended learning impact the students' learning experiences?

The answers to these two research questions are presented and discussed as follows.

Results and Discussion

MLR was applied to determine whether teaching, social, and cognitive presences are statistically correlated. In the analysis, I examined the multicollinearity of the predictive variables, the backward multiple regression analysis of the data and how it was produced, and the standardised coefficient Beta weights of the predictive variables. The results are shown in the following tables.

Table 1 presents the Tolerance and Variance Inflation Factor (VIF) which checks the multicollinearity of the predictive variables (i.e. teaching and social presences). The tolerance levels are no less than .1 and the VIF scores are below 10, indicating that there is no reason to be concerned that the predictive variables excessively influence each other (Plots, 2011). In addition, both the predictive variables are shown to have significant levels (teaching presence $p = .049 < .05$, social presence $p = .000 < .001$). Therefore, the two predictive variables indicate a significant correlation with the dependent variable (i.e. cognitive presence).

Table 2 shows the results of the predictive variables in the backward multiple regression analysis. $R_2 = .753$, which suggests that 75.3% of the variance in the dependent variable (cognitive presence) can be explained by the predictive variables (teaching and social presences) and R_2 has a significant explanatory power ($F = 121.741$, $p = .000 < .001$).

In Table 3, the Beta weight and statistical significance are analysed. From the results of the Beta weights, it is evident that both predictive variables are significant. They are teaching presence ($\beta = .202$, $t = 1.999$, $p = .049 < .05$) and social presence ($\beta = .692$, $t = 6.850$, p $= .000 < .001$). To sum up, teaching and social

presences are all significantly correlated with cognitive presence.

The process of the second multiple regression for testing the correlation between teaching process and social presence is the same as the above. The results are presented in Table 4. The results suggest that the predicator can significantly explain the correlation with the dependent variable (VIF = 1.000, tolerance = 1.000). Additionally, 69.7% of the variance in the dependent variable (social presence) can be explained by the predictive variable (teaching presence) and R_2 has a significant explanatory power ($F = 186.229$, $p = .000 < .001$). It is demonstrable that the predictive variable (teaching presence) has a high influence on the dependent variable (social presence) ($\beta = .835$, $t = 13.647$, $p = .000 < .001$).

Table 1. Coefficients and Multicollinearity, Tolerance and Variance Inflation Factor (VIF) Coefficients.

Model	Unstandardised Coefficients		Standardised Coefficients			Collinearity Statistics	
	B	**SE**	**Beta**	**t**	**Sig.**	**Tolerance**	**VIF**
1 (Constant)	0.155	0.093		1.663	0.100		
Teaching Presence	0.257	0.128	0.202	1.999	0.049	0.303	3.299
Social Presence	0.590	0.086	0.692	6.850	0.000	0.303	3.299

Note: Dependent Variable: Cognitive Presence

Table 2. *Model Summary*

Model	R	R_2	Adjusted R_2	SE of the Estimated	Change Statistics				
					R_2 Change	F Change	df 1	df 2	Sig. F Change
1	0.868a	0.753	0.746	0.19676	0.753	121.741	2	80	0.000

Note 1: Predictors: (Constant), Teaching Presence, Social Presence
Note 2: Dependent Variable: Cognitive Presence

Table 3. *Predictive Variables Used*

Model	Unstandardised Coefficients		Standardised Coefficients			Collinearity Statistics	
	B	**SE**	**Beta**	**t**	**Sig.**	**Tolerance**	**VIF**
1 (Constant)	0.155	0.093		1.663	0.100		
Teaching Presence	0.257	0.128	0.202	1.999	0.049	0.303	3.299
Social Presence	0.590	0.086	0.692	6.850	0.000	0.303	3.299

Dependent Variable: Cognitive Presence

Based on the standardised coefficients in the first and the second multiple regressions, a path analysis model was drawn and is presented in Figure 5.

Figure 5 shows that the three paths are statistically significant. Social presence ($\beta = .692$, p $= .000 < .001$) has a greater influence on cognitive presence than teaching presence ($\beta = .202$, $p = .049 < .05$). In addition, teaching presence has a significant influence on social presence ($\beta = .835$, $p = .000 < .001$).
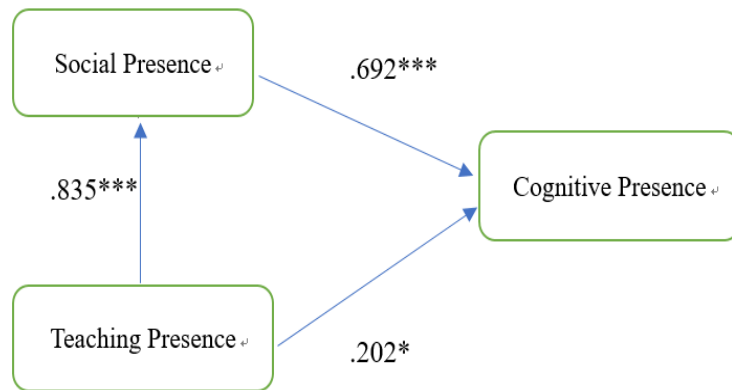

Figure 5. The path analysis model. Note: *p $< .05$; ***p $< .001$

Table 4. *Model Summary*

Model	R	R_2	Adjusted R_2	Std. Error of the Estimated	R_2 Change	F Change	df 1	df 2	Sig. F Change
						Change Statistics			
1	0.835	0.697	0.693	0.17038	0.697	186.229	1	81	0.000

Predictor: (Constant), Teaching Presence

Coefficients_a

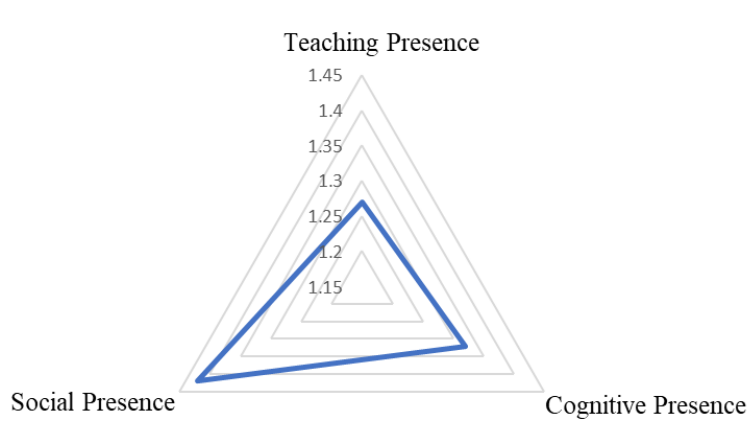| Model	Unstandardised Coefficients		Standardised Coefficients			Collinearity Statistics	
	B	SE	Beta	t	Sig.	Tolerance	VIF
1 (Constant)	-0.164	0.119		-1.375	0.173		
Teaching Presence	1.243	0.091	0.835	13.647	0.000	1.000	1.000

Dependent Variable: Social Presence

Figure 6. Radar chart of the three presences

Descriptive statistics (see Appendix C) were used to analyse students' perceptions of teaching, social, and cognitive presences and to demonstrate the effectiveness of the establishment of a CoI. The radar chart (Figure 6) has three dimensions along with the mean values of each dimension as points plotted on those axes. The spoke points closer to the centre on an axis indicate a higher mean value. Therefore, it can be clearly seen that students gave a high rating to the teaching presence ($M = 1.27$), followed by cognitive presence ($M = 1.32$) and social presence ($M = 1.42$).

Together with the sub-dimensions, the means are between 1.0 and 2.0, which indicates a high student approval rating. Based on the students' approval of both dimensions and sub-dimensions, it can be confirmed that CoI has been effectively established in the blended learning process. The classification of students' written evaluations (see Appendix D) also indicate that the blended learning has successfully constructed a CoI and the CoI actively influenced students' learning motivation.

Course Discussions and Group Activities

Results showed that 92.04 percent of students stated that online or in-class discussions and group activities are beneficial for learning about different opinions, negotiating with others, and constructing knew knowledge. Excerpts from students' evaluations are displayed in Excerpt 1 to Excerpt 3:

Excerpt 1

> I like discussing with my classmates, because I can know what they think and they can also know mine. … When I have questions about the learning content, I talk to my classmates for understanding and for finding solutions (Student 1; online discussion).

Excerpt 2

> I feel comfortable communicating with my classmates both in Mosoink and in class. I also like communicating with the teacher in Mosoink, because I can talk to her privately like in WeChat. It makes me feel ease and I can practice texting in English. The teacher is very helpful with my questions and points out my errors in my writing. I now know how to write an academic article in English (Student 2; online and in-class discussion).

Excerpt 3

> I like face-to-face discussion. I do not like discussing online. Face-to-face discussion is more real and direct. … I like group work. I now know how to collaborate with others, how to make PPT, and how to do academic presentations. My knowledge has been enlarged (Student 3; in-class discussion).

As the above excerpts illustrate, there is qualitative evidence, too, that the open communication and group cohesion characteristic of social presence have a major influence on cognitive presence in the students' learning experience. The two elements create and sustain a climate of inquiry that helps students to gain meaningful knowledge. In this regard, clear statistical and qualitative evidence in the present study confirms that social presence has a particularly significant correlation and influence on cognition in the learning process. It should be noted that although social presence has a strong influence on cognitive presence, Student 2's evaluation states specifically that teaching presence also has a positive impact. Student responses do vary, and the qualitative evidence is a reminder that the statistical results do not interpret themselves. They are, after all, based on student perceptions of their learning and the CoI survey should not be considered a uniquely insightful mode of gaining understanding of the learning process.

It is noticeable that Student 3 does not like discussing online, and this indicates that not all the students prefer online discussion. Some favour face-to-face communication. However, regardless whether the form of the discussion is online or face-to-face, the significance given to social presence (i.e. sharing understandings) is valuable to the designer of blended courses.

Instructor's Behaviour

Regarding the instructor's behaviour, 87.5 percent of students mentioned that the instructor designed various course activities to engage them in group collaboration. They also mentioned that the instructor sometimes participates in the discussions, especially in online discussions, to help them focus on issues relevant to the course. Examples are provided in Excerpt 4 to Excerpt 6.

Excerpt 4

I like the teacher participating in the online discussion. Sometimes we need the teacher to confirm our ideas and engage us in communication. …The teacher always designs different group activities to make us complete with each other (Student 4).

Excerpt 5

I am always lost in the online discussion, because many students show their ideas and I do not know what to say. However, when the teacher speaks, I will follow her and am content to participate in the discussion (Student 5).

Excerpt 6

I like the teacher to join in the face-to-face discussion especially when she listens to our discussion and makes comments. Our group members are excited by her and we are more willing to speak (Students 6).

From the students' reflections, it is evident that teaching design and the instructor's facilitation are two main factors that highly influence social presence. Some researchers argue that at the beginning of the learning process, the instructor plays an important role in creating a community, and when students have succeeded in forming a community, the instructor's facilitation will be required less (Conrad, 2002; Stein et al., 2005). However, based on the three students reflections above, I argue that at least some students may need the instructor's participation and facilitation at any phase in their learning process, because the instructor's behaviour can reinforce group identity and facilitate discourse in an intriguing, stimulating, and engaging learning environment. When the instructor conducts blended teaching, they should keep their own role in mind, with the awareness that some students may need the instructor's facilitation all through their blended learning process.

Learning Mode

Regarding learning mode, 98.86 percent of students mentioned that in this blended learning course, they have learned what they expected to learn, that they do not fear learning English and they want to improve their proficiency. Examples are provided in Excerpt 7 to Excerpt 9.

Excerpt 7

I like the video lectures delivered in Mosoink. It is very convenient for me. I can watch and listen to them wherever I want (Student 7).

Excerpt 8

I now know how to write abstract, introduction, methodology, etc. in academic articles. I will try to write English articles about the things in my major (Student 8).

Excerpt 9

I like proposing questions online and making them clear when I attend the class instruction. This kind of way of learning makes me curious to learn (Student 9).

From the students' reflections, it can be safely concluded that students' English learning motivation has been activated by the blended learning mode. Knowing their frank and critical perspectives towards learning English, the instructor finds that most of these students are not majoring in English, so they do not prioritise

English learning and seldom read and listen to English on their own. After taking this course, they described themselves as motivated to be more active learners, and this outcome is a significant and important goal of the learning design. This finding is also in line with some researchers' claim that students' motivation is improved by teaching practices in which effective blended learning is implemented (Lei, 2010; López-Pérez, Pérez-López, & Rodríguez-Ariza, 2010).

Conclusion

The present study has demonstrated that the CoI framework can assist in the development of an effective blended learning process. The framework allows for the analysis of the correlations of teaching and social presence with cognitive presence, and the demonstration of the connectedness between teaching and social presences. Both qualitative and quantitative analyses in the present study indicate that social presence is the major factor influencing cognitive presence, while teaching presence also has a significant correlation not only with cognitive presence but also with social presence. The findings confirm the importance and value of social presence and also demonstrate that teaching presence is an unignorable element in developing a CoI and in the blended learning process. Additionally, the CoI framework helps in the course design process and in implementing activities and tasks which develop the students' disciplinary knowledge and skills, activate their motivation to learn English, give them greater satisfaction with their progress, and encourage them to apply what they have learned to their professional studies. These are areas for further studies.

Acknowledgements

Funding

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Appendix A

Student 1

In the constructed version, the terms and the images are presented in a simple way, such as sensor head and sensor housing. In the authentic version, the Scarecrow Assembly Guide depicts with more words in details, and it requires more understandings to the function of the components and more reflections to the details (Figure of Sprinkler). The constructed version is divided into three sections (1.sprinkler 2. sensor head 3. stake), and it is constructed in a simpler structure. The authentic version is clearer and more detailed to introduce components, such as where the battery cover is located, not only the battery volt. The constructed version does not depict the figures in detail, such as the figure for sensing area, while the authentic version explains in concise terms, as 'the sensing area consists of several dozen alleyways through which an animal must cross to be detected'.

Unfamiliar Words	Authentic Version	Constructed Version	**The authentic version is more formal and detailed, more new words and expressions, and it is a bit long that readers need to spend time to find out information they need. In the constructed version, words are simple, and the main components are provided but are not clearly illustrated.**
	sprinkler head	sprinkler	
	sensor housing	sensor head	
	lens	battery compartments	
	battery cover	garden hose	
	alleyways	sturdy plastic spike	
	flow through		
	foot rest and house		
	attachment point		

Student 2

I think there are two main differences between the two versions:

1. In terms of using vocabulary, the authentic version is basically simple and easy to understand. The authentic version uses more professional vocabulary. For example, there are many qualitative or quantitative words, such as area, height, scope, and so on.

2. In the aspect of sentence composition, the authentic version uses simple sentences to make the description easy but concise to help people understand the structure of the sprinkler and its function, while the sentences in the constructed version are complicated and not guidable for operating the equipment.

Note: The author edited for grammar and clarity.

Appendix B

Community of Inquiry Survey of English for Agriculture and Forestry

The aim of this survey is to evaluate the blended learning in the course English for Agriculture and Forestry

form students' perspective. Please indicate what you think about the course that the following items describe. Please write the number of scales after each item (1=strongly agree, 2=agree, 3=neutral, 4=disagree, 5= strongly disagree). Thank you.

Teaching Presence

Design and Organization

1. The instructor clearly stated the learning objectives of the course.
2. The instructor clearly stated the course topics.
3. The instructor clearly provided instructions on how to participate in the course activities.
4. The instructors clearly provided instructions on how to participate in the course tasks.
5. The instructor clearly stated the due time for tasks.

Facilitation

6. The instructor illustrates the learning topics that helped my understanding.
7. The instructor kept students engaged in productive interaction.
8. The instructor kept students on tasks in a way that helped my learning.
9. The instructor encouraged students to explore new ideas in the course.
10. The instructor reinforced the development of a sense of community among students.

Direct Instruction

11. The instructor helped students focus discussions on relevant issues in a way that helped me clarify my thinking.
12. The instructor provided feedback that helped me understand my strengths and weaknesses relative to the learning objectives.
13. The instructor provided feedback in a timely fashion.

Social Presence

Affective Expression

14. Getting to know other classmates gave me a sense of belonging to the course.
15. I was able to form distinct impressions of some students.
16. Online or Web-based communication is an excellent medium for interaction.

Open Communication

17. I felt comfortable communicating through the online platform.
18. I felt comfortable participating in the course discussions.
19. I felt comfortable communicating with my classmates.

Group Cohesion

20. I felt comfortable disagreeing with my classmates while still maintaining a sense of trust.
21. I felt that my point of view was acknowledged by my classmates.
22. Course activities helped me develop a sense of collaboration.

Cognitive Presence

Triggering Event

23. Problems posed increased my interest in course topics.
24. Course activities stimulate my curiosity.
25. I felt motivated to explore content related questions.

Exploration

26. I utilised a variety of information sources to explore problems posted in the course.
27. Brainstorming and finding relevant information helped me resolve content related questions.
28. Couse discussions were valuable in helping me appreciate different perspectives.

Integration
    29. Combining new information helped me answer questions raised in course activities.
    30. Learning activities helped me construct explanations/solutions.
    31. Reflection on course content and discussions helped me understand fundamental concepts in the class.

Resolution
    32. I can describe ways to test and apply the knowledge created in the course.
    33. I have developed solutions to course problems that can be applied in practice.
    34. I can apply the knowledge created in the course to my professional study.

Appendix C

Descriptive Statistics of Community of Inquiry

Dimensions	# of Items	*M*	*SD*
Teaching Presence	13	1.2710	0.03376
Design & Organization	5	1.2337	0.03373
Facilitation	5	1.2819	0.03741
Direct Instruction	3	1.2972	0.04390
Social Presence	9	1.4163	0.05028
Affective Expression	3	1.4297	0.05376
Open Communication	3	1.3735	0.05610
Group Cohesion	3	1.4458	0.05369
Cognitive Presence	12	1.3173	0.04289
Triggering Event	3	1.3414	0.04948
Exploration	3	1.3012	0.04412
Integration	3	1.3092	0.04306
Resolution	3	1.4137	0.05759

Appendix D

Classification of Students' Written Evaluation

Categories (Student Number)	Examples	Proportion
Course Discussions and Group Activities (SN=81)	discussing/communicating with my classmates	92.04
	have questions and talk to my classmates	
	face-to-face discussion	
	ask classmates for help	
	group work	
	discuss online	
	collaborate with others	

Instructor's Behavior (SN=77)	the teacher participates/joins in the discussion	87.5
	the teacher confirms ideas and engages students in communication	
	the teacher designs different group activities/listens to discussions and makes comments	
	follow the teacher	
	be excited by the teacher	
Learning Mode (SN=87)	video lectures delivered on Mosoink	98.86
	face-to-face teaching and online learning	
	change the traditional fixed mode	
	learn both online and in class	
	propose questions online and make them clear in the class instruction	

About the Author

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