Advancing educational research on collaboration through the use of gStudy computer-supported collaborative learning (CSCL) tools: Introduction to special issue

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**Abstract**

This is an introduction to a special issue on computer-supported collaborative learning.

Computer-supported collaborative learning (CSCL) is a dynamic area of research drawing upon a wide array of implementation tools, assessment methodologies, definitions of collaboration, as well as learning tasks, contacts and structures (Hadwin, Gress, Page, & Ross, 2005). The need for learners to access collaborative tools such as synchronous chat, asynchronous discussion threads, and group workspaces, is evident in the number of tools now available and the increasing incorporation of these tools into educational and traditional word processing software (e.g., Microsoft Office, 2007, Google Groups, Skype). However, providing a plethora of tools for collaboration is not sufficient. Collaborators also need support to learn how to use collaborative tools to optimize the collaborative experience. Consequently, in this special issue we emphasize the role of computer-based technologies as scaffolding and supporting learners as they learn to self-regulate, co-regulate, and share in the regulation of learning and tasks in collaborative contexts. Each paper in this session describes aspects of support in computer-supported collaborative learning that extend beyond the provision of interactive collaboration tools. The emphasis of this paper is the integration of tools that guide or support the collaborative process.

Collectively, papers in this special issue strive to promote research on supporting and sustaining socially shared regulatory processes in CSCL, such as collaborative goal setting, task understanding and management, and evaluation and adaptation, beyond the introduction of collaborative software tools (Hadwin et al., 2005; Hadwin, Winne, Nesbit, 2005). This special issue builds on a collaborative symposium designed to introduce and invite discussion on supporting collaborative process via a series of innovative collaborative tools and technological scaffolds designed in the context of the Learning Kit research project (Winne et al., 2006).

The goals of this special issue are twofold. First, we provide an overview of the various CSCL measures and assessment tools currently available to researchers in this field. Second, we introduce four major research areas in which our state-of-the-art software tools afford opportunities to significantly advance educational research on collaborative learning: (a) social construction of self-regulated learning in CSCL; (b) the use of prompts, roles, and scripts to support CSCL; (c) measurement and assessment opportunities and challenges; (d) assessing process via an ontological approach. Collaboration tools in gStudy (Winne et al., 2006) are designed to meet three primary goals: (a) help students enhance individual self-regulation of learning as they participate in collaborative learning activities; (b) boost each group member’s learning, development, and testing of strategies to promote shared regulation of learning; and (c) provide methods for systematic research on the effectiveness of these tools in supporting productive individual and shared self-regulation, as well as the group’s co-regulation of their collaborative processes.
The first paper, by Winne, Hadwin, and Gress (2010), sets the stage for the special issue by proposing four reasons for the paucity of research on collaborative tools for supporting and sustaining productive collaboration including: (a) an overemphasis in the literature on developing and testing the functionality and usability of technologically based tools (e.g., text chat tools, conferencing tools, email systems) for sharing information, rather than examining how and why collaboration takes place and varies according to these tools, (b) an acknowledgment of the various models of collaboration that may affect the process and productivity of CSCL environments and therefore research results, (c) a lack of attention to the research findings on collaborative and co-operative face-to-face learning in designing online collaborative learning tools and research agendas, and (d) unresolved challenges regarding the measurement of learning and collaboration in the context of complex computer-supported learning contexts. Next, the authors suggest there are three critical resources every collaborator brings to collaborations that are underutilized in CSCL research: (a) prior knowledge, (b) information not yet transformed into knowledge that is judged relevant to the task(s) addressed in collaboration, and (c) cognitive processes used to construct these informational resources. Finally, the authors introduce gStudy, a software tool designed to advance research in the learning sciences by drawing on those three learner resources.

The second paper by Hadwin, Oshige, Gress, and Winne (2010) introduces self-regulation, co-regulation, and socially shared regulation as theoretical perspectives for researching collaboration. To advance research agendas about self-regulation, co-regulation, and socially shared regulation three collaborative structures or contexts in gStudy are described including: (a) the exchange of individual workspaces or kits across group members, (b) the construction of one collaborative workspace or kit across all group members, and (c) a combination of individual and collaborative or co-constructed workspaces (kits) amongst group members. In addition to a brief introduction to the literature, the authors demonstrate how gStudy might advance theory, research, and practice in the area of computer-supported collaboration, by discussing how utilizing differing models allow them to examine the effect of different social structures.

To empirically demonstrate the beneficial nature of collaborative environments and tools, a focus on measurement tools, methods, and analysis is essential (Puntambekar & Luckin, 2003). In the third paper Gress, Fior, Hadwin, and Winne (2010) provide an overview of the current methods used to measure and assess learning processes in CSCL. They organize their review by answering, what they suggest to be three fundamental questions: (a) What measures are utilized in CSCL research? (b) Do measures examine the effectiveness of attempts to facilitate, support, and sustain CSCL? and (c) When are the measures administered? The authors found that (a) there is a plethora of self-report, the majority of which are after collaborative activities and very few collecting baseline information about collaboration and collaborative activities, (b) the findings and recommendations in the field are dominated by ‘after collaboration’ measurement, and (c) there is little replication, an over reliance on text-based measures, and an insufficient collection of tools and measures for examining processes involved in CSCL.

Learning can be effectively fostered through collaboration, whereby partners or group members summarize information and materials, clarify misunderstandings, and answer questions designed to encourage mastery (Lambiotte et al., 1987). In order to do so effectively, students are often encouraged to assign roles within the group and use prompts and follow scripts. In the fourth paper, by Morris, Hadwin, Gress, Miller, Fior, Church, and Winne (2009), the use of roles, scripts, and prompts in traditional and online collaborative learning is explored and then applied to the design of supports implemented in an online chat tool. The authors describe how collaborative supports in gStudy might enhance opportunities for students to learn to self-regulate collaborative activity, and use examples from their research to propose ways these types of support tools might advance research in CSCL.

The final paper by Kumar, Gress, Hadwin, and Winne (2009), reviews the computer scientists’ overture into education and collaborative learning, to acknowledge what other researchers have accomplished and what is yet to come. They conclude that section by describing current objectives and highlighting five core criteria they believe necessary for advancing CSCL systems. For the remainder of the article, they present their implementation of these five design criteria in a trace-based software system named gStudy (Winne et al., 2006), and its software extensions named MI-EDNA, SRLP, and MICE, demonstrate how and the system as a whole with its embedded ontologies can enhance collaborative interactions and measurement.

To conclude the special issue, Abrami discusses and critiques each article. Drawing on well established expertise in areas of co-operative learning, collaboration, and educational technologies, Abrami provide an insightful analysis of these contributions and identifies directions for future empirical work in the field. Our goal with this special issue is to stimulate further the theoretical and applied debate on CSCL environments, encouraged, and facilitated by others in this field. These articles lay the foundation for conducting systematic and applied research targeting computer-based support for collaborative learning.

References


