

Cognitive Presence in Online Learning

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ABSTRACT

THE PURPOSE OF THIS STUDY was to advance understanding of how to facilitate higher levels of learning when using asynchronous text-based Internet communication technology. The framework used to guide this study is based on the community of inquiry model developed by Garrison, Anderson, and Archer (2000). Crucial methodological constructs congruent with this model and higher order learning were identified. They are discourse, collaboration, management, reflection, monitoring, and knowledge construction. Using a focus group interview, the results of this study reveal that these methodological constructs are consistent with, and supportive of, the facilitation of higher levels of learning in an asynchronous text-based Internet environment. (*Keywords: online learning, higher levels of learning, critical thinking, methodological constructs, community of inquiry*)

INTRODUCTION

THE WIDESPREAD ADOPTION OF THE INTERNET into the learning process has made the concept of “online learning” commonplace in many, if not most, higher education institutions around the world. There has been much speculation that the integration of asynchronous Internet technology is reshaping higher education in significant ways (Imel, 2001). An examination of the current literature reveals much discussion about the ability of Internet communication tools to facilitate critical, creative, and complex thinking skills in this postindustrial era of technologically enhanced higher education. The nature of asynchronous Internet communication technology may be such that high levels of thinking, such as critical thinking, can be facilitated; but online written communication is a very different type of learning experience than face-to-face.

To date there have been few empirical studies on the use of asynchronous text-based Internet communication technologies and their ability and/or effectiveness to facilitate higher levels of learning. Even if it is shown that asynchronous Internet communication technology can engender higher levels of learning, much remains to be understood about implementing online learning activities that facilitate the development of a meaningful and worthwhile educational experience. In particular, many learning strategies that are effective at facilitating higher levels of learning in face-to-face environments do not translate as effectively to an asynchronous text-based Internet environment. For example, in face-to-face contexts, educators have hailed small group discussions as the instructional method “par excellence,” for its ability to facilitate critical thinking (Brookfield, 1990). However, emerging empirical research reveals that online discussions do not necessarily support higher levels of learning. The most likely reason for this appears to be a lack of understanding about how communities of learners are formed online, and how interactions that result in higher levels of learning are designed for and facilitated in online learning activities.

Empirical research indicates that the use of group discussions can often result in keeping both instructors and learners in their comfort zones, resulting in missed opportunities to expand learners' thinking and learning in significant ways (Collette, Kanuka, Blanchette, & Goodale, 1999). Similarly, research also indicates that online discussions typically result in a trivialized (e.g., sharing, comparing, and agreeing) group conversation (Klemm & Snell, 1996). Thus, while online discussions have considerable potential to facilitate higher learning (Garrison & Anderson, 2003), they are, in and of themselves, not necessarily effective at supporting critical, creative, and complex thinking skills. If higher levels of learning are to be achieved in online environments, there is a need to expand our perspectives of teaching and learning beyond the "sharing and comparing" of opinions in online group discussions. Learners must be provided opportunities to not only discuss what they have learned, but also apply what they have learned. This requires that educators possess knowledge of and skills in the use of educational methods and learning strategies, as well as an understanding of how to use Internet communication media as a learning and teaching platform. Many postsecondary educators who use Internet communication media in the learning process do not have such knowledge and skills, and they could benefit from using a framework that guides them in facilitating higher levels of online learning.

THEORETICAL FRAMEWORK: COMMUNITY OF INQUIRY

THE FRAMEWORK used to guide this study is based on the theory of community of inquiry developed by Garrison, Anderson, and Archer (2000). This framework identifies the elements that are crucial prerequisites for successful higher educational experiences. Effective educational experiences are embedded within a community of inquiry, comprised of teachers and students. An assumption underpinning this theory is that effective learning—or ac-

tivities that facilitate higher learning—occurs within a community and the interaction of three core elements: social presence, cognitive presence, and teaching presence. When text-based asynchronous Internet communication—or commonly referred to as “online learning”—is used for educational purposes in higher education settings, it is possible to create a community of inquiry and higher levels of learning.

The element in this model that is central to successful higher education learning experiences is cognitive presence. Cognitive presence is the extent to which learners are able to construct meaning through sustained communication. Moreover, cognitive presence is the key element in critical thinking, a necessary element for higher levels of thinking and learning. Social presence, a second core element of the model, is the ability of the students to project their personal characteristics into the community. The importance of this element is to support cognitive presence through indirect facilitation of critical thinking carried on by the community of learners. Teaching presence is comprised of two functions: the design of the educational experience and facilitation of the learning activities. This element reflects the creation, integration, and facilitation of both cognitive and social presence.

While cognitive and social presence are essential elements in the facilitation of higher levels of learning, whether or not it is achieved depends on the presence of a teacher or facilitator of the learning activities. When online learning is ineffective, it is usually because there has not been effective teaching presence with appropriate leadership and direction by the facilitator (Hiltz & Turoff, 1993). While it is clearly possible to create and sustain a teaching presence in an online environment, the nature of Internet communication technologies presents unique challenges to the development of an *effective* teaching presence. Moreover, student activity is influenced by the instructor's behavior. Indeed, research reveals that the presence of an instructor who models critical discourse and offers constructive critiques is crucial to facilitating higher learning in online settings (Fabro & Garrison, 1998).

There are educational methods that can be facilitated in an online environment that influence cognitive presence. These methods include designing and delivering learning strategies that account for effective amounts of content dissemination, moderation style, group size, and that skillfully capitalize on specific characteristics of Internet communication media. An example of capitalizing on a particular characteristic of Internet communication technology includes the frequency and time lag between postings, which provides learners opportunities for reflection.

While critical discourse in face-to-face settings is generally an accepted learning strategy that supports higher levels of learning (such as critical thinking), it is not entirely clear how to support critical discourse in online environments. What we do know, however, is that creating the conditions to facilitate higher learning in text-based environments is vague and largely based on tacit knowledge. There is little guidance as to learning strategies that can create and sustain the conditions necessary to facilitate higher levels of learning in an online environment. Further research to extend our knowledge of online learning transactions that result in meaningful and worthwhile learning outcomes is becoming critical.

Using the practical inquiry model (Garrison & Anderson, 2003), we argue that cognitive presence is necessary for higher learning, such as critical thinking. A higher level of learning is a holistic multibased process that is associated with a triggering event. The triggering event is followed by perception, deliberation, conception, and warranted action. Figure 1 illustrates the relationships among the elements of cognitive presence.

As Figure 1 illustrates, critical thinking is not solely a reflective, personal, and internal process. Rather, it is an iterative relationship between the personal and shared worlds. Specifically, worthwhile learning experiences should consider the student's personal world (reflective and meaning focused), as well as the shared world (collaborative and knowledge focused). This reflects a collaborative constructivist perspective on teaching and learning (Garrison & Archer, 2000) emphasizing the construction of meaningful and worth-

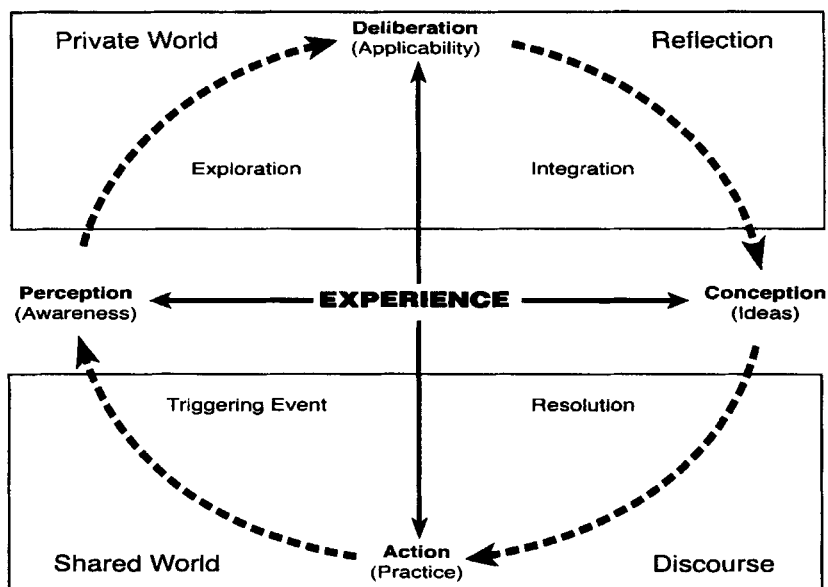


Figure 1. Practical inquiry model for cognitive presence (adapted from Garrison et al. *The Internet and Higher Education*, 2(2-3), 1-9.

while knowledge, and it is seen as an essential aspect of cognitive development.

The first category of cognitive presence illustrated in the model (lower left quadrant) is a state of dissonance or feeling of unease resulting from an experience. This category is described as a triggering event and the indicator is a sense of puzzlement. The second category (upper left quadrant) is that of exploration in a search for information, knowledge, and alternatives that might help to make sense of the problem. This is where there is an extensive search and exchange of information. The third category (upper right) is associated with connecting ideas and integrating the information and knowledge into a coherent concept. The fourth category is the resolution of the issue or problem and the application of the ideas or solution.

Using the practical inquiry model for cognitive presence (see Figure 1), we identify three external and three internal methodological constructs essential to create cognitive presence for the purpose of facilitating higher levels of learning. More recently, educational

literature has focused on the assumption that a worthwhile learning experience must consider the learner's personal world (internal) as well as the shared world (external) (Garrison, Anderson, & Archer, 2000). The external constructs identified here are *discourse*, *collaboration*, and *management*, while the internal constructs are *reflection*, *monitoring*, and *knowledge*. The question, however, is how can these constructs and associated activities be used to facilitate higher learning in an online environment?

Using this theoretical framework, the purpose of this study was to advance an understanding of learning strategies that facilitate higher levels of learning when using asynchronous text-based Internet communication technology.

FOCUS GROUP

A FOCUS GROUP INTERVIEW was used to collect data. Focus groups can be used for exploration and confirmation, both of which were aims of this study. As such, a focus group interview was deemed the most appropriate method.

The focus group interviews were designed to stimulate an in-depth exploration of learning strategies that can facilitate learning in an online environment. The group interview was structured using the practical inquiry model for cognitive presence (see Figure 1). The interview process was guided by the three external and the three internal methodological constructs considered to be essential to create cognitive presence and facilitate higher learning. Table 1 provides a list of the internal and external constructs, as well as descriptions of each.

The group interview began with the presentation of the constructs to the focus group participants (see Table 1). Participants were then asked to consider the following two questions: (a) Do you agree with the constructs presented? (probe: if not, why not?); (b) What strategies can be applied that facilitate higher levels of learning when using asynchronous text-based Internet communication technology? It was

Table 1.
Internal and External Methodological Constructs

	Construct	Brief Description
External	Discourse	Meaningful understandings created in the learning process should proceed through a guided reasoned discourse, rather than intuition.
	Collaboration	Interactive participation can be described as the use of interactive participation learning strategies to facilitate active intellectual participation between the learners, the instructors, and the subject matter.
	Management	Teachers and learners should take control of learning tasks to ensure expectations are realized and that activities are meaningful, authentic, and challenging.
Internal	Reflection	Learning should be characterized by thoughtful mediation or contemplation that uses the powers of the mind to conceive ideas and/or draw inferences resulting in the expression of carefully considered thought expressed through critical dialogue.
	Monitoring	Learners need to metacognitively evaluate their abilities, assess the task at hand, and determine where to focus their efforts to make the learning process personally meaningful.
	Knowledge	The learning process should require learners to compare, classify, induce, deduce, analyze, abstract, synthesize, and evaluate to make sense of the data or information presented.

also indicated that consensus was not required or necessary and the constructs were open to additions or deletions. By providing focus group members an environment in which they could consider their own views in the context of the other group members, we hoped to gain insight about the conditions for facilitating the constructs.

PARTICIPANTS

The focus group was comprised of ten carefully selected, well-informed and experienced individuals from a large research-based

university in Western Canada who had the potential to provide insights about facilitating the teaching and learning process in a text-based asynchronous Internet environment. A requirement to be a group member was related education (such as a Masters degree in Instructional or Educational Technology) and related experience in facilitating online instruction in a higher education setting.

FINDINGS

THE FOCUS GROUP INTERVIEW proved to be an effective method for this study. In particular, the group interview was a convenient way to accumulate the individual knowledge of group members, which resulted in insights that would have been difficult to obtain with other research methods. The group interview for this study provided a forum for the respondents to react to, and build upon, the responses of other group members. In a prior study on which this investigation builds (Kanuka, 2002), a survey instrument did not yield the data that resulted from the synergistic effect of the focus group setting. The themes from the focus group interview emerged as relatively consistent, with similar shared views between group members on the topic of strategies that facilitate higher levels of learning. All focus group participants agreed that the constructs represented the necessary elements to facilitate higher learning. While some divergence of opinion occurred between individual group members, there was overall consensus regarding the strategies that can be used to facilitate learning. The following discussion provides a broader description of the findings for learning strategies on each of the constructs presented to the focus group participants.

DISCOURSE

For this construct, the focus group participants agreed that if online discourse is to be effective, then instructors must take an active role and assist, or guide, the discussions. One example provided for how to achieve this was through posing questions of emerging relevance.

If relevance is not integrated into the discussion, as was noted by a participant, learners just want to compare and contrast (i.e., just post comments for visibility or marks) and not engage in the difficult process of constructing knowledge. Another focus group participant stated that sustainability is a problem. In particular, when an instructor enters the online discussion there is a tendency to stop the discussion. Alternatively, when instructors only observe the discussion, students tend to accuse them of “*not being there*”—due to the lack of visual presence in online learning environments. Similarly, an observation was also shared that postsecondary instructors tend to have a rather formal writing style, as opposed to conversational styles in face-to-face classroom settings. Many learners can be “*put off*” by the formality of the instructor’s responses.

Discourse is most often used when the instructor has a specific pedagogical objective and usually wants to explore the nature of a complex problem followed by investigating alternative solutions. According to Brookfield (1990), guided discourse is often viewed as the most effective instructional method available to adult educators; this view is in keeping with the focus group data. There are a variety of reasons why this is considered to be an effective method, which include its ability to be inclusive, democratic, respectful of learners, as well as its ability to facilitate problem solving skills, concept exploration, and attitude change (Brookfield, 1990).

The literature on how successful discourse is facilitated in face-to-face settings has argued that the effectiveness rests on whether or not instructors have the necessary skills to guide and moderate the discussion. According to Taylor, Marienau, and Fiddler (2000), if the discourse is too global and abstract, learners will give unoriginal and standard type responses. To avoid this, Brookfield (1989) argues that instructors should require learners to reflect on their experiences, using a “critical incident” (e.g., case history) format followed with discussion in order to explore new meanings. According to Taylor et al. (2000), also problematic for many instructors trying to facilitate guided discourse is finding the right level of difficulty with learners who have “similar levels of maturity and responsibility, though they need

not be matched with regard to depth of knowledge or experience” (p. 303). In addition, instructors must ensure there is sufficient time to develop momentum (which is required for higher levels of learning), followed by bringing closure with resolution. Thus, to be effective—as well as to guard against inattentive participants or those unwilling or unable to participate fully and contribute equally—instructors need to design discourse where the purpose is clearly articulated with accountability and assessable outcomes. “Learners need to know in advance the criteria for a quality discussion so they can assess how well they are accomplishing the goal. This means carefully articulating demonstrable results that can be used as criteria” (Taylor et al., 2000, p. 303).

The literature on facilitating online discourse reveals comparable findings. For example, comparative studies by Hiltz, Johnson, and Turoff (1986) report similar outcomes and quality in online versus face-to-face discussions. Research has also revealed that online discourse suffers from many of the same problems as face-to-face discussions. A study by Phillips, Santoro, and Kuehn (1988), for example, found that online discourse is often ineffective because of the instructors’ inability to moderate. This brings attention back to the need for instructors to acquire the necessary skills and knowledge to facilitate discourse, whether face-to-face or online. Sufficient research has revealed that an instructor with moderating skills can provide opportunities to support reasoned discourse and sustain critical dialogue in online learning environments.

COLLABORATION

The focus group participants agreed that interactive participation can be effectively facilitated through the use of asynchronous text-based Internet communication software (e.g., WebCT and FirstClass) and group work. Comments revolved around the belief that collaborative group project work should be in small online group discussion forums, where students can generate solutions, share and critique each others’ proposed resolutions, prioritize solutions, and make collaborative judgments.

These views are in agreement with research indicating that one of the most effective means to facilitate higher levels of learning is through collaborative group processes where learners are required to think critically, creatively, and integratively (Klemm & Snell, 1996). Studies reviewed by Chambers (1992) in the area of learning theory indicate that, in general, learners learn faster and retain more if they collaboratively interact. Research by Gokhale (1995) revealed that collaborative learning facilitates higher levels of learning, and in particular, critical thinking. Zirkin and Sumler (1995) conducted a major review of literature on the use of computers in distance education and arrived at the same conclusion. Their review also revealed that interactivity was a common element to learner success. Specifically, "the more interactive the instruction, the more effective the outcome was likely to be" (Zirkin & Sumler, 1995, p. 100). They further identified the key ingredients with the interaction as (a) the availability of the instructor, whether face-to-face or through computer mediated communication, and (b) the intellectual engagement of the student with the content.

MANAGEMENT

Focus group members agreed that establishing where to focus efforts—or engage in self-management—can be effectively facilitated through online collaborative projects where students take increased control of learning activities. Another example provided by a focus group member suggested students develop an online group project and present the project to the larger community where their feedback guides them in their assessment of where their efforts need to be focused. It must be noted, though, that one participant cautioned that the planning process should be more specific in the online classroom and goals and objectives need to be articulated in a clear and concise fashion.

The literature on self-management of online group learning is in agreement with these suggestions. Jones, Valdez, Nowakowski, and Rasmussen (1996), for example, maintain that collaborative learners need to articulate their ideas and be able to identify not only their

own strengths, but also those of others. They also need to define the learning goals and have a holistic view of how their activities will relate to these goals. Likewise, Jonassen, Peck, and Wilson (1999) argue that the Internet's easily accessible and vast resource base offers self-regulated learners an unparalleled source for information. Moreover, "the intentionality is enhanced when a group of learners is committed to the same goals There are a number of projects that have maintained students' focus by supporting collaborative meaning making among groups of learners" (Jonassen et al., 1999, p. 37).

REFLECTION

All focus group members agreed that requesting learners to reflect using online conferencing software encourages many learners to express their views and opinions carefully. Specifically, asynchronous text-based Internet conferencing software results in reflective deliberation because of the posting's permanency and availability for others to view, refer to, and quote.

Laurillard (2002) and others (e.g., Garrison & Archer, 2000; Garrison & Anderson, 2003) have articulated the need for reflective deliberation in academic learning. According to Laurillard, there are two ways to construct knowledge: through experiencing phenomena (real life experiences) and through reflecting on abstracted phenomena (academic knowledge). If the process of knowledge construction is to be effectively facilitated through academic knowledge, it must be meaningful to the learners; information is made meaningful through reflecting on the relevance to one's world. Yet it is impossible for most instructors to present learners with unique and personally relevant phenomena that are grounded in each learner's world. Given these constraints, instructors typically present information through rhetorical discourse and text (descriptions of phenomena). In turn, learners must then be able to reflect on the abstracted material presented and make it relevant to their own worlds. To do this, learners must be able to generalize and transfer abstracted information, act on it, and then reflect on their actions. Their reflections must be articulated through language and presented for reasoning, evaluation, feed-

back, and improvement. Hence, both teaching and learning are rhetorical activities.

Based on this argument, the process of meaning making in academic environments must be about how to conduct reflective rhetorical activities, which requires skill in using language effectively and persuasively. Instructors must begin this process by using language in ways that help their learners make meaningful relationships between their worlds and the material presented. When abstracted phenomena are presented using language that is effective and persuasive, it facilitates the relevancy, thereby creating the conditions for learners to make meaning of the information presented. Alternatively, learners must be able to clearly articulate their position, arguments, and interpretation—or reflectively deliberate—on the phenomena presented.

MONITORING

The focus group participants determined that self-assessment, in collaboration with the instructor, can facilitate the process of setting standards of excellence. Rubrics were suggested as an effective strategy to facilitate self-assessment. In formal and credentialed settings, a rubric is often constructed as an instructor-led self-assessment tool (Jonassen et al., 1999). Essentially a rubric is a self-assessment tool that is particularly effective in evaluating criteria that are complex and subjective, and it can be an important tool for effectively facilitating self-assessment. In specific terms, a rubric is a carefully designed ratings chart that is drawn up jointly by the instructor, learners, and, when possible, practitioners.

Taylor et al. (2000) describe the self-assessment process as involving “a range of different practices in which learners take responsibility for making their own judgments about their work” (p. 64). Typically, the process requires learners to work in collaboration with their instructor, practitioners, and peers; isolated and individual evaluation exercises do not foster self-assessment skills.

The benefits of self-assessment have been cited as an active approach that involves the learners in understanding and formulating the criteria used for judgment which, in turn, improves the quality of

learners' work and, more importantly, helps learners to assume greater responsibility for their own learning. The rationale supporting this assumption is that "learners engage in the process of questioning what counts as good work, thus becoming involved with deeper questions" (Taylor et al., 2000, p. 65). According to Boud (1995), self-assessment can be used to self-monitor and check process, promote good learning practices (learn how to learn), self-diagnose and self-remediate, practice alternatives to other forms of assessment, improve professional or academic practice, consolidate learning over a range of contexts, review achievements as a prelude to recognize prior learning, and achieve self-knowledge and understanding.

It is important to mention that some participants had concerns with having learners set standards of excellence. These concerns are in keeping with the literature on self-directed assessment. Crowe (2000), for example, cites three major ethical issues in assessment of this nature: (1) learner readiness, (2) evaluation credibility, and (3) power issues. To resolve these issues, Crowe suggests a middle ground that combines traditional assessment techniques with self-directed assessment techniques, such as triangulated assessment.

KNOWLEDGE

Focus group participants noted that it is important for learners to make sense of information presented, or to "construct knowledge." How best to facilitate this resulted in a suggestion to have students extrapolate data to design additional experiments and test hypotheses from the initial data. This was confirmed by other group members who expressed that from the day we are born, we continuously seek to make sense of what goes on around and within us. According to Taylor et al. (2000), as we grow, this meaning making process takes on more complex forms including testing conclusions, making judgments, examining feelings, exploring perspectives, assigning significance to ideas, and noticing the importance of what had seemed inconsequential. Bruner (1990) maintains that we make sense of our environment from experiencing phenomena and interpreting those experiences based on what we already know, reasoning from them,

and reflecting on the experiences and the reasoning. As such, an essential aspect of meaning making is to critically reflect on the process of meaning making itself.

CONCLUSION

THE PURPOSE OF THIS STUDY was to advance understanding of how to facilitate higher levels of learning with asynchronous text-based Internet communication technology. The primary goal was to structure and explore external (*discourse, collaboration, and management*) and internal (*reflection, monitoring, and the construction of knowledge*) constructs. The results of this study reveal that the identified methodological constructs are consistent with the facilitation of higher levels of learning in online settings. We suggest that combinations of internal and external constructs are important and even necessary for higher levels of learning.

The focus group interview used in this study proved to be a powerful way to collect data and gain insights into the complex issues of facilitating higher levels of learning. However, it needs to be stressed that while interviewing a group of experts on a focused topic provided insights to advance our understandings on this complex phenomena, the focus group members do not represent feedback from a randomly selected population. As such, the conclusions drawn from this investigation should not be generalized to other, larger populations. There is a need to further investigate these results with a larger and more diverse group of participants.

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