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Learning presence: Towards a theory of self-efficacy, self-regulation, and the development of a communities of inquiry in online and blended learning environments

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ABSTRACT

In this paper we examine the Community of Inquiry framework (Garrison, Anderson, & Archer, 2000) suggesting that the model may be enhanced through a fuller articulation of the roles of online learners. We present the results of a study of 3165 students in online and hybrid courses from 42 two- and four-year institutions in which we examine the relationship between learner self-efficacy measures and their ratings of the quality of their learning in virtual environments. We conclude that a positive relationship exists between elements of the CoI framework and between elements of a nascent theoretical construct that we label "learning presence". We suggest that learning presence represents elements such as self-efficacy as well as other cognitive, behavioral, and motivational constructs supportive of *online learner self-regulation*. We suggest that this focused analysis on the active roles of online learners may contribute to a more thorough account of knowledge construction in technology-mediated environments expanding the descriptive and explanatory power of the Community of Inquiry framework. Learning presence: Towards a Theory of Self-efficacy, Self-regulation, and the Development of a Communities of Inquiry in Online and Blended Learning Environments.

1. Introduction

Online education continues to grow and is playing and increasingly significant role in US higher education. Recent research indicates that more 4 million higher education learners, i.e. 25% of all college students, are enrolled in at least one online course (Allen & Seaman, 2010) This represents an increase of more than 100% from just four years ago. In addition to this rapid growth, research is beginning to emerge indicating that online education has transcended the "no significant difference" phenomena. For more than a decade the accepted wisdom has been that online education and its predecessor, "distance learning" resulted in no significant difference relative to learning outcomes achieved through classroom instruction. Reviews of the literature comparing distance education and classroom learning concluded overall the two forms were equivalent. In 2005 however, Zhao et al.'s investigated the "heterogeneity" of empirical results and began to identify the conditions under which distance and online education resulted in better outcomes (Zhao, Lei, Yan, Lai, & Tan, 2005). Perhaps the most interesting of these conditions was "publication year" with an increasing number of studies after 1998 revealing advantages for the online format. Zhao et al. concluded that this finding suggested that the two-way interaction allowed by Internet-based online applications of distance learning provided advantages that previous technological affordances had not. Zhao et al. also concluded that studies in which instructor interaction with students was medium to high resulted in better learning outcomes for online students relative to classroom learners.

These results were confirmed in 2009 by Means et al.'s in a comprehensive meta-analysis of the online education empirical literature. These researchers conducted an exhaustive search and identified 1132 studies that compared online and face-to-face conditions, and filtered through these to locate the most rigorous studies employing experimental and quasi-experimental research designs (Means, Toyama,

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Murphy, Bakia, & Jones, 2009). Applying these criteria the authors conducted an analysis of the 56 most rigorous studies of online education that they identified. Findings indicated that learners in online settings significantly outperformed their peers in traditional classrooms and provided added insights into the conditions under which this online learning advantage holds true. While the main findings of Means et al. were that blended applications in which online and face-to-face learning were combined resulted in the largest benefits, details regarding specific pedagogies that accounted for advantages of blended learning were not described. Simply combining online and face-to-face instruction is clearly not a recipe for consistently improving the performance of students in higher education. However, within the Means et al. study was a much more actionable finding. Reviewing studies that investigated elements of online learner self-regulation (e.g., Bixler 2008; Chang, 2007; Chung, Chung, & Severance, 1999; Cook, Dupras, Thompson, &. Pankratz, 2005; Crippen & Earl, 2007; Nelson, 2007; Saito & Miwa, 2007; Shen, Lee, & Tsai, 2007; Wang, Wang, Wang, & Huang, 2006) the authors concluded that all the studies converged on advantageous outcomes for providing support for "metacognitive" learning strategies including self-reflection, self-explanation, and self-monitoring. These positive findings for online learner self-regulation represent fertile ground for the development of a comprehensive explanatory model for understanding the potential benefits of online instruction, a task to which we now turn.

2. Review of literature

2.1. Communities of inquiry

A powerful perspective informing an explanatory model of technology-mediated instruction is discussed by Larreamendy-Joerns and Leinhardt (2006) and referred to as "epistemic-engagement", i.e. learner commitment to active group knowledge building. In this view the potential for online learning reflects processes of participatory practice, with designs that gradually assist learners to develop the language and skills of a disciplinary discourse community. In much the same way that historians, sociologists, and physicists must learn the language and conventions of their various intellectual enterprises, learners participating in an epistemic engagement model are inducted into the traditions of their area of study, appropriating its language and conventions through group investigation of the important questions and themes of the discipline. In this conception, online environments support knowledge construction through social interaction and negotiation of meaning largely through asynchronous communication. This dialogic pedagogical approach reflects a social constructivist epistemology (Vygotsky, 1978) in which text-based interaction serves as the means for collaborative knowledge construction. While research in this area is promising (e.g., Arbaugh, 2007; Correia & Davis, 2008; Liu, Magjuka, Bonk, & Lee, 2007; Moore, 2008; Wise, Duffy, & Padmanabhan, 2008) Larreamendy-Joerns and Leinhardt warn us that networked interaction per se is insufficient to the development of a community of active, self-regulated, and reflective learners. This is an important caveat, which has been addressed in the Community of Inquiry (CoI) framework (Garrison, Anderson, & Archer, 2000; Garrison, Anderson, & Archer, 2001), a model devoted specifically to the goal of supporting epistemic engagement.

Accommodating Larreamendy-Joerns and Leinhardt's (2006) caution about the insufficiency of interaction to promote the development of online learning communities, the CoI framework attempts to articulate the social, technological, and pedagogical processes that engender collaborative knowledge construction. It therefore represents an effort to resolve the greatest challenge to the quality of online education raised by Larreamendy-Joerns and Leinhardt in the epistemic engagement approach, dialogic pedagogy: "… successfully orchestrating a dialogue demands fairly sophisticated skills. Conversational contributions need to be simultaneously parsed according to their disciplinary value, their location within the chain of collective argumentation, their relevance to the instructional goals, and their role as indicators of the student's ongoing understanding. The outcome of this complex appraisal is a sense of the amount and quality of the guidance that specific contributions and the conversation as a whole require to support learning." (Larreamendy-Joerns & Leinhardt, p. 591)

The CoI Framework focuses on the intentional development of an online learning community with an emphasis on the processes of instructional conversations that are likely to lead to epistemic engagement. The model articulates the behaviors and processes required to nurture knowledge construction through the cultivation of various forms of "presence", among which are teaching-, social-, and cognitive presence (Garrison et al., 2001). The model outlines conceptual elements essential to successful knowledge construction in collaborative online environments. The framework theorizes online knowledge building as a result of collaborative work among active participants in learning communities characterized by instructional orchestration appropriate to the online environments (*teaching presence*) and a supportive collegial online setting (*social presence*). The teaching presence construct outlines task sets such as organization, design, discourse facilitation, and direct instruction (Anderson, Rourke, Garrison, & Archer, 2001) and articulates the specific behaviors likely to result in a productive community of inquiry (e.g., Shea, Li, Swan, & Pickett, 2005). Social presence highlights online discourse that promotes positive affect, interaction, and cohesion (Rourke, Anderson, Garrison, & Archer, 1999) that support a functional collaborative environment. The model also references *cognitive presence*, a multivariate measure of significant learning that results from the cyclical process of practical inquiry within such a community of learners. The specific form of interaction within the cognitive presence construct thus reflects a pragmatic view of learning (Dewey, 1933; Lipmann, 2003; Pierce, 1955) However the model as a whole can be seen to articulate the "epistemic" or knowledge construction features of Larreamendy-Joerns and Leinhardt's model with teaching presence serving the over-arching instructional function and social presence supporting productive and participatory "engagement". These relationships within the model are described in more detail below.

Past factor analytic research has indicated that the model represents a coherent conceptual structure (Arbaugh, 2007; Ice et al., 2007; Shea & Bidjerano, 2008), components of which correlates with student satisfaction and learning (Shea et al., 2005; Swan & Shih, 2005). Hypothesized relationships within this conceptual structure have also been analyzed. For example, Shea and Bidjerano (2008) developed a structural equation model based on data gathered from more than 5000 online learners confirming that variance in student judgments of their own cognitive presence can be modeled from their ratings of instructor teaching presence mediated by their assessment of social presence in their online courses. Garrison, Cleveland-Innes, and Fung (2010) replicated these findings. This line of research indicated that the multivariate measure of learning represented by the cognitive presence factor could be predicted by the quality of teaching presence and social presence reported by learners in online courses. The relationship between these constructs is illustrated in Fig. 1 below.

Additional work on the CoI model (Shea, Vickers, & Hayes, 2010) suggested that past research methods may have resulted in a systematic under representation of the instructional effort involved in online education. Using quantitative content analysis these authors examined