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## **EXPLORING CAUSAL RELATIONSHIPS AMONG TEACHING, COGNITIVE AND SOCIAL PRESENCE IN INTERNATIONAL COLLABORATIVE SEMINARS: INITIAL FINDINGS USING THE COMMUNITY OF INQUIRY SURVEY**

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### **Abstract**

This paper discusses the causal relationships among the three presences in the Community of Inquiry (CoI) framework that has been used extensively in the research and practice of online and blended learning. Relations among social, cognitive and teaching presence were explored in the context of a series of course redesign experiments (2012-2014) in higher education. The redesign experiments revolved around the transformation of regular in-person graduate seminars into ‘international collaborative seminars’ that involved two international groups of students at two simultaneous teaching sites linked through synchronous web-conferencing and asynchronous online work. With the CoI survey we tested the hypothesized causal relationships among the three presences. The results confirmed the relationship that teaching and social presence have a significant perceived influence on cognitive presence, but interestingly, teaching presence is perceived to influence social presence less than cognitive presence. These results underline the overarching importance of teaching presence in facilitating cognition in a formal online learning community however they also direct our attention to further exploring its role in the social dimensions of the instructional processes.

### **Introduction**

The Community of Inquiry (CoI) serves as a framework for conducting research into formal (higher-level) online and blended learning in higher education (Garrison & Arbaugh, 2007). It maps and defines educational presence (Garrison & Cleveland-Innes, 2005), and as such, integrates social, teaching and cognitive dimensions of the teaching and learning process. Since their inception, both the framework and the CoI survey have been validated in multiple studies (Arbaugh, 2007), and yet, the causal relationships among the presences require empirical demonstration (Garrison, Cleveland-Innes & Fung, 2010). In particular, the overarching effect of teaching presence on the contextual dynamics of the presences needs further investigation. Similarly, the question whether social presence makes significant contributions to the prediction of cognitive presence has been addressed but is still in need of exploration (Swan et al., 2008).

Telecollaborations (O'Dowd, 2013) served as a methodological precedent to our redesign model of 'international collaborative seminar', which refers to a university course involving two in-person learning communities located at two simultaneous teaching sites collaborating through web-conferencing and asynchronous online work. In such courses students experience the complex dynamics of international, interdisciplinary, online and face-to-face, synchronous and asynchronous learning. Hence, this unique instructional set-up with the synergy of experiences necessitates our focus on the nature of causal relationships among the presences that are at play.

Hence, in this paper we aim to measure the interpretability of the factor structure of the CoI survey used to measure students' perceptions of teaching, cognitive and social presence and attempt to advance research on the CoI through the investigation of the contextual relational dynamics of the three presences in the redesign model 'international collaborative seminar'.

### **Conceptual framework**

The CoI framework is grounded in the social constructivist paradigm that knowledge construction occurs through critical inquiry in a collaborative learning setting (Arbaugh, 2007; Garrison & Arbaugh, 2007) and this, as Garrison and Vaughan (2008) argue, resonates with the ideal expectations towards teaching and learning in higher education.

The model assumes that through the three presences – cognitive, teaching and social presence – the various dynamics of the online and blended teaching and learning processes can be depicted. Cognitive presence is grounded in Dewey's (1938/1991) theory of inquiry and critical thinking, and is described as "the extent to which the participants in any particular configuration of a community of inquiry are able to construct meaning through sustained communication" (Garrison et al., 2000, p.89). Cognitive presence is thus operationalized as a practical inquiry involving a systemic progression of cognition from triggering event, exploration, and integration to resolution.

Teaching presence refers to the design of the materials and processes, facilitation of critical discourse, and direction of discipline-specific instruction. Therefore, teaching presence, according to Anderson et al. (2001), begins before the course commences since the teacher plans and prepares the course, and it is maintained throughout the course as the teacher facilitates the interactions and collaborations. It thus describes an overarching responsibility to orchestrate the many dimensions of the inquiry process so that students accumulate personally and academically relevant learning (Garrison & Arbaugh, 2007).

The third – most re-conceptualized – element of the CoI framework is social presence, that is defined as "the ability of participants to identify with the community (e.g. course of study), communicate purposefully in a trusting environment, and develop inter-personal relationships by way of projecting their individual personalities" (Garrison, 2009).

## Exploring Causal Relationships among Teaching, Cognitive and Social Presence in International Collaborative Seminars: Initial Findings Using the Community of Inquiry Survey

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According to the framework, social presence has a mediating function between teaching and cognitive presence. As Garrison et al. (2010) argue, it is “a responsibility of teaching presence and a condition for creating cognitive presence” (p.32). Previous empirical research has shown that there is a causal relationship between teaching presence and perceived learning as well as student satisfaction (Akyol & Garrison, 2008; Arbaugh, 2008) and that there is a causal relationship between social and cognitive presence (Shea & Bidjerano, 2009). With acknowledging the evidence provided by previous research on the CoI framework and the survey, we aim to further explore the contextual dynamics of the three presences in the redesign model ‘international collaborative seminar’ that integrates synchronous, asynchronous, online and face-to-face, international and interdisciplinary learning processes.

The following are the research questions:

1. What is the predictive relationship of social and teaching presence with the development of cognitive presence in this redesign?
2. What is the ability of teaching and cognitive presence to predict social presence in this redesign?

### Methods

We draw our data from a series of international collaborative seminars that were designed, conducted and studied collaboratively by an international team of faculty and instructional designers in Fall 2012, Fall 2013, Spring 2014 – involving 82 graduate students of social sciences and humanities. In each semester, two institutions conducted a 12-week-long seminar, which integrated interdisciplinary approaches from gender studies, history, museum studies, Holocaust and genocide studies, literature and cultural studies, and film studies. The Hungarian university, the organizer, was the ‘permanent’ institution in each case. The partner universities were from the US and Estonia.

The CoI survey was used to predict relationship among the presences. The CoI survey is a 5-point Likert scale instrument that consists of 34 items describing the three presences. We employed standard linear regression in our analyses. We calculated the Cronbach’s Alpha values to measure scale reliability, that is, the internal consistency of a set of items within a variable group. The Cronbach’s Alpha measures demonstrate high scale reliability and internal consistency. These values together with the means and standard deviations are depicted in Table 1.

Table 1: Scale reliability and descriptive statistics ( $N = 82$ )

Presences	Cronbach’s Alpha	Mean	Std. Deviation
Teaching	.941	3.283	.907
Social	.913	2.887	1.086
Cognitive	.936	3.094	.966

## **Preliminary findings**

### ***Descriptive statistics***

The means show acceptable levels of satisfaction, with large standard deviations indicating a significant clustering of replies around the mean. The lowest means are clustered on the indicators of social presence.

### ***The predictive relationship of social and teaching presence with cognitive presence in this redesign***

Analysis of variance showed that the regression model was significant,  $F(2, 50) = 86.968$ ,  $p = .000$ . The unstandardized betas, standard error, and standardized betas of the predictors are presented in Table 2. Initial analysis indicates that teaching and social presence make significant contributions to the prediction of cognitive presence – approximately to an equal extent. Also, preliminary results showed that teaching and social presence explained approximately 77% of the variance in cognitive presence, which is indicative of a robust relationship. Details of hierarchical regression indicating the statistically significant predictors among the items of the CoI will be available later (at the paper presentation).

Table 2: Summary of regression analysis of social and teaching presence on predicting cognitive presence ( $N = 82$ )

<b>Variable</b>	<b>B</b>	<b>SEB</b>	<b><math>\beta</math></b>	<b>Sig.</b>
Teaching presence	.474	.113	.445	.000
Social presence	.436	.094	.490	.000

### ***The ability of teaching presence and cognitive presence to predict social presence in this redesign***

Results indicated that this model was also significant  $F(2, 50) = 64.584$ ,  $p = .000$ . The correlation coefficient of .85 indicates that the predictors can account for 71% of total variance of social presence. As seen in Table 3, teaching presence makes considerably less contribution to the prediction of social presence than cognitive presence. This indicates that teaching presence, in this redesign model, has less robust predicative relationship to social presence as compared to cognitive presence. Again, details of hierarchical regression that describe the statistically significant predictors among the items of the CoI will be presented later.

Table 3: Summary of regression analysis of teaching and cognitive presence on predicting social presence ( $N = 82$ )

<b>Variable</b>	<b>B</b>	<b>SEB</b>	<b><math>\beta</math></b>	<b>Sig.</b>
Teaching presence	.323	.158	.270	.047
Cognitive presence	.689	.149	.613	.000

## **Discussion**

As found, the three elements of the CoI are highly interconnected and influence each other in this redesign model. The international collaborative seminars thus managed to provide an integrative approach to the synergy of experiences triggered by the teaching and learning processes. The results also confirmed the hypothesized relationship that teaching and social presence have a significant perceived contribution to cognitive presence. But interestingly, teaching presence is perceived to influence social presence less than cognitive presence. These preliminary results underline the overarching importance of teaching presence in facilitating cognition in the formal online learning community, such as the one created in the international collaborative seminar, however, they also direct our attention to further exploring its role in the social dimensions of the instructional processes. That is, consciously adopted strategies of interactivity such as expressing agreement and appreciation, acknowledging the other's point of view, referencing previous ideas etc., may impact cognitive engagement thus constructivist approaches to discussion leadership need to be thoughtfully integrated in the instructional design. Finally, it still remains important to investigate the instructors' contribution, through their design and facilitative strategies to social presence since these formal online learning communities are often impeded by the design and instructional practices characterized by the one-directional flow of knowledge extant in the higher education context (Annand, 2011).

Details of hierarchical regression, conducted to identify the statistically significant predictors among the items of the CoI will be also presented with the aim to further refine our understanding of the contextual dynamics among the presences and to also arrive at the pragmatic and functional implications for the purposeful instructional design of similar models in the higher education context. We also intend to discuss the limitations of the applied research tools.

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