



Interrelationships between and among social, teaching, and cognitive presence



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ABSTRACT

The purpose of the present study is to investigate the relationships between and among teaching, social, and cognitive presence. To this end, Spearman's rank correlation and partial correlation analyses were employed. The results referred to (a) positive large bivariate correlational relationships between presence types, and (b) the dependence of these pairwise relationships on the third presence to a certain extent. For instance, it was found that cognitive presence may have a strong effect on the relationship between teaching presence and social presence because the relationship between teaching presence and social presence may disappear when cognitive presence is controlled for. On the other hand, results also suggested that the relationship between cognitive presence and social presence, and the relationship between teaching presence and cognitive presence may largely be independent of the effect of the other third presence.

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1. Introduction

There is a continued interest in online higher education (Lloyd, Byrne, & McCoy, 2012) as evidenced by the number of US students taking at least one online course, which has now surpassed 6.5 million, and 65% of higher education institutions report that online learning is a critical part of their long-term strategy (Allen & Seaman, 2013). While compelling, this accelerated growth suggests an ever-growing and competitive online higher education market. It also raises significant questions related to the quality of online instruction in terms of such outcomes as student learning and perceived efficacy where effectiveness and efficiency are of great importance for learning purposes. Consequently, higher education institutions need to keep a close eye on the quality of online education they offer in order to survive in the market, and future online research should provide us with more insights into how to increase the quality of online education; to this end, theoretical insights can be of great help.

In order to make the most out of theoretical insights, it is necessary to empirically test them. The community of inquiry (CoI) (Garrison & Akyol, 2013a,b; Garrison, Anderson, & Archer, 2000, 2001, 2010; Garrison & Arbaugh, 2007), is a popular theoretical framework that focuses on quality online education and encourages increasing levels of teaching presence, social presence, and cognitive presence and assumes an overlapping relationship between and among the presences. Much research has been done on the CoI (e.g., Arbaugh, 2008; Shea et al., 2011) but there has been limited research on the overlapping relation-

ships (e.g., Akyol & Garrison, 2008; Ke, 2010). The purpose of the current study is to empirically examine the interrelationships between and among the three presences.

2. The community of inquiry framework

The CoI Framework emerged within the lieu of higher education computer conferencing or asynchronous textual group discussions (Garrison et al., 2010). It is important to note here that this framework has a social-constructivist orientation toward learning (Akyol & Garrison, 2011; Akyol, Ice, Garrison, & Mitchell, 2010; Akyol et al., 2009; Shea et al., 2011; Swan, Garrison, & Richardson, 2009; Swan & Ice, 2010). According to social constructivism, learning stems from learners' interaction in a socio-cultural context through a sense-making process (Oldfather, West, White, & Wilmarth, 1999). Consequently, the CoI Framework specifically focuses on the learning process (Akyol et al., 2009; Swan, Garrison, & Richardson, 2009) versus other frameworks that focus on learning outcomes (Akyol et al., 2009).

2.1. The presences

At the core of the CoI Framework are three overlapping constructs or presences: (a) cognitive presence, (b) teaching presence, and (c) social presence. At the intersection of the overlapping constructs is a "deep and meaningful educational experience" [Arbaugh et al., 2008, p. 134].

Cognitive presence refers to the extent to which online learners can construct and validate meaning based on critical and continuous communication and thinking (Garrison et al., 2000, 2001). In other words, cognitive presence means being cognitively active, in that learners seek the most effective and efficient ways of solving a learning problem, and apply these solutions at the end. Specifically speaking,

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cognitive presence has been defined through Dewey's practical inquiry model (Garrison et al., 2001) and consists of: (a) a triggering event presenting a problem to solve, (b) exploration of the ideas regarding how to solve the problem, (c) integration of the solution ideas, and (d) resolution through which the best one or ones are chosen and applied.

Based on the practical inquiry model above, cognitive presence comprises an iterative and sometimes cyclical move through a triggering event, exploration, integration, and resolution phases (Garrison & Arbaugh, 2007). Consequently, Garrison (2003) asserted the importance of understanding cognitive presence to achieve deep and meaningful learning. After all, cognitive presence mirrors "the focus and success of the learning experience" (Vaughan & Garrison, 2005, p. 8).

Previous research found a smaller number of resolution and integration stages, especially compared with the exploration stage (e.g., Arnold & Ducate, 2006; Garrison et al., 2001; Kanuka, Rourke, & Laflamme, 2007; Meyer, 2003). This finding has been attributed to an interrelationship between cognitive presence and teaching presence (Garrison, 2007; Garrison & Akyol, 2013a; Garrison & Arbaugh, 2007; Garrison & Cleveland-Innes, 2005; Vaughan & Garrison, 2005). Specifically, Garrison and Arbaugh (2007) underscored the roles of facilitation, direction, and task design in encouraging the resolution or application stage of cognitive presence. Each of these implies a need for teaching presence that enhances critical thinking to reach higher levels of cognitive presence or learning (Garrison & Akyol, 2013a).

Teaching presence is "the design, facilitation, and direction of cognitive and social presences for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes" (Garrison et al., 2000, p. 5). It includes the components of design and organization, facilitating discourse and direct instruction (Akyol & Garrison, 2008; Anderson, Rourke, Garrison, & Archer, 2001; Garrison, 2013; Garrison & Akyol, 2013a). According to Garrison et al. (2000), the main obligation of teaching presence is to sustain cognitive and social presence through designing instruction and facilitating learning. Garrison (2011) explained that even though teaching presence is usually within the instructor's realm, it can extend to anyone participating in a community of inquiry. Therefore, it is not surprising that previous studies highlighted the importance of teaching presence for educational communities of inquiry (Garrison & Akyol, 2013a). Teaching presence is of great importance not only in terms of learning consequences but also in the alignment of social and cognitive presence (Garrison & Akyol, 2013a). Similarly, Garrison (2011) claimed that teaching presence brings the components of a community of inquiry together in such a way that it concurs with learning outcomes, learner needs, and learner abilities. This indicates that teaching presence relates not only to cognitive presence but to social presence as well.

Because social presence highlights encouraging social interaction as well as the underpinnings of critical thinking and higher level learning (Garrison & Akyol, 2013a), it is thought to be of great significance for a community of inquiry (Garrison et al., 2010). Garrison (2009) described it as a continuous process of maintaining relationships, identifying with the community, and involving in meaningful and trustful communication (as cited in Garrison & Akyol, 2013a, p. 107). Social presence—defined as the degree to which participants feel affectively connected to one another—is based on the components of "emotional expression, open communication, and group cohesion" (Garrison et al., 2000, p. 99). According to Garrison and Akyol (2013a), affective or emotional expressions (which refer to interpersonal communication), may not be the main drivers for social presence, but rather serve as the foundation of a learning community. Open communication, moreover, is mutual and courteous communication (Garrison et al., 2000). Finally, group cohesion means establishing and maintaining a feeling or sense of a community through a feeling of belongingness, which favors group membership over individuality (Garrison et al., 2000). While arguing that group cohesion requires more than social interactions and relationships, Garrison and Arbaugh (2007) stated that "social presence in a

community of inquiry must create personal but purposeful relationships" (p. 160).

This suggests that the presences, at least theoretically, relate to each other. More specifically, it is clear that teaching presence is expected to affect both cognitive and social presence, with the latter functioning as the underlying construct that brings the three together. In terms of creating a learning environment that supports cognitive presence, it is plausible to expect social presence to relate to cognitive presence as well. Despite these reasonable relationships, less is known about the nature of these interrelationships between and among the presences due to fewer studies focusing on this topic. The next section focuses on these interrelationships.

2.2. How the presences relate to each other

Pointing to the impact the presences may have on each other, Garrison and Arbaugh (2007) claimed that we need to gain more insights into the interconnectedness of the presences. The authors also criticized earlier research because of the lack of enough focus on the framework as a whole or the interdependence of the presences. Thus, if learning happens at the intersection of the presences (Arbaugh et al., 2008) understanding how the presences relate to each other is of great importance.

However, there have been fewer studies focusing on this issue. Using Spearman's correlation analysis, for example, Akyol and Garrison (2008) found a significant relationship between teaching presence and cognitive presence only ($r_s = .779$). This does not concur with the conceptualization of the Col Framework by Garrison et al. (2000) because this model presumes both an intersection of all the presences and an intersection between any of the two presences. After all, educational experience resides in the common intersection of all three presences (Garrison et al., 2000). The results from Akyol and Garrison (2008) are surprising given that the graduate course context of the study was designed in accordance with the Col Framework and high levels of presence reported by the participants. In this regard, Shea et al. (2010) found that when instructor teaching presence and social presence are high, they relate positively and significantly ($r_s = .97$ and 0.98 , respectively) to student social presence toward the end of an online course.

Ke (2010) also examined how the presences relate to each other. The researcher operationalized teaching presence as online course content design and discussion design; cognitive presence as "the degree of learning satisfaction, the degree of self-perceived deep & surface learning, and the amount of knowledge-constructive interaction units"; and social presence as ratings on Rovai (2002)'s classroom community scale and "the amount of social interaction units" (p. 817). Results yielded that content and discussion design significantly predicts knowledge-constructive interaction units and social interaction, as well as the positive significant relationship between cognitive presence and social presence. Accordingly, Ke (2010) surmised that teaching presence has a significant role in encouraging cognitive and social presences, and that there is strong association between the two.

Similarly, using a standard multiple regression analysis, Archibald (2010) focused on whether teaching presence and social presence can predict cognitive presence. Results revealed that teaching presence and social presence can significantly explain the variance in cognitive presence. Results further indicated that social presence makes a larger significant contribution to the explanation of cognitive presence than teaching presence.

The studies above referred to correlational relationships. Two other recent studies used structural equation modeling to examine the causal relationships among the presences. Using a large sample size ($n = 2159$) in an online learning environment, Shea and Bidjerano (2009) found that only teaching presence has a significant total and direct effect on cognitive presence, while social presence has a significant direct effect on cognitive presence only. Similarly, Garrison,

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