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# A Constructivist Approach to Online Learning: The Community of Inquiry Framework

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Abstract

This chapter presents a theoretical model of online learning, the Community of Inquiry (CoI) framework, which is grounded in John Dewey's progressive understanding of education. The CoI framework is a process model of online learning which views the online educational experience as arising from the interaction of three presences – social presence, cognitive presence, and teaching presence. Each of these three elements in the CoI model are described and related to Dewey's work, and research findings and issues concerning them reviewed. The development of a common CoI survey measure that promises to address some of these issues is described and discussed. The chapter concludes with emerging findings from new studies which use the CoI survey, directions for future research, and practical uses of the CoI model.

Keywords: Community of Inquiry, Online Learning, Social Presence, Teaching Presence, Cognitive Presence, John Dewey, Constructivism

## A Constructivist Approach to Online Learning:

### The Community of Inquiry Framework

Inquiry and community were at the core of John Dewey's educational philosophy and practice. Dewey (1959) believed that an educational experience must fuse the interests of the individual and society, that individual development was dependent upon community. He believed the essence of community was the organic fusion of the public and our private worlds. He also believed that the process of inquiry went to the heart of the educative experience. For Dewey, inquiry involved the generalization of the scientific method to practical problem solving and worthwhile learning. It defined the relationship between thought and action. For Dewey, inquiry was also an essentially social activity. Dewey believed that through collaboration that respected the individual, students would assume responsibility to actively construct and confirm meaning. It is this collaborative constructivist approach that is worthy of further exploration in online learning.

Online learning has evolved from early computer conferencing experiences where the big question was whether we could create and sustain a learning community in a largely asynchronous text based environment. Naturally, much attention in these early days was directed toward the question of whether we could establish the social presence essential to a viable online community of learners. As we shall see subsequently, considerable research established that it was possible to develop both social presence and online learning communities. Once this was established, the focus began to shift to the purposeful nature of a community of learners collaboratively constructing meaning, to the development of online communities of inquiry.

Higher education has traditionally emphasized constructivist approaches to learning in the sense of individual students taking responsibility for making sense of their educational

experiences. What is less common is the collaborative construction of knowledge in a community of learners. This social construction of knowledge must be reasserted considering the fact that the traditional ideal in higher education has been discourse and reflection in a collaborative community of scholars. It is argued here that constructivist approaches and community are necessary for creating and confirming meaning and are essential for achieving effective critical thinking. Therefore, constructivist approaches and community must be necessary parts of higher education. In online higher education, building community is particularly important because it cannot be taken for granted, nor, for that matter, can inquiry. As Garrison and Archer (2000) note “construction of meaning may result from individual critical reflection but ideas are generated and knowledge constructed through the collaborative and confirmatory process of sustained dialogue within a critical community of learners” (p. 91).

This chapter will present and discuss the Community of Inquiry (CoI) framework (Garrison, Anderson & Archer, 2000), a process model of online learning, the core of which is a collaborative constructivist view. Each of the three elements of the CoI model – cognitive presence, social presence and teaching presence -- will be described and related to Dewey’s work, and research findings concerning them reviewed. Issues emerging from CoI research and the development of a common CoI survey measure that promises to address at least some of these issues will then be discussed. Emerging findings from new studies which use the CoI survey will also be reported. The chapter will conclude with a summary and several directions for future research.

#### Background: the Community of Inquiry Framework

The CoI framework (Garrison, Anderson & Archer, 2000) is a process model of online learning. It assumes that effective online learning, especially higher order learning, requires the

development of community, and that such development is not a trivial challenge in the online environment. The CoI framework is a dynamic model of the necessary core elements for both the development of community and the pursuit of inquiry, in any educational environment. Its three core elements -- cognitive, social and teaching presence – described in the sections which follow, are viewed as multidimensional and interdependent. The overlapping nature of these elements is depicted in Figure 1. At their core is the unity of a collaborative constructivist learning experience consistent with the legacy of John Dewey. Together, the two constituting notions of community and inquiry form a pragmatic organizing framework of sustainable principles and processes for the purpose of guiding online educational practice. The CoI framework has provided perspective and guidance to a good deal of important research on purposeful online learning over the last decade.

## Community of Inquiry

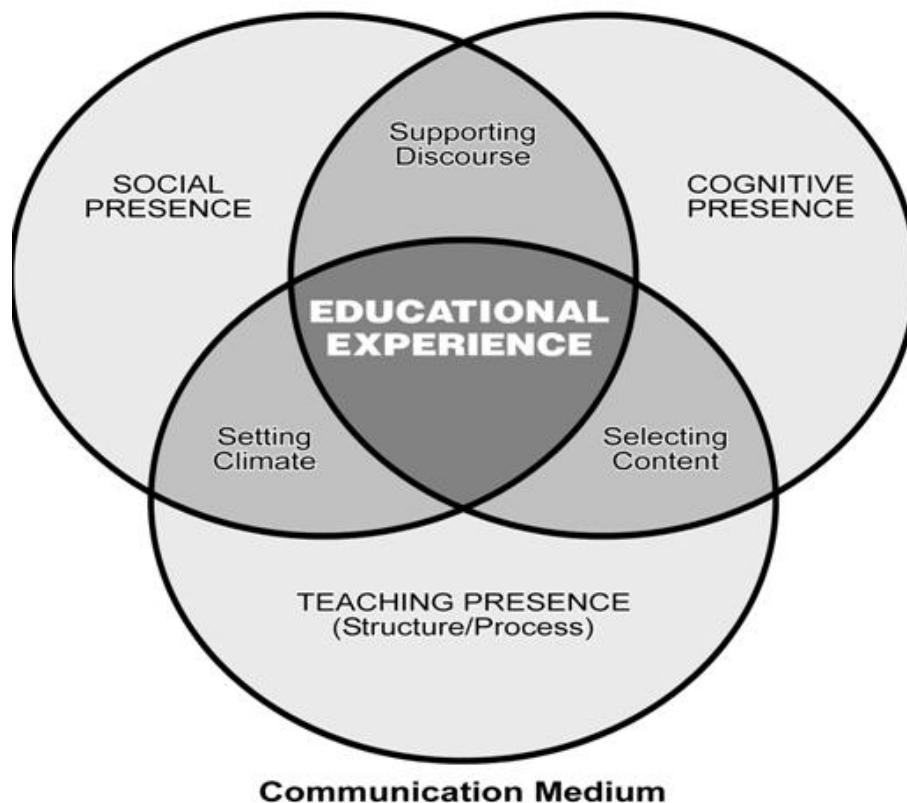


Figure 1: CoI Framework (Garrison, Anderson &amp; Archer, 2000)

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### *Cognitive Presence*

Dewey's generalization of the scientific method in the form of reflective thinking provided the foundation for the critical thinking movement that is the hallmark of higher education. 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, in addition to the full explanation of reflective inquiry, on which he believed an educational experience should be based. It is this concept that was the genesis for the practical inquiry model described below which operationally defines cognitive presence in the CoI framework.

The Practical Inquiry Model (Garrison, Anderson & Archer, 2001) is framed along two dimensions (see Figure 2). The vertical axis represents the psychological and sociological sides of the educational process identified by Dewey. This reflects the individual's private and reflective world juxtaposed with the community's shared world of discourse. Practical inquiry iterates imperceptibly between these two worlds. It is a process that includes both deliberation and action. That is, practical inquiry is shaped by the rigorous and purposeful process of reflection and discourse to construct meaning and confirm knowledge. The second dimension of the model defines the divergent process of perception and analysis contrasted with the convergent process of conception and synthesis. The points of perception and conception are

points of insight and understanding. At each of these points we see the true fusion of the psychological and sociological and the unity of the educational experience that Dewey advocated.

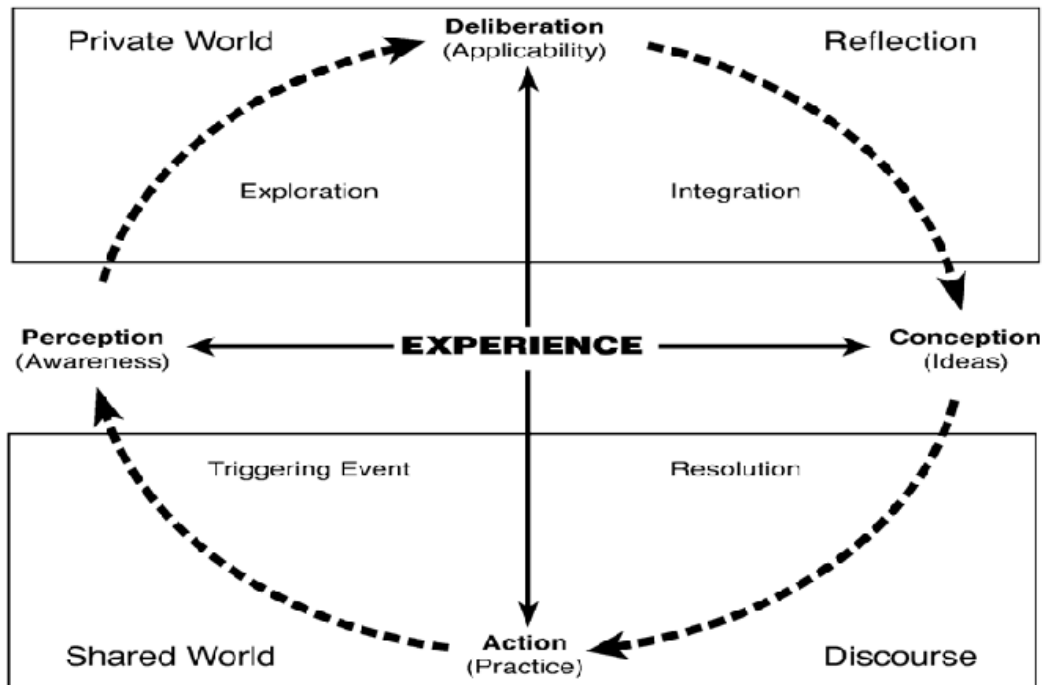


Figure 2: Practical Inquiry Model (Garrison, Anderson & Archer, 2001)

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The dimensions of the Practical Inquiry Model provide its conceptual structure; the phases focus on the pragmatic dynamics of the inquiry process. Practical inquiry begins with a *triggering event* in the form of an issue, problem or dilemma that needs resolution. As a result of this event, there is a natural shift to *exploration*, the search for relevant information that can provide insight into the challenge at hand. As ideas crystallize, there is a move into the third phase – *integration* -- in which connections are made and there is a search for a viable explanation. Finally, there is a selection and testing (through vicarious or direct application) of the most viable solution and *resolution*. At each of the stages there may be a need to return to a previous stage for new direction or information. The four phases described in the model are a

telescoping of Dewey's phases of reflective thinking for the purposes of parsimony and understanding. Consistent with Dewey's rejection of dualism, the phases should not be seen as discrete or linear. In an actual educational experience, they would be very difficult to label, as those that have used this model to code transcripts will attest (Garrison, Anderson & Archer, 2001).

In the CoI framework, cognitive presence is defined as the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse (Garrison, Anderson & Archer, 2001). In the CoI framework, cognitive presence is seen as consisting of the four phases of practical inquiry. Researchers have been able to find evidence of practical inquiry in online discussion, but initial studies of cognitive presence revealed that most postings in an online discussion forum concentrated at the exploration phase where participants shared information and brainstormed ideas (Garrison & Arbaugh, 2007). Indeed, several studies in this area have found that inquiry revealed in online discussion rarely moves beyond the exploration phase (Kanuka & Anderson, 1998; Luebeck & Bice, 2005; Meyer, 2003; 2004; Murphy, 2004).

While various explanations have been explored, it is most likely that much of this has to do with the nature of the assignments and instructional direction provided (Garrison & Arbaugh, 2007; Akyol & Garrison, in press). In studies in which students were challenged to resolve a problem and explicit facilitation and direction provided, students did progress to resolution (Meyer, 2003; Murphy, 2004; Shea & Bidjermo, 2008). Further research exploring the link between teaching presence and cognitive presence is thus clearly indicated. This and other issues surrounding cognitive presence will be discussed later in this chapter.

### *Social Presence*



Dewey believed that learning results from experience that is contextually based and socially situated. Lipman (1991) argued that “the reflective model is thoroughly social and communal” (p. 19). 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, the degree to which participants in computer-mediated communication feel affectively connected one to another, is the longest researched of the three presences in the CoI framework, predating the creation of the CoI model. It arose from concerns among some communications scholars that computer-mediated communication might prevent students from developing the sense of belonging with other students, instructors, and programs of study which social learning theories suggest support learning. Short, Williams and Christie (1976) originally coined the term “social presence” to refer to the differing capacities various media have for transmitting non-verbal and vocal cues, and so, in their opinion, for communicating the affective and emotional (the social) aspects of learning interactions.

As educators began experimenting with online discussion in the late 1980s and early 1990s, however, they quickly noted what Walther (1994) refers to as the “hyperpersonalness” of online discussion. Participants in online discussion, they maintained, project their personalities into online discussion using text alone (Gunawardena, 1995). They thus argued that social presence was more a matter of individual perceptions than an objective quality of the medium, and so the concept of “social presence” evolved to the notion more common among online educators today.

Gunawardena and Zittle (1997), for example, defined social presence as “the degree to which a person is perceived as ‘real’ in mediated communication” (p 8). They developed survey items to measure students’ perceptions of the social presence of others in an online computer

conference and found that perceived social presence predicted 60% of the variance in students' satisfaction with the conference. A number of studies followed which identify the perception of interpersonal connections with virtual others as an important factor in the success of online learning (Picciano, 2002; Richardson & Swan, 2003; Swan, 2002; Tu, 2000; Wegerif, 1998).

It is this sense of social presence that Rourke, Anderson, Garrison, & Archer (1999) incorporated into the CoI model. Their research team (Rourke, Anderson, Garrison & Archer, 2001) identified three categories of social presence indicators, based on research on immediacy (Weiner & Mehrabian, 1968) and their own observations. Although the elements of social presence have been variously defined, in this chapter (and in the CoI survey discussed), we identify them as *affective expression*, where learners share personal expressions of emotion, feelings, beliefs, and values; *open communication*, where learners build and sustain a sense of group commitment; and *group cohesion*, where learners interact around common intellectual activities and tasks.

Swan (2003) used Rourke et. al.'s categories and similar indicators of social presence to examine the ways in which social presence developed among online students enrolled in an online graduate course in education. Swan's coding noted all uses of paralinguistic, emotion, value, humor, self-disclosure (affective indicators), greetings and salutations, vocatives, group reference, social sharing, reflection on course itself (cohesive indicators), acknowledgement, agreement and disagreement, approval, invitation, personal advice (interactive indicators) in discussion postings. She documented the use of an average of almost six social presence indicators per message in a sample of 235 discussion postings and found changes in the relative frequencies of text-based social presence indicators employed over time.

Danchak, Walther and Swan (2001) hypothesized that people communicating online use such textual immediacy indicators to maintain a sense of affective equilibrium in their interactions. Danchak, et. al. argued that participants in environments with less affective communication channels available will evoke more verbal immediacy behaviors to affect a kind of equilibrium of social presence with which they are comfortable.

Noting the relationship between perceived presence and success in online courses, Tu (2000) linked the development of social presence in online courses to course design. Based on elements of social learning theory, he distinguished three dimensions of course design which influenced the development of social presence – social context, online communication, and interactivity, which includes reciprocal communication patterns and timely responses. Tu and McIsaac (2002) found support for these dimensions of social presence in a factor analysis of student responses to an online survey concerned with computer-mediated communication tools.

Swan and Shih (2005) also found support for the impact of course design on perceptions of social presence in a study of its development of four classes (two different courses taught by two different instructors). Their findings further revealed an overlap in perceptions of instructor and peer presence and indicated that the perceived presence of instructors was a more influential predictor of student satisfaction than the perceived presence of peers. Additionally, Swan and Shih found that students perceiving the highest social presence also employed the greatest number of social presence indicators to project themselves into online discussions.

Of course, meaningful research instigates further research. Perhaps the most significant is whether social presence is really a necessary precursor of cognitive presence. Most researchers in this area agree that it is, with the caveat that social presence must be directed toward learning outcomes (Garrison, 2007). This has led to a revision of the original social presence categories

and indicators to reflect academic purposes (Garrison, Cleveland-Innes & Fung, 2004).

Currently, the elements of social presence are conceptualized as consisting of affective/personal communication, open communication (interaction), and group cohesion and collaboration (Vaughn & Garrison, 2006), but the interaction of social and cognitive presence is still largely unknown and clearly under-researched. Many other questions remain and these will be discussed more fully later this chapter.

### *Teaching Presence*

Dewey (1959) 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” (p. 20). 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*. Dewey (1938) argued that it is the responsibility of the educator to establish aims and activities, but not to be straight-jacketed by them. To establish and sustain a community of inquiry, he maintained, educators must be knowledgeable, flexible but focused, and comfortable with uncertainty. In this regard, he stated, “thought needs careful and attentive educational direction” (Dewey, 1933, p. 22). Dewey (1938) was also aware of the need to facilitate appropriate social relationships by giving as much attention to the organization of the social environment of the classroom as to its physical environment. Teaching presence is established by attending to cognitive and social presence challenges in a collaborative CoI.

In the CoI framework, 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). The collaborative construction of knowledge in any educational context is particularly

challenging. However, it is extraordinarily difficult to manage the multi-faceted responsibilities of teaching presence in a largely text-based online environment. For this reason, we need to understand the dimensions of teaching presence and their roles in the dynamics of a collaborative constructive educational experience.

The three dimensions or categories of teaching presence alluded to in the previous definition emerged from a review of the literature related to the classification of online teaching responsibilities (Anderson et al., 2001). The first category, *design and organization*, cannot be neglected in an online learning environment. This is particularly true in terms of the selection of worthwhile collaborative learning activities. In an asynchronous nonverbal context, expectations with regard to discourse must be clear. For example, message length and focus of comments must be stated and modeled. The second category of teaching presence is *facilitating discourse*. Regardless of how clearly stated the expectations for online discussion, there will be a need to guide that discussion in a meaningful manner, ensuring that students stay focused. This is essential for students to stay engaged and to build a collaborative community of inquiry. Moreover, in a formal educational context, there will be times when it is necessary to intervene directly to correct misconceptions, provide relevant information, summarize the discussion and/or provide some metacognitive awareness. This is the third category of teaching presence – *direct instruction* (Anderson et al., 2001).

Researchers have documented strong correlations between learner's perceived and actual interactions with instructors and their perceived learning (Jiang & Ting, 2000; Richardson & Swan, 2003; Swan, Shea, Fredericksen, Pickett, Pelz & Maher, 2000), and between all three elements of teaching presence and student satisfaction and perceived learning in online courses (Shea, Pickett & Pelz, 2004). Teaching presence has also been shown to be linked to the

development of a sense of community in online courses (Shea, Li, Swan & Pickett, 2005).

Indeed, the body of evidence attesting to the critical importance of teaching presence for successful online learning continues to grow (Garrison & Cleveland-Innes, 2005; Meyer, 2003; Murphy, 2004; Swan & Shih, 2005; Vaughn & Garrison, 2006; Wu & Hiltz, 2004).

There is, however, some confusion about the elements of teaching presence. In his study of teaching presence and sense of community, Shea (2006) found that items developed to measure the three dimensions of teaching presence yielded a two factor solution he interpreted as *instructional design and organization* and *directed facilitation* (merging the instructor behavior dimensions of the construct). Conversely, in their study of MBA students' perceptions of teaching presence, Arbaugh and Hwang (2006) found support for the three-dimensional teaching presence construct. This and other issues surrounding the teaching presence construct will be discussed in greater detail later this chapter.

### *Summary*

Table 1 below summarizes the three presences in the CoI framework and their respective categories. It also gives examples of indicators of the presences and categories that have been used over the years to test the structure of the framework (Arbaugh & Hwang, 2006; Garrison, Cleveland-Innes and Fung, 2004; Shea, Li and Pickett, 2006), to explore various aspects and issues associated with online learning (Garrison & Arbaugh, 2007) as well as providing the inspiration for the development of a quantitative CoI questionnaire (Swan, Richardson, Ice, Garrison, Cleveland-Innes & Arbaugh, 2008).

ELEMENTS	CATEGORIES	INDICATORS
		(examples only)

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<b>Cognitive Presence</b>	Triggering Event	sense of puzzlement
	Exploration	information exchange
	Integration	connecting ideas
	Resolution	application
<b>Social Presence</b>	Affective Expression	self projection/expressing emotion
	Open Communication	trust/risk free climate
	Group Cohesion	collaboration/interactivity
<b>Teaching Presence</b>	Design & Organization	setting curriculum & activities
	Facilitating Discourse	shaping constructive exchange
	Direct Instruction	focusing & resolving issues

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Figure 3: CoI categories and indicators; (Garrison & Anderson, 2003)

#### Issues Related to the Community of Inquiry Framework

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As noted above, research on each of the presences that combine to form the CoI framework has revealed issues unique to them. Research on cognitive presence, for example, has found that inquiry revealed in online discussion rarely moves beyond the exploration phase (Garrison, Anderson & Archer, 2001; Kanuka & Anderson, 1998; Luebeck & Bice, 2005; Meyer, 2003; 2004; Murphy, 2004). Several explanations might account for such results; it might simply be that integration and resolution take place in other parts of online courses (e.g., essay assignments) or internally in learners' minds (Arnold & Ducate, 2006). Meyer (2003) suggests that sufficient time to reach these phases is not often available in online discussions. Recent research, however, suggests that moving inquiry through to integration and resolution, or the lack

thereof, is related to aspects of teaching presence (Garrison & Arbaugh, 2007). There is growing evidence that discussions organized around problem solutions, the production of artifacts, or the completion of tasks are more likely to move to resolution (Arnold & Ducate, 2006; Murphy, 2004), and that progression through inquiry requires direction from instructors or tutors (Vaughn & Garrison, 2005).

Most studies of social presence have noted the highly democratic nature of online discussion (Harasim, 1990; Kanuka & Anderson, 1998) and accordingly conceptualized social presence as a single construct with an emphasis on perceptions of the presence of peers. As noted above, there is some indication that instructor presence may be equally important (Swan & Shih, 2005). While the social presence of instructors has been considered in explorations of “teaching presence” (Anderson, Rourke, Garrison & Archer, 2000; Shea, Pickett & Pelz, 2003), it has not been isolated therein. In addition, while most studies of social presence implicitly locate its development in online discussion, survey questions have not explicitly addressed it in that context. Indeed, Richardson and Swan (2003) found strong correlations between perceived social presence and student satisfaction and perceived learning in a variety of course activities outside course discussions including such seemingly asocial activities as quizzes and tests, individual assignments, and lecture notes. Their findings may be yet another example of the overlap and interchange that exists between the presences. Finally, recent research on emotion in online learning suggests a principal role for acknowledgement and support of student emotion. Cleveland-Innes and Campbell (2006) define emotional presence as the extent to which learners and teachers transform their behavior to accommodate the overt and covert presence of emotion. While Garrison, Anderson and Archer (2000) suggest that emotional expression is a sub-



component of social presence, Cleveland-Innes and Campbell's research findings suggest that emotion plays a role in all three elements of the CoI model.

As noted previously, another issue that has arisen in the literature involves the categories associated with teaching presence. While some studies have confirmed the presence of three categories (Arbaugh & Hwang, 2006; Akyol & Garrison, in press), Shea, Li and Pickett (2006) conducted a large scale factor analysis that suggested a two factor solution was most interpretable. The two factors (i.e., categories) were labeled "design" and "directed facilitation." The second factor was clearly an amalgamation of facilitation and direct instruction. The question is whether this was simply contextual (e.g., these students could not distinguish between facilitation and direct instruction) or whether the structure of teaching presence needs revision. Although it is becoming clear as to the importance of teaching presence, much more empirical research in a variety of contexts is required to conclusively define the categories of teaching presence.

While the CoI framework holds great promise for bringing order and a theoretical base to research in online learning, there is obviously much work to be done before it can meet that promise. Perhaps most importantly, it needs to be kept in mind that the theoretical foundation of the CoI framework is that of a collaborative constructivist educational experience. As such, it is a dynamic model that is in constant search for balance among the presences. That is, the influence of each of the presences and their categories interact and shift over time, and across courses. Most research to date has concentrated on single presences in the CoI model, while its theoretical strength lies in the dynamics of the whole community. In particular, better understanding of evolving interactions among the CoI presences and their respective categories is needed. In addition, much of the CoI research has employed different measures and sometimes different

terminology, especially as regards the elements of social presence. Finally, with some important exceptions, the research has mostly involved single institutions and often single courses. Inter- and intra-institutional research is needed, both to validate the model as a whole and to make use of the model in a myriad of studies that could move online learning research significantly forward.

#### New Developments: The Community of Inquiry Instrument

To address some of the issues noted above and to move CoI research forward in many other ways, a group of CoI researchers from a variety of institutions and with expertise in the various components of the model collaborated in the development of a CoI survey instrument. The resulting instrument was adapted from measures group members had successfully used to measure individual presences in the CoI framework. It includes twelve items designed to measure cognitive presence (3 for triggering events, 3 for exploration, 3 for integration, and 3 for resolution), nine items designed to measure social presence (3 for affective expression, 3 for open communication and 3 for group cohesion), and thirteen items designed to measure teaching presence (4 for design and organization, 6 for facilitation of discourse, and 3 for direct instruction). In the summer of 2007, the survey was tested in graduate courses at four institutions located in the United States and Canada using principal component factor analysis and the three factor (presences) construct predicted by the CoI framework was supported (Swan, et al., 2008).

Results of the factor analysis provide evidence that, as currently defined and operationalized, an online community of inquiry emerges out of social, cognitive and teaching presence. Student responses to the survey's statements about their online experience clustered around items as defined by the theory. The results also validate a measurement tool of agreed upon and statistically confirmed items that operationalizes the concepts in the CoI model (Swan,

et al., 2008). This measurement tool may be used for continued explication of concepts in the model, and can serve as a ground for more qualitative investigations in mixed methods studies.

For example, a recent study by Akyol and Garrison (in press) attempted to understand how a community of inquiry changes over time. The authors employed content analysis to explore the dynamics of social presence as students' progressed through an online course. As expected, social presence was initially the most frequent type of response, but was over taken by cognitive presence by the end of the course. There were also changes in the relative frequencies of the social presence categories as the course progressed, with group cohesion responses gradually increasing and open communication and affective expression decreasing over time. Similarly, within teaching presence facilitation responses declined and direct instruction increased as the course progressed. Akyol and Garrison suggest that as open communication was established and group cohesion grew, there was less need or perhaps time for affective expression. The focus appeared to be on the task and so direct instruction and cognitive presence grew. It would also appear that as students adjusted to their roles they needed less encouragement and support.

This study was perhaps the first to employ the recently developed CoI instrument to measure the relationships among the three presences, students' satisfaction and perceived learning. The results showed significant relationships between teaching presence and cognitive presence ( $p=.001$ ); between teaching presence and perceived learning ( $p=.03$ ); between teaching presence and satisfaction ( $p=.011$ ), between cognitive presence and perceived learning ( $p=.007$ ); between cognitive presence and satisfaction ( $p=.009$ ), and between social presence and satisfaction ( $p=.038$ ) (Akyol & Garrison, in press). However, the analysis did not find a significant relationship between social presence and perceived learning. It is also worth noting

the concurrent rise of particular categories in each of the three presences. That is, group cohesion, integration and direct instruction responses all increased over the time of the course of study. The question is whether there is a reinforcing effect: Is it that group cohesion (i.e., social presence) and direct instruction (teaching presence) sets the stage for integration (cognitive presence)?

Evidence to this effect, and more insight into the lack of finding a relationship between social presence and perceived learning, has been provided by another new study using the CoI survey by Shea and Bidjermo (2008). Shea and Bidjermo (2008) used Structural Equation Modeling (SEM) to study the impacts of teaching and social presence on cognitive presence, all as measured by the CoI survey. The results of their analysis are shown graphically in Figure 3. They reveal that teaching and social presence together account for 70% of the variation in students' reported level of cognitive presence. However, the authors also found that the development of social presence was contingent on the establishment of teaching presence; that is, social presence did not in itself directly affect cognitive presence but rather served as a mediating variable between teaching presence and cognitive presence. This finding helps explain those of Akyol and Garrison (in press). Shea and Bidjermo concluded that the "teaching and social presence represent the processes needed to create paths to epistemic engagement and cognitive presence for online learners." (p. 14)

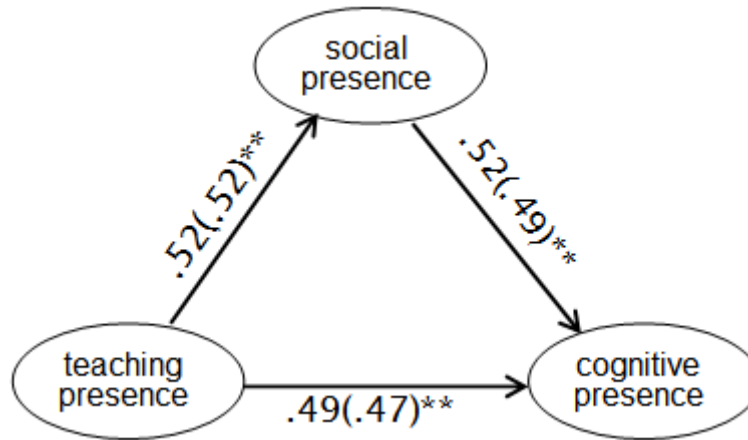


Figure 4: SEM Analysis of Effects of Social & Teaching Presence on Cognitive Presence; Detail adapted from Shea & Bidjeramo, 2008; “© 2008, Peter Shea. Used with permission.”

#### Future and Emerging Trends

As one might expect, several institutions have begun to look to the CoI framework as a development tool for their online courses (Shea, P., & Bidjeramo, T., 2008; Vaughan & Garrison, 2006). In general the CoI model, while considered valuable by researchers and practitioners alike, has not generally taken root at an institutional level for course development. With the validation of the framework and the development and validation of the CoI instrument (Swan, et al., 2008; Shea and Bidjermo, 2008) the framework can be more easily operationalized by developers and practitioners, especially those moving beyond the traditional online course format to a more constructivist one.

One of the fastest growing areas of non-traditional online learning is blended learning. As higher education institutions are looking at asynchronous online discussions as a means to increase students' higher order thinking skills and outcomes they often utilize blended learning environments. Traditionally blended learning environments have mirrored face-to-face teaching and learning, with the exception of having online discussions and using the online environment as a repository. However, several institutions have begun to look to the CoI framework as a

model for these blended learning environments (Garrison & Vaughan, 2008; Vaughan & Garrison, 2006). For example, in a work by Vaughan and Garrison (2006) the authors concluded that, “The key to creating a cohesive, purposeful and worthwhile community of inquiry is the integration of social, teaching and cognitive presence... Each of the three presences manifest themselves and evolve in different ways in a face-to-face or online context.” (p. 150)

As research continues on the CoI framework and how it can improve online courses, CoI research is also branching out into other environments. For example, a research group at Purdue University (Radcliffe, D., Strobel, J., Brophy, S & Richardson, J.C., personal communication, April 21, 2008) is looking to the CoI framework as a means for examining and categorizing virtual communities of practice, specifically communities using HUB-Zero technology. The hope is that the CoI framework will be able to serve as a tool for developing successful virtual communities of practice for discovery and learning.

Finally, the CoI framework is also being tied to other emerging online technologies that can help develop the presences within courses. For example, a recent study by Ice, Curtis, Philips & Wells (2007) looked at the effects of audio feedback from instructors embedded in student assignments to enhance teaching presence and learning. They found that audio feedback was associated with the perception that the instructor cared more about the student and that students were three times more likely to apply content for which audio commenting was provided in class projects than was the case for content for which text based commenting was provided. In two subsequent multi-institutional studies (n= 287, n=1138) employing the CoI survey, Ice (2008) found significant differences between students in courses in which embedded feedback and students in courses where it wasn't used that favored embedded feedback on three teaching presence items. Interesting, significant differences favoring embedded feedback were also found

on one social presence and two cognitive presence items as well, again providing evidence for the integration of the three presences conceptualized in the model.

### Conclusion

The CoI framework, stemming from Dewey's emphasis on collaborative constructivism and practical inquiry holds promise as a theoretical and practical model for online learning. At the heart of the CoI framework is the idea that community, critical reflection, and knowledge construction are integral to learning, especially learning online (Garrison & Archer, 2000, p. 91). Moreover, the CoI framework, based on the constructs of cognitive, social, and teaching presence, takes into account the various stakeholder groups involved in an online course (student, instructor, designer) and what each can do to make their course a successful learning experience.

To date, research related to the CoI framework has focused mostly on single presences instead of the framework as a whole. It has also focused on individual courses and institutions with few exceptions, but the research tells us that the influence of each of the presences and their categories interact and shift over time, and possibly across courses (e.g. disciplines, course level). As such, research needs to be conducted not only at an inter-and intra- institutional level but also across disciplines and course levels. Researchers have developed and validated a "common" CoI survey, which has in turn validated the CoI framework. The instrument not only allows for continued investigation of the constructs in the model (cognitive, social and teaching presence) but can also serve as an evaluation tool for online courses utilizing the model for development.

We are seeing the CoI framework evolve into a tool for environments outside of its original purpose, namely virtual communities of practice, blended learning environments, and as

a theoretical basis for tool development to strengthen the presences in online learning. Finally, current and future research in this area abounds, and with each new research study more is learned about the elements and components of the model, the shifts in CoI over time, and how the model can be used by and for practitioners developing online courses.



## References

- Akyol, Z., & Garrison, D. R. (in press). The development of a community of inquiry over time in an online course: Understanding the progression and integration of social, cognitive and teaching presence. *Journal of Asynchronous Learning Networks*.
- Anderson, T., Rourke, L., Garrison, D. R., & Archer, W. (2001). Assessing teaching presence in a computer conferencing context. *Journal of Asynchronous Learning Networks*, 5(2), 1-17.
- Arbaugh, J. B., & Hwang, A. (2006). Does “teaching presence” exist in online MBA courses? *The Internet and Higher Education*, 9(1), 9-21.
- Arnold, N., & Ducate, L. (2006). Future foreign language teachers' social and cognitive collaboration in an online environment. *Language, Learning & Technology*, 10(1), 42–66. Retrieved January 14, 2006 from <http://ilt.msu.edu/vol10num1/pdf/arnoldducate.pdf>
- Cleveland-Innes, M. & Campbell, P. (2006). *Understanding emotional presence in an online community of inquiry*. Paper presented at the 12<sup>th</sup> Annual SLOAN-C ALN Conference, Orlando, Florida.
- Danchak, M. M., Walther, J. B. & Swan, K. (2001). *Presence in mediated instruction: bandwidth, behavior, and expectancy violations*. Orlando, FL: Paper presented at the Seventh Annual Sloan-C International Conference on Online Learning.
- Dewey, J. (1933). *How we think* (rev ed.). Boston: D. C. Heath.
- Dewey, J. (1938). *Experience and education* (7<sup>th</sup> printing, 1967). New York: Collier.
- Dewey, J. (1959). My pedagogic creed. In J. Dewey, *Dewey on education* (pp. 19-32). New York: Teachers College, Columbia University. (Original work published 1897)
- Garrison, D. R. (2007). Online Community of Inquiry review: Social, cognitive and teaching presence issues. *Journal of Asynchronous Learning Networks*, 11(1), 61-72.
- Garrison, D. R., & Anderson, T. (2003). *E-Learning in the 21<sup>st</sup> century: A framework for research and practice*. London: Routledge/Falmer.
- Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education* 2: 87–105.
- Garrison, D. R., Anderson, T., & Archer, W. (2001). Critical thinking, cognitive presence and computer conferencing in distance education. *American Journal of Distance Education*, 15(1), 7-23.
- Garrison, D. R., & Arbaugh, J. B. (2007). Researching the community of inquiry framework: Review, issues, and future directions. *Internet and Higher Education*, 10(3), 157-172.
- Garrison, D. R., & Archer, W. (2000). *A transactional perspective on teaching-learning: A framework for adult and higher education*. Oxford, UK: Pergamon.
- Garrison, D. R., & Cleveland-Innes, M. (2005). Facilitating cognitive presence in online learning: interaction is not enough. *American Journal of Distance Education*, 19(3), 133–148.
- Garrison, D. R., Cleveland-Innes, M., & Fung, T. (2004). Student role adjustment in online communities of inquiry: Model and instrument validation. *Journal of Asynchronous Learning Networks*, 8(2), 61-74. Retrieved August 13, 2005, from [http://www.sloan-c.org/publications/jaln/v8n2/pdf/v8n2\\_garrison.pdf](http://www.sloan-c.org/publications/jaln/v8n2/pdf/v8n2_garrison.pdf)
- Garrison, D. R., & Vaughan, N. (2008). *Blended learning in higher education*. San Francisco:

Jossey-Bass.

- Gunawardena, C. (1995). Social presence theory and implications for interaction and collaborative learning in computer conferencing. *International Journal of Educational Telecommunications*, 1(2-3), 147 – 166.
- Gunawardena, C. & Zittle, F. (1997). Social presence as a predictor of satisfaction within a computer mediated conferencing environment. *American Journal of Distance Education*, 11(3), 8-26.
- Harasim, L. (1990). *On-line Education: Perspectives on a New Environment*. New York: Praeger.
- Ice, P. (2008). *The impact of asynchronous audio feedback on teaching, social and cognitive presence*. Paper presented at the 2008 Conference of the Canadian Network for Innovation in Education, Banff, Alberta, Canada.
- Ice, P., Curtis, R., Philips, P. & Wells, J. (2007). Using asynchronous audio feedback to enhance teaching presence and students' sense of community. *Journal of Asynchronous Learning Networks*, 11(2). Retrieved May 6, 2008, from [http://www.sloan-c.org/publications/JALN/v11n2/v11n2\\_ice.asp](http://www.sloan-c.org/publications/JALN/v11n2/v11n2_ice.asp)
- Jiang, M. & Ting, E. (2000). A study of factors influencing students' perceived learning in a web-based course environment. *International Journal of Educational Telecommunications*, 6(4), 317-338
- Kanuka, H., & T. Anderson. (1998). Online social interchange, discord, and knowledge construction. *Journal of Distance Education* 13 (1), 57–75.
- Lipman, M. (1991). *Thinking in education*. Cambridge: Cambridge University Press.
- Luebeck, J. L., & Bice, L. R. (2005). Online discussion as a mechanism of conceptual change among mathematics and science teachers. *Journal of Distance Education*, 20(2), 21–39.
- Meyer, K. A. (2003). Face-to-face versus threaded discussions: The role of time and higher-order thinking. *Journal of Asynchronous Learning Networks*, 7(3), 55-65.
- Meyer, K. A. (2004). Evaluating online discussions: Four different frames of analysis. *Journal of Asynchronous Learning Networks*, 8(2), 101-114.
- Murphy, E. (2004). Identifying and measuring ill-structured problem formulation and resolution in online asynchronous discussions. *Canadian Journal of Learning and Technology*, 30(1), 5-20.
- Richardson, J. C. & Swan, K. (2003). Examining social presence in online courses in relation to students' perceived learning and satisfaction. *Journal of Asynchronous Learning Networks*, 7(1), 68-88.
- Picciano, A. G. (2002). Beyond student perceptions: Issues of interaction, presence and performance in an online course. *Journal of Asynchronous Learning Networks*, 6(1), 21-40.
- Rourke, L., Anderson, T. Garrison, D. R., & Archer, W. (1999). Assessing Social Presence in Asynchronous, Text-Based Computer Conferencing. *Journal of Distance Education*, 14, (3), 51-70.
- Rourke, L., Anderson, T., Garrison, D. R. & Archer, W. (2001). Assessing social presence in asynchronous text-based computer conferencing. *Journal of Distance Education*, 14(2), 50-71.
- Shea, P. (2006). A study of students' sense of learning community in online environments. *Journal of Asynchronous Learning Networks*, 10(1), 35-44.
- Shea, P., Li, C., Swan K., Pickett, A. (2005) Developing Learning Community in Online Asynchronous College Courses: The Role of Teaching Presence. *Journal of Asynchronous Learning Networks*, 9(4). Retrieved May 1, 2008 from: [http://www.sloan-c.org/publications/jaln/v9n4/v9n4\\_shea.asp](http://www.sloan-c.org/publications/jaln/v9n4/v9n4_shea.asp)

- Shea, P. J., Pickett, A. M. & Pelz, W. E. (2003). A follow-up investigation of “teaching presence” in the SUNY Learning Network. *Journal of Asynchronous Learning Networks*, 7(2), 61-80.
- Shea, P., & Bidjeramo, T. (2008). *Community of inquiry as a theoretical framework to foster “epistemic engagement” and “cognitive presence” in online education*. Paper presented at the Annual Meeting of the American Educational Research Association, New York, March.
- Shea, P., Li, C.S., & Pickett, A. (2006). A study of teaching presence and student sense of learning community in fully online and web-enhanced college courses. *The Internet and Higher Education*, 9(3), 175-190.
- Short, J., Williams, E., & Christie, B. (1976). *The Social Psychology of Telecommunications*. Toronto: Wiley.
- Swan, K., Shea, P., Fredericksen, E., Pickett, A., Pelz, W. & G. Maher (2000). Building knowledge building communities: consistency, contact and communication in the virtual classroom. *Journal of Educational Computing Research*, 23(4): 389-413.
- Swan, K. (2002). Building communities in online courses: the importance of interaction. *Education, Communication and Information*, 2(1), 23-49.
- Swan, K. (2003). Developing social presence in online discussions. In S. Naidu (Ed), *Learning and Teaching with Technology: Principles and Practices*. London: Kogan Page, 147-164.
- Swan, K., & Shih, L-F. (2005). On the nature and development of social presence in online course discussions. *Journal of Asynchronous Learning Networks*, 9 (3), 115-136.
- Swan, K., Richardson, J.C, Ice, P., Garrison, D. R., Cleveland-Innes, M., & Arbaugh, J. B. (2008). Validating a measurement tool of presence in online communities of inquiry. *E-Mentor*, 2(24), 1-12.  
[http://www.e-mentor.edu.pl/e\\_index.php?numer=24&all=1](http://www.e-mentor.edu.pl/e_index.php?numer=24&all=1)
- Tu, C. H. (2000). On-line learning migration: From social learning theory to social presence theory in CMC environment. *Journal of Network and Computer Applications*, 23(1), 27–37.
- Tu, C-H. & Mclsaac, M. (2002). The relationship of social presence and interaction in online classes. *The American Journal of Distance Education*, 16(3), 131–150.
- Vaughan, N., & Garrison, D. R. (2006). How blended learning can support a faculty development community of inquiry. *Journal of Asynchronous Learning Networks*, 10(4), 139-152.
- Walther, J. (1994). Interpersonal effects in computer mediated interaction. *Communication Research*, 21(4), 460-487.
- Wegerif, R. (1998). The social dimension of asynchronous learning networks. *Journal of Asynchronous Learning Networks*, 2(1), 34-49.
- Weiner, M. & Mehrabian, A. (1968). *Language Within Language: Immediacy, a Channel in Verbal Communication*. New York: Appleton-Century-Crofts.
- Wu, D., & Hiltz, S. R. (2004). Predicting learning from asynchronous online discussions. *Journal of Asynchronous Learning Networks*, 8(2), 139–152.