



Toward the development of a metacognition construct for communities of inquiry



D.R. Garrison^{a,*}, Zehra Akyol^{b,1}

^a University of Calgary, 2500 University Drive NW, Calgary, Alberta, T2N 1N4, Canada

^b Calgary Police Services, Calgary, AB, Canada

ARTICLE INFO

Article history:

Accepted 16 October 2014

Available online 24 October 2014

Keywords:

Metacognition
Self-regulation
Co-regulation
Community of inquiry
Social presence
Cognitive presence
Teaching presence

ABSTRACT

Metacognition is a required cognitive ability to achieve deep and meaningful learning that must be viewed from both an individual and social perspective. Recently, the transition from the earliest individualistic models to an acknowledgement of metacognition as socially situated and socially constructed has precipitated the study of metacognition in collaborative learning environments. This study presents the results of research to develop and validate a metacognitive construct for use in collaborative learning environments. The metacognitive construct was developed using the Community of Inquiry framework as a theoretical guide and tested applying qualitative research techniques in previous research and has been tested in this research by way of developing a metacognition questionnaire. The results indicate that in order to better understand the structure and dynamics of metacognition in emerging collaborative learning environments, we must go beyond individual approaches to learning and consider metacognition in terms of complementary self and co-regulation that integrates individual and shared regulation.

© 2014 Elsevier Inc. All rights reserved.

1. Introduction

Metacognition is an important intellectual skill that plays a critical role in learning. Metacognition supervises and controls cognitive processes so that they are executed appropriately and according to superordinate rules (Gourgey, 2001; Necka & Orzechowski, 2005). Research suggests that the ability to monitor and control learning is crucial both for successful learning and learning how to learn (White, Frederiksen, & Collins, 2009). Recently, however, there has been a growing interest in learning communities and metacognitive processes associated with shared cognitive experiences (Chan, 2012). With the increasing focus on learning communities and the need to recognize individual and social regulatory processes, researchers have begun to investigate metacognition in collaborative learning contexts. Flavell (1979) defined metacognition in terms of monitoring and controlling cognition and indicated that metacognition is not only required for communicating, explaining and justifying one's thinking to self but to others as well (Flavell, 1987). Similarly, Iiskala, Vauras, Lehtinen, and Salonen (2011) also consider metacognition in terms of interaction between an individual or individuals and a surrounding context.

From a broader societal perspective, there is a growing need to understand the process of collaborative thinking and learning in an increasingly connected world as a result of the invasion of ubiquitous

communication technologies. Boundaries between the individual and the group are becoming increasingly blurred. As a result, there is a call for more engaged and collaborative approaches to teaching and learning. The question is how is this changing how we think and learn. That is, how do we construct meaning and share understanding in a collaborative learning environment. Simple connectivity is no guarantee of thoughtful collaboration. Metacognition is no longer simply a self-regulated ability and, therefore, must consider issues of shared metacognition and co-regulation.

Considering this perspective, it is argued that metacognition and regulation in collaborative learning environments must go beyond interaction with content and include interaction with others (Cho & Kim, 2013). As a result, there is a pressing need for a construct to study and understand how individuals can be metacognitive in a collaborative learning environment. Moreover, with the increased success of collaborative approaches to learning, it is becoming clear that to better understand the structure and dynamics of metacognition, we must extend self-regulated learning constructs and approaches to include the dynamics of co-regulation of cognition (DiDonato, 2013). To address this, it has been argued that we must articulate the "relationship between regulation and metacognition ... [and] develop conceptual models and frameworks that explicate more clearly the nature and processes of co-regulation" (Chan, 2012, p. 70-71). This is the focus of this research.

The goal of this paper is to "broaden" the study of metacognition to collaborative learning environments. We approached this goal by operationalizing shared metacognition processes through the constructs of self and co-regulation of cognition. We used the Community of Inquiry framework to explicate the shared metacognition construct.

* Corresponding author. Tel.: +1 403 239 6660.

E-mail addresses: garrison@ucalgary.ca (D.R. Garrison), zehraakyol@gmail.com (Z. Akyol).

¹ Tel.: +1 403 690 0255.

Within this perspective, metacognition is seen to mediate between internal knowledge construction and collaborative learning activities.

More specifically, the purpose of this paper is to report validation results of the theoretically developed construct of metacognition in a community of inquiry learning environment. Based on a previous study, it was hypothesized that a factor analysis would yield a two factor solution confirming self and co-regulation shared metacognition processes. It is suggested that having a valid and reliable shared metacognitive construct will enhance the understanding of the dynamics and structure of metacognition in collaborative communities of inquiry, leading to further opportunities for the investigation and understanding of shared metacognition. Moreover, a quantitative instrument has the potential to extend qualitative studies of self and co-regulated learning (DiDonato, 2013).

2. Community of Inquiry perspective

The shared metacognition construct was explicated within the Community of Inquiry (CoI) framework (Garrison, Anderson, & Archer, 2000). The CoI framework provides a coherent perspective to further study the complex dynamic of collaborative learning environments. Studies of collaborative approaches to learning need to be conducted in a theoretical framework that can concurrently consider the complex interactions of personal cognition and socially shared learning dynamics. The CoI framework was utilized as the theoretical lens in this study for two reasons. First, the CoI framework has been proven successful in describing the inquiry process and has been validated as a coherent theory in understanding the complexities and conduct of learning collaboratively (Garrison, 2011). Secondly, the CoI framework emphasizes both the personal (reflective) and shared (collaborative) worlds of a learning experience, which is consistent with the hypothesized shared metacognitive construct and the integration of the personal and shared view of metacognition proposed here (Akyol & Garrison, 2011; Garrison & Akyol, 2013).

The CoI framework encourages the learner to be self-reflective and communicative in creating the conditions to support and sustain metacognitive development in a collaborative-constructivist learning environment. Learning in a community of inquiry is a reflective and recursive process (Akyol, 2013) which also requires a bidirectional relationship between self and co-regulation. The CoI framework provides the core elements (cognitive, teaching and social presence) essential to study and understand shared metacognition in a learning community. For example, the cognitive presence element of the CoI framework represents the cycle of inquiry that provides a cognitive map of the personal and shared dynamics of the inquiry process and correspondingly the means to study and understand the shared metacognition processes of self and co-regulation. The teaching presence element provides the construct to understand metacognitive development by encouraging students to take personal responsibility for their learning (self-regulation) through facilitating discourse and resolving misunderstandings collaboratively (co-regulation). There is a commonality between the dimensions of teaching presence (design, facilitation and direct instruction) and those of metacognition in terms of monitoring and managing learning through inquiry. Finally, social presence creates an important frame of reference for metacognition. In a community of inquiry, it is the social presence that creates the motivational and academic environment essential for shared metacognition. Collaborative approaches to learning require participants to develop a secure climate in which they can participate and contribute to critical inquiry in order to develop self and co-regulatory metacognition processes.

The impetus behind this research emerged from the idea that learning would be greatly facilitated by an understanding of the metacognitive processes needed to be successful in a collaborative inquiry learning environment. This was reinforced from the perspective that in a collaborative learning environment, metacognition must be extended to consider inherent shared regulatory (monitoring and managing) activities. That

is, participants must be aware of and engaged with others' metacognitive thoughts and activities. In previous articles we have defined metacognition as "a set of higher knowledge and skills to monitor and regulate manifest cognitive processes of self and others" (Akyol & Garrison, 2011, p. 184) and provided a thorough review of the metacognition literature (Garrison & Akyol, 2013). Building on this previous research, we argue that the shared metacognitive construct described here has the potential to be developed into an important tool to further explore the shared dynamics of learning collaboratively.

The potential of a metacognitive instrument has the advantage of measuring latent self-regulation that may not be evident in the collaborative discourse found in transcripts of online learning environments. As Delfino, Dettori, and Persico (2008) found that "... when writing messages in online collaborative environments, students are more likely to deal with matters concerning the group rather than themselves as individuals" (p. 201). In collaborative online learning environments, self-regulation may be a latent variable difficult to assess and, therefore, the individual learning dynamic may benefit from an appreciation and assessment provided by an objective questionnaire that reflects the dynamics of both self and co-regulation.

3. Evolution of the metacognitive construct

This paper presents the second phase of a research project to develop and validate a metacognition construct for the purpose of understanding the structure and dynamics of metacognition in collaborative learning environments. This research began with a qualitative study that defined a metacognitive construct derived from the literature on metacognition and self-regulated learning. In this study (Akyol & Garrison, 2011), metacognition was hypothesized as consisting of three dimensions: 1) *knowledge of cognition* (KC) as an entering metacognitive state that reflects knowledge and motivation associated with the inquiry process; 2) *monitoring of cognition* (MC) as reflection on action and associated with assessing the learning process (this includes assessing progression and effort with regard to goals and expectations); and, 3) *regulation of cognition* (RC) as the enactment and control of the learning process (reflection in action) which requires employment of strategies to achieve meaningful learning outcomes. The analysis of online discussion transcripts provided evidence to support this metacognition construct (Akyol & Garrison, 2011). Moreover, Snyder and Dringus (2014) found the construct to be "useful in exploring and examining deep instances of metacognition in online discussion forums" (Discussion, first paragraph).

The next step was to further explore this construct quantitatively by developing and testing a metacognitive questionnaire. The questionnaire included questions representing the three dimensions of the previously described metacognitive construct and pilot tested this instrument by administering it to students at a large university in Canada (Garrison & Akyol, 2013). There were 76 students (53 undergraduates; 23 graduates) who completed the questionnaire. Students were also asked to comment on each questionnaire item in terms of its clarity and meaning. Factor analysis was conducted to extract the latent constructs of the questionnaire. However, the factor analytic results were not as hypothesized. Even though the analysis yielded a three factor solution, the factors were not separated in a manner consistent with the qualitative findings of the previous study.

The results of the quantitative analysis directed our attention to a crucial characteristic of the collaborative framework that was not made explicit. That is, the initial metacognitive construct that framed the first phase of this research did not explicitly reflect both individual and shared learning activities (Garrison & Akyol, 2013). More specifically, in a community of inquiry environment, the individual is provided the opportunity to assume appropriate degrees of responsibility to regulate their learning (personal dimension) while receiving collaborative support and direction (shared dimension). Each participant in a community of inquiry has the responsibility not only to construct personal

Download English Version:

<https://daneshyari.com/en/article/357740>

Download Persian Version:

<https://daneshyari.com/article/357740>

[Daneshyari.com](https://daneshyari.com)