

## **Interrelationship among Social, Teaching, and Cognitive Presences through Students' Online Learning Experience**

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### **Abstract**

Changes caused by the COVID-19 pandemic have tremendously affected different aspects of education and have shifted the traditional face-to-face approaches to online learning. As a non-innovative mode of learning, online teaching and learning have created a new cultural ambiance since teachers and students have to change shortly. The present study draws upon the Community of Inquiry (CoI) framework combining teaching, social, and cognitive presences to explore students' online learning experiences. It aims to assess the interrelationship among presences of CoI and find out which presence is a major factor influencing cognitive presence. A total of 207 university students participated in this study. Data was collected using the Community of Inquiry Survey Instrument and quantitatively analyzed through Multiple Linear Regression (MLR) and descriptive statistics. The obtained results indicated that teaching, social, and cognitive presences are correlated, and social presence has a significant impact on students' learning process. This has a wider implication for online teachers to create more activities and motivate the students to communicate and participate openly in social interaction.

**Keywords:** *Community of Inquiry framework, Social presence, online learning*

### **Introduction**

The World Health Organization has declared pandemic COVID 19 a threat to a global community. For this reason, educational institutions have been forced to change or readjust academic schedules in educational institutions to online learning. In Vietnam, during the first quarter of 2020, Vietnamese educators faced a new challenge of having to temporarily close schools due to the complicated development of the COVID 19 pandemic. It has tremendously changed many aspects of social interactions among people around the world. Social distance was also implemented in Vietnam for a short period of time which strongly changed the way of working and studying (Dinh & Nguyen, 2020). In spite of creating new challenges in education, it helped promote a new way of teaching and learning which was virtualized nationally (Dinh & Nguyen, 2020). Changing teaching methods has made an ultimatum, yet it might be an opportunity to constitute education in a pandemic (Adedoyin & Soykan, 2020). Furthermore, online learning is a temporary method to protect citizens' health and sustain education (Tran et al., 2020).

Learning English has not been easy, and it requires the teachers and students to actively modernize their teaching and learning methods (Tran, Anvari, Phan & Nguyen, 2019). Moreover, when learning goes online, students and teachers find it difficult to handle with because traditional teaching programs which center of attention to teacher-student and student-student interactions (Dinh & Nguyen, 2020).

The CoI framework was developed by Garrison, Anderson, and Archer (2000) and has been widely used by educational institutions around the world in the field of online learning. The CoI framework comprises three categories, namely social presence, which defines as the ability of learners to project themselves socially and effectively into a community of inquiry; cognitive presence defined as the exploration, construction, resolution, and confirmation of understanding through collaboration and reflection in a community of inquiry; teaching presence is defined as "the design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes". There are a few studies applying the CoI framework to measure the students' online learning experiences in Vietnam.

Many studies have investigated students' satisfaction with online education in Vietnam and students' reflection (Dinh & Nguyen, 2020; Tran, Anvari, Phan & Nguyen, 2019). However, research has yet to measure the interrelationships among the three presences of CoI. Thus, the current study narrows the empirical gap by examining the interrelatedness of three presences and find out which presence has a high correlation with the cognitive presence in an online learning environment.

## Research Questions

**Q1.** What is the interrelationship among teaching, social, and cognitive presences of Community of Inquiry (CoI) in the students' online learning experiences?

**Q2.** Which presence has a significant impact on cognitive presence in students' online experience?

## Review of Literature

### Social constructivist theory

Vygotsky (1978) claimed that meaning is constructed through social interactions; therefore, learning is an essential social activity and that our understanding of the world is constructed through communication, collaborative activity, and interactions with others. Interactive activities take place in both face-to-face learning and the online learning context by communicating and negotiating with their peers. The effort of interacting among the learners to construct knowledge in a social environment.

According to the work of Vygotsky in 1978, More Knowledgeable Other (MKO) are those who possess higher understanding or ability in a particular task or problem-solving skill than the others. MKO is usually implied as the teacher or facilitator in class and parents at home. However, there are learners, peers in this case, who take over higher capabilities or critical thinking than the others or even the facilitators in particular knowledge or fields. (Pear, J. J., & Crone-Todd, D. E., 2002) stated that the questions which are discussed in an online class do not have specific correct answers, instead, the value of the answers is graded by how they are argued by the feedback from other students. Furthermore, the students are also received an assessment from the advanced students. By openly negotiating different perspectives, students can enhance their apprehension and construct new knowledge from previous one for further learning. The

assistance from learners' peers or teachers is called Zone of Proximal Development. As described from the practical implications of Kim (2006), a group of students is assigned a difficult math problem. By applying different previous knowledge backgrounds, the students can assist their friends to solve the problem more effectively than being alone. Getting succor and guidance from teachers and peers, the knowledge and ability of a person are going to get better.

### **The Community of Inquiry (CoI) framework**

Dewey (1933) believed that learning results from experience is based on context and social situation. Social presence is therefore viewed as directly impacting the development of community and collaboration in online courses and so an integral part of the CoI framework. Social presence is defined as "the ability of learners to project themselves socially and effectively into a community of inquiry" (Garrison et al., 2001). "It creates a supportive environment where learners can openly communicate with each other to negotiate different perspectives and confirm mutual understanding" (Garrison et al., 2001). Social presence includes three types of factors; affective expression is the feeling that is attached to friends when participating in group activities; group cohesion is the building and maintaining a sense of community through the communication among members; open communication is the positive reflection from the community to promote an individual's interaction with the community.

Dewey (1933) described the complete cycle of reflective activity in terms of a pre-reflective state which starts with a problem, followed by five phases of reflective thought (suggestion, intellectualization, guiding idea, reasoning, and testing), and ends with a satisfactory resolution. Dewey believed that reflective inquiry has practical value in providing meaning to experience, and so described a practical method of inquiry, the Practical Inquiry model, which operationally defines cognitive presence in the CoI framework. 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 the extent to which learners can construct and validate meaning based on communication and thinking" (Garrison et al., 2001).

Dewey (1959, p.20) stated "that the educational process has two sides – one psychological and one sociological; and that neither can be subordinated to the other or neglected without evil results following" This clearly reflects the cognitive and social presence elements of the CoI framework. He also explicitly addressed the need for purpose, structure, and leadership, that is, teaching presence. Teaching presence is defined as "the design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes" (Anderson, Rourke, Garrison, & Archer, 2001). It is the responsibility of the instructor to design and integrate both cognitive and social presence for educational purposes through scaffolding, modeling, and/or coaching.

### **Previous Studies**

In the CoI framework, social presence, teaching presence, and cognitive presence were described as overlapping and interacting processes that determined the quality of the online learning experience. Many existing studies abounded with the interrelatedness among the three presences. By using the survey instrument, the Passive Intermodulation (PIM) can analyze rigorously the relative effects of the three CoI presences. Based on responses to a PIM survey from over 5,000 learners in the US higher learning institutions that used a common learning management system and pedagogy, Shea and Bidjerano (2008) developed a structural equation model which described the interrelationship between teaching, social, and cognitive presence.

Their model explained how the three presences influence and interact to create the online learning experience. It showed that teaching presence and social presence have direct effects on cognitive presence.

Garrison, Cleveland-Innes, and Fung (2010) used the CoI Survey Instrument to conduct an online survey with 287 students from four institutions in the United States and Canada and received 205 completed questionnaires. The study utilized Structural equation modeling (SEM) to test the hypothesized relationships among the three CoI presences. The results of the factor analysis revealed significant direct effects of teaching presence and social presence on cognitive presence. In addition, the researchers have also confirmed that social presence has an indirect or mediating effect on cognitive presence.

Various approaches have been hypothesized to find that among social, cognitive, and teaching presence what presence is the determinant factor for learning successfully. Liu, Gomez, and Yen (2009) used a predictive quantitative research design to examine the foresight of the relationship among social presence and course retention as well as a final grade in community college online courses. Their research team collected data from participants at a suburban community college in Maryland during the fall of 2006. In the online environment, they identified social presence as the degree of one's feeling, perception, and reaction to another intellectual entity. The research's result suggested that social presence had a positive impact on student's online learning experiences and was a significant predictor of course retention and final grade in the community college online environment.

In the same year, Wally Boston, Sebastián R. Díaz (2009) also employed a quantitative research design. Their aim was to explore the relationship between indicators of the CoI framework and student persistence. They analyzed over 28,000 students who were enrolled in bachelors or associates level courses records and survey data at an online university American Public University System. The study suggested that social presence is an important factor for students' online learning persistence. Social presence was also found to have an impact on students' satisfaction with a course, perceived learning, and actual learning.

Nonetheless, Shea and Bidjerano (2008) found that social presence does not contribute unique variance to the prediction of satisfaction. Furthermore, in a study of 413 graduate and undergraduate volunteer students who relate to online learning at four US universities and colleges. By administering the PIM survey, Diaz et al. (2010) found that social presence was rated as least important while teaching presence is the most important presence.

Focus on the effect of social presence; there is a difference in the important rating of social impact on a similar context. Therefore, it is necessary to examine the important rating of independent presences in different learning contexts and using different learner groups.

## **Methodology**

### **Research design**

A quantitative correlational research design was used to study the relationship among teaching, social, and cognitive presences of the CoI model using questionnaires adopted from Arbaugh et al. (2008). The CoI subscales of teaching, social, and cognitive presence, as measured by the CoI survey instrument (Arbaugh et al., 2008), served as the predictor variables. The CoI model was first introduced by Garrison et al. in 2000 as a conceptual order and a tool for the use of computer-mediated communication in supporting an educational experience and has been widely adopted and applied in the field of online learning research.

## Participants

The participants were a university student who enrolled in online English Preparation Courses via the Google Meeting platform in the Spring 2020 semester for two months; with an average age of 18 to 20. Actually, 207 participants took part in this study based on the convenience sampling technique.

## Research instruments

The instrument used in the present study was the CoI survey questionnaire which consists of 34 agreed upon and statistically validated items that operationalize the concepts in the CoI (Arbaugh et al., 2008). This is being used to explore learners' educational experiences in online and blended learning environment. The adapted version of the questionnaire was piloted with 14 students, and it was decided that no items needed to be further revised. The 34 items in the questionnaire covered different 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, *strongly agree* to five *strongly disagree*.

The reliability of the questionnaire was measured by Cronbach's Alpha. The reliability coefficients for the three presences were .906 for teaching presence, .896 for social presence, and .939 for cognitive presence. 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 was good, and the questionnaire had a high reliability. Also, Multiple Linear Regression (MLR) was used for the statistical interpretation of the interrelationship among the three presences.

**Table 1**

*Reliability of constructs*

Variables	Items	Cronbach's Alpha
Teaching presence	1 - 13	.906
Social presence	14 - 22	.896
Cognitive presence	23 - 34	.939
Students' Online Learning Experiences	1 - 34	.961

## Data collection procedures

The researchers sent emails to lecturers for gaining permission and scheduling a class meeting. They also clarified the nature and scope of the study for the participants by giving them an information sheet, a consent form, and a QR code to access the online questionnaire on Google Form. A total of 207 students responded to the survey delivered in Google Form, a response rate of 69.6 percent. Then, Statistical Package for the Social Sciences (SPSS) was used to analyze the data. It was utilized as a tool to test the interrelationship among teaching, social, and cognitive presences of CoI.

### \Results

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

**Table 2**

*Coefficients and Multicollinearity, Tolerance and Variance Inflation Factor (VIF)*

#### Coefficients<sup>a</sup>

Model	Unstandardized Coefficients		Standardized t Coefficients	Sig.	Collinearity Statistics			
	B	Std. Error	Beta		Tolerance	VIF		
	(Constant)	.225	.211	1.067	.287			
1	Social	.617	.052	.637	11.920	.000	.550	1.818
	Teaching	.318	.069	.248	4.640	.000	.550	1.818

a. Dependent Variable: Cognitive

Table 2 presents the Tolerance and Variance Inflation Factor (VIF), which checks the multicollinearity of teaching and social presences, the predictive variables. 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, for both teaching and social presences, the predictive variables are shown to have significant levels ( $p = .000 < .001$ ). Therefore, the two predictive variables indicate a significant correlation with the dependent variable, cognitive presence.

In Table 2, the Beta weight and statistical significance are analyzed. From the results of the Beta weights, it is evident that both predictive variables are significant. They are teaching presence ( $\beta = .248, t = 4.640, p = .000 < .001$ ) and social presence ( $\beta = .637, t = 11.920, p = .000 < .001$ ). To sum up, teaching and social presences are all significantly correlated with cognitive presence.

#### Social presence on cognitive presence

In order to analyze which presence has a significant impact on cognitive presence, the MLR test was used.

**Table 3**

*Social presence on cognitive presence*

#### Coefficients<sup>a</sup>

Model	Unstandardized Coefficients		Standardized t Coefficients	Sig.	Collinearity Statistics	
	B	Std. Error	Beta		Tolerance	VIF

1	(Constant)	.933	.153		6.092	.000		
	Social	.778	.040	.803	19.322	.000	1.000	1.000

a. Dependent Variable: Cognitive

Based on the standardised coefficients, social presence ( $\beta = .803$ ,  $p = .000 < .001$ ) has a great influence on cognitive presence. The results from Table 3 suggest that the predictor can significantly explain the correlation with the dependent variable (VIF = 1.000, tolerance = 1.000).

**Table 4***Model summary of social predictor***Model Summary**

Model	R	R Square	Adjusted Square	RStd. Error of the Estimate
1	.803 <sup>a</sup>	.646	.644	.4880898

a. Predictors: (Constant), Social

Table 4 shows the results of the predictive variable in the backward multiple regression analysis.  $R^2 = .646$ , which suggests that 64.6 percent of the variance in the dependent variable, cognitive presence, can be explained by the predictive variable, social presence.

**Teaching presence on cognitive presence****Table 5***Teaching presence on cognitive presence***Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized t Coefficients	Sig.	Collinearity Statistics	
		B	Std. Error	Beta		Tolerance	VIF
1	(Constant)	.265	.274	.966	.335		
	Teaching	.866	.066	.675	13.110	.000	1.000

a. Dependent Variable: Cognitive

Based on the standardized coefficients, teaching presence ( $\beta = .675$ ,  $p = .000 < .001$ ) has a great influence on cognitive presence. The results from Table 5 suggest that the predictor can significantly explain the correlation with the dependent variable (VIF = 1.000, tolerance = 1.000).

**Table 6***Model summary of teaching predictor***Model Summary**

Model	R	R Square	Adjusted Square	RStd. Error of the Estimate
1	.675 <sup>a</sup>	.456	.453	.6046333

a. Predictors: (Constant), Teaching

Table 6 shows the results of the predictive variable in the backward multiple regression analysis.  $R^2 = .456$ , which suggests that 45.6 percent of the variance in the dependent variable, cognitive presence, can be explained by the predictive variable, teaching presence. From the above results, it shows that social presence has a greater influence on cognitive presence than teaching presence.

### Discussion

The analysis of the study revealed that social presence, cognitive presence, and teaching presence are interrelated and influenced each other. This supports the previous studies by Garrison et al. (2010), which reported that there is a casual relationship among the presences of the CoI model, Shea and Bidjerano (2009), with a sample size of more than 2000 online learners, which found that social presence, cognitive presence, and teaching presence have impacted on each other, and Akyol and Garrison (2008) who claimed that there are significant relationships among social presence, cognitive, and teaching presence. This finding is consistent with one of the findings of Garrison, Cleveland-Innes, and Fung (2010) and Liu, Gomez, and Yen (2009) that social presence is a major factor influencing cognitive presence. This was highly appreciated by students when they met online classmates, communicating and participating in an online platforms. In this study, the result revealed that social presence has a significant impact on cognitive presence in an online learning environment since students have been shifted from traditional to online shortly.

To evaluate the social presence, affective expression, open communication, and group cohesion were further explored. The results showed that having a good impression with one or some classmates motivates the students to communicate and exchange information. Social activities in the online environment are relatively effective thanks to the normal interaction with other individuals within the community. Within the social presence, the categories are also designed to be mutually reinforcing. The interactive process takes place normally facilitating the better exchange of information and knowledge, the team working process will also easily achieve the desired outcome. Moreover, the results proved that in the context of online learning, communication with their peers and the opportunity to experience activities in the classroom cannot be ignored.

Additionally, a user-friendly online platform builds an engaging online learning environment. A study by Shea and Bidjerano (2009) found that the social factors involved in online learning comfort students and influence their perception. It can be said that, if the comfort level of participating in online activities is low, the level of students' awareness is also low (Shea & Bidjerano, 2009). It is implied that students tend to be excited to join in online group activities. Garrison and Arbaugh (2007) stated that "social presence is necessary for the development of cognitive presence" (p. 160).

However, in this environment, social presence seemed to lack much interaction as indicated. They wanted to communicate openly with classmates and teachers, and they had much desire to participate in online discussion. These correlations brought a connection between what students can learn through social presence as affective expression, open communication, group cohesion. It is ultimately understandable that students considered social interactions as a valuable exploration in formation for their learning outcomes. Additionally, it carries several implications for educators in designing problem-based activities to motivate social presence. Likewise, it can be truly believed that the presence of indicators of the CoI can assist in the role of students' interaction in a social context.



The results finally emphasized the role of teaching presence in this environment when it showed a positive correlation with cognitive presence. Facilitation was seen as a major indicator to keep students engaged in productive interaction and encourage students to explore ideas, and help them feel like a sense of community. This has several implications for teachers to use these techniques to maximize their understanding of students' needs. According to the social constructivist approach, teachers should be facilitators to help students to get their own understanding of the content through social work.

### Conclusion

The findings of this study confirm the importance of social presence in the online learning process and also demonstrate that teaching presence is an unignorable element in developing a CoI since the three presences are correlated. Moreover, the CoI framework helps in the course design process and in implementing activities which develop the students' social interaction to activate their motivation to learn English and give them greater satisfaction with their progress. The findings also suggest that social presence in the CoI model should be increased in online classes because it positively affects the dependent variable, cognitive presence. Once we can make the social presence popular in online classes, cognitive presence will appear and help learners achieve their educational goals. Furthermore, MKO should be emphasized in online classes to help students widen their capabilities, with the less capable learners becoming independent learners in the near future.

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