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The effect of self-regulated learning on college students' perceptions of community of inquiry and affective outcomes in online learning

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ABSTRACT

The purpose of this study was to examine the effects of students' self-regulated learning (SRL) levels on their perceptions of community of inquiry (CoI) and their affective outcomes (task-specific attitudes and self-efficacy). Participants were 180 college students enrolled in a required online course. Using the cluster analysis method, SRL levels were grouped into four levels (High regulators, Mid regulators lacking efforts, Mid regulators lacking values, and Low regulators). ANOVA revealed that highly self-regulated students demonstrated a stronger sense of CoI and achieved higher affective outcomes, compared to low self-regulated students. The finding confirms that SRL could play an important role in the framework of community of inquiry.

1. Introduction

Community of inquiry (CoI) has been one of the frequently used frameworks in online learning research and pedagogy to enrich students' learning experiences (Annand, 2011; Arbaugh et al., 2008; Garrison, Cleveland-Innes, & Fung, 2010; Rockinson-Szapkiw, Wendt, Wighting, & Nisbet, 2016). CoI emphasizes the importance of *co-efforts* among the online community members (e.g., the instructor and students) to bring about meaningful learning experiences (Annand, 2011). In the CoI perspective, the instructor's role is important, in that she/he designs the online course to support student's cognitive development, as well as facilitating interactions among the students and between the instructor and students (Akyol & Garrison, 2011). Additionally, each student's commitment to cultivating a positive learning community could be another important factor for success with the CoI framework. In online learning, students play a more demanding role (Bol & Garner, 2011; Broadbent & Poon, 2015) and take more responsibility for their learning (Barnard, Paton, & Lan, 2008; Cho, Demei, & Laffey, 2010), compared to face-to-face settings. Nonetheless, such student driven factors have often been neglected in the research on community of inquiry (Shea & Bidjerano, 2010, 2012).

In particular, self-regulated learning (SRL) is considered an important factor for explaining learning experiences of the students who are successful in online learning (Bol & Garner, 2011; Broadbent & Poon, 2015; Cho & Heron, 2015). SRL significantly influences their achievements and satisfaction in online courses (Broadbent & Poon, 2015; Kuo, Walker, Belland, & Schroder, 2013). In this study, therefore, the authors have examined whether different levels of self-regulated learning would influence college students' perceptions of community of inquiry and their affective outcomes (task-specific attitudes and task-specific self-efficacy beliefs).

2. Theoretical background

2.1. Community of inquiry

Theoretically, Community of inquiry (CoI) is situated in social constructivism that views collaboration among the participants as a catalyst for meaningful knowledge creation (Garrison et al., 2010). Students' mindful engagement in interactions with the instructor and with other students can help them to develop relevant knowledge (Garrison, Anderson, & Archer, 2001).

Three types of presence constitute the CoI framework: social presence, cognitive presence, and teaching presence. Social presence refers to "the ability of participants to identify with the community (e.g., course of study), communicate purposefully in a trusting environment, and develop interpersonal relationships by way of projecting their individual personalities" (Garrison, 2009, p. 352). Social presence emphasizes participants' communication skills in relation to other members and contributes to the creation of a collaborative learning climate (Akyol & Garrison, 2011). Cognitive presence refers to "the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse in a critical community of inquiry" (Garrison, Anderson, & Archer, 1999, p. 11). Through cogni-

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tive presence, students develop meaningful knowledge. Teaching presence refers to "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, p. 5). Teaching presence plays a key role for cultivating and sustaining social and cognitive presences (Akyol & Garrison, 2011; Garrison et al., 2010). In general, it is believed that CoI could maximize students' learning experiences since the three presences integrally promote social and intellectual interactions among the participants and materials and, thereby, fruitful learning outcomes (Annand, 2011).

2.2. Self-regulated learning

Self-regulated learning (SRL) is defined as learners' systematic effort to manage their learning process to attain personal goals (Zimmerman & Schunk, 2011). When facing a new task, self-regulated learners proactively set learning goals and engage in the process of achieving the goals, such as planning tasks, monitoring progress, and reflecting goal accomplishment. The self-regulated learning (SRL) process can be explained in terms of students' motivation and their use of cognitive strategies (Abar & Loken, 2010; Pintrich, 2004; Zimmerman, 2008).

Motivationally, self-regulated learners have four key qualities: intrinsic goal orientation, high confidence in learning, high control of learning beliefs, and high task value. These four qualities should be understood if one is to grasp the significance of self-regulation in learning. First, intrinsic goal orientation refers to students' disposition toward mastering the content or task. Students who have intrinsic goal orientation engage in setting personally meaningful goals instead of external goals (e.g., getting a good grade to show off to others). They voluntarily monitor, reflect, and adjust the learning process and also attribute their failure to mismanagement of the process or misuse of learning strategies (Pintrich, 2004; Zimmerman, 2008).

Also, confidence in learning leads to learners' deeper engagement in SRL process. Confident students not only use deep learning strategies such as rehearsal, elaboration, and organization (Pintrich, 1999) but also participate in online social interaction more strategically (Cho & Jonassen, 2009). Closely tied to confidence in learning is a student's control of learning beliefs. When students believe that they have control over their learning, they are more likely to initiate personal goal setting and monitor and adjust their learning process. When these adjustments lead to success, students' confidence is bolstered and they are motivated to continue to make efforts to achieve their goals.

The quality of task value also influences self-regulation. Task value means perceived value of doing a task. According to Lawanto, Santoso, Goodridge, & Lawanto (2014), college engineering students with high task value set their goals and evaluate their learning process systematically, as well as being more strategic to accomplish the goals. In addition to the four qualities, effort regulation is critically involved in the SRL process. Effort regulation refers to students' capacity to persist and put an effort in academically challenging situations (Broadbent & Poon, 2015). Even when they are not intrinsically motivated while facing an academically challenging task, highly self-regulated learners strategically manage their effort and complete tasks (Broadbent & Poon, 2015; Cho & Shen, 2013).

Perhaps not surprisingly, the self-regulated learning process and students' affect are reciprocally related (Pintrich, 2004; Zimmerman & Schunk, 2011). Positive affect is essential for proactive and consistent engagement in SRL processes (Cho & Heron, 2015; Pintrich, 2004; Zimmerman & Schunk, 2011). In a recent study, Cho and Heron (2015) compared passing and non-passing students' motivation and emotion in an online remedial mathematics course. Passing students' motivation such as task value and self-efficacy were positively related to students' course satisfaction, whereas non-passing students' motivation and emotions (such as test anxiety, frustration, and boredom) were negatively related.

2.3. Different levels of SRL

Fundamentally, every learner self-regulates their learning to a certain degree; however, the levels of self-regulation vary (Zimmerman, 1990). Zimmerman's view is that self-regulation is a continuum between less skillful and skillful self-regulated learners (Zimmerman, 1989). Researchers in SRL describe that skillful self-regulated learners have the capacity to set proximal goals, showed mastery learning goals and high confidence in their learning, and attributed their unsatisfactory outcomes to the misusage of learning strategies or their failure to effectively manage the learning resources (Pintrich, 2004; Zimmerman, 2008). In contrast, less skillful self-regulated learners often fail to set proximal goals, tend to pursue performance avoidance goals, demonstrate low confidence in learning, and attribute their unsatisfactory performance mainly to external sources, such as the instructor or ineffective course design.

2.4. SRL in community of inquiry

Recently, some researchers in online learning suggest that SRL be considered as learning presence to the CoI framework, along with social, cognitive, and teaching presences. In a study by Shea and Bidjerano (2010), teaching and social presences are positively correlated with confidence in learning, but cognitive presence is positively correlated with effort regulation. Defining learning presence in terms of learners' confidence and effort regulation, these researchers call for future studies that will incorporate learner characteristics into the CoI framework and expand their conception of learning presence.

In contrast, Akyol and Garrison (2011) argue that SRL can be understood as the interaction of cognitive presence and teaching presence, rather than viewing SRL as a separate construct in the CoI framework. Garrison and Akyol (2015) have brought forth the concept of shared regulation in the CoI framework. They define shared regulation as both self-regulation and co-regulation of cognition in online collaboration. When students collaborate, they not only self-regulate but also co-regulate each other's efforts. Individually, students monitor and control their cognition; collaboratively, they co-monitor and co-control their group's cognition.

Motivated by this on-going debate about the role of SRL in the CoI framework, the current study explored the effects of SRL levels on college students' perceptions of community of inquiry (i.e., social, cognitive, and teaching presences) and their affective learning outcomes. The affective outcomes included students' attitudes toward technology integration into classrooms and their sense of self-efficacy in integrating technology integration.

2.5. Hypotheses

The study was conducted with three hypotheses:

H1. Students with high SRL will demonstrate higher perceptions of community of inquiry than students with low SRL.

H2. Students with high SRL will demonstrate more positive task-specific attitudes than students with low SRL.

H3. Students with high SRL will demonstrate higher task-specific self-efficacy than students with low SRL.

3. Method

3.1. Participants

Participants were 180 undergraduate students enrolled in an online