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Innovative ways for using *gStudy* to orchestrate and research social aspects of self-regulated learning

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ABSTRACT

This paper explores the ways three different theoretical perspectives of the social aspects of self-regulated learning [Hadwin, A. F. (2000). Building a case for self-regulating as a socially constructed phenomenon. Unpublished doctoral dissertation, Simon Fraser University, Burnaby, BC, Canada; Hadwin, A. F., & Oshige, M. (2006). Self-regulation, co-regulation, and socially-shared regulation: Examining many faces of *social* in models of SRL. In A. F. Hadwin, & S. Jarvela (Chairs), *Socially constructed self-regulated learning: Where social and self meet in strategic regulation of learning*. Symposium conducted at the Annual Meeting of the American Educational Research Association, San Francisco, CA] have been operationalized in a computer supported learning environment called *gStudy*. In addition to contrasting social aspects of SRL and drawing connections with specific collaborative tools and structures, this paper explores the potential of *gStudy* to advance theory, research, and practice. Specifically it discusses how the utilization of differing collaborative models provides new avenues for systematically researching social aspects of SRL and their roles in collaboration.

1. Introduction

Historically, models have portrayed self-regulated learning (SRL) as an individual, cognitive-constructive activity (e.g., Winne, 1997; Zimmerman, 1989) that integrates learning skill and will (McCombs & Marzano, 1990). Such models emphasize individual agency and individual differences associated with SRL including self-efficacy, metacognition, goal setting, and achievement (Schunk, 1990, 1994; Zimmerman, 1990). In addition, the notion that social context or environment is an important part of student's SRL is evidenced in Zimmerman's (1989) socio-cognitive model of self-regulation; SRL involves personal perceptions and efficacy, as well as environmental conditions such as support from a teacher's feedback on previous problems.

Despite the fact most models of SRL acknowledge aspects of social context, there is great diversity in where social is positioned in the SRL model from a peripheral contextual input for individual SRL to a socially-shared process. The role of social context in self-regulation has evolved over the last 20 years. Corno and Mandinach (2004) suggested that contemporary perspectives of learning and SRL reveal: (a) increased interest in explaining the role of social and contextual influences on SRL; and (b) shifts to models that place social context in the socio-cultural centre of SRL. As a result, emerging perspectives of SRL move beyond Zimmerman's (1989) earlier conception of social context being a component in the triadic process and towards social being at the core of SRL. These models move along a continuum from more individual constructivist perspectives to more social constructionist perspectives of learning (cf., Hadwin, 2000; Meyer & Turner, 2002).

Research about SRL is typically confined to one SRL model or another. To our knowledge, there have been few attempts to compare social aspects of SRL by conducting research that traverses models of SRL (cf., Hadwin & Oshige, 2006). Hadwin (2000) examined the same set of data from three different theoretical and empirical approaches each of which positioned social aspects differently. One challenge in extending this research has been in developing tools and contexts that allow shifts in both orchestration of and examination of SRL. *gStudy* (a software system developed by Winne, Hadwin, Nesbit, Kumar, & Beaudoin, 2005) provides some innovative ways to tackle this challenge.

2. Introduction to *gStudy* tools

As stated in the introductory section (Winne, Hadwin, & Gress, 2010), *gStudy* (Winne et al., 2005) is a state-of-the-art software system grounded in theories and research about self-regulated learning. It is a cross-platform software tool for researching learning (Winne et al.). Importantly, while students work using the *gStudy* software, trace data are unobtrusively collected. Data

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include a time and date stamped record of every mouse click, text entry and scrolling action in the environment (Hadwin, Winne, Nesbit, & Murphy, 2005). Collecting this type of trace data in *gStudy* will open new research opportunities by allowing researchers to examine the "blind spots" in SRL literature (e.g., changes in the process of interaction, discourse analysis, actual strategy use).

A main goal of Hadwin's Learning Kit project team has been to develop *gStudy* tools and structures that support individual and collaborative regulation of learning through the development of software tools. Therefore, embedded in *gStudy* are a number of features intended to support collaborative learning processes and provide means for researching the social aspects of SRL as they unfold in various collaborative configurations. The software provides computer-supported collaborative learning structures and tools to facilitate learners working together to develop individual and collaborative *self*-regulated learning strategies and processes. Tools to support collaboration include: an open chat tool, guided chat using roles and prompts, coaching (using artificially intelligent agents), and general learning tools including notes, glossaries, and searches.

3. Collaboration and *gStudy*

Just as models of SRL recognize the significance of social aspects in developing SRL skills, the research about classroom learning also suggests working in collaboration with others is an effective instructional method in student academic achievement (e.g., Kulik & Kulik, 1987; Lou et al., 1996; Lou, Abrami, & Spence, 2000). A meta-analytic review about the effects of group work on students' achievement conducted by Lou et al. (1996) reported that the mean effect sizes of +0.17 across 51 studies was statistically significant. Their findings showed that students in small groups performed slightly better in academic achievement than students not engaging in small group learning. Analyses also revealed that effect sizes were the largest when groups consisted of three to four students who were instructed to engage in cooperative learning involving group activities intended to develop positive interdependence and sense of responsibility in groups. Extending Lou et al.'s (1996) analysis, Lou et al. (2000) re-analyzed 103 independent effect sizes from 51 studies, using multiple regression analysis model. Results indicated an overall effect size of +0.16, which did not differ from Lou et al.'s findings. Lou et al.'s (2000) study was in consistent with the previous findings, validating the effectiveness of collaboration in learning. Thus, supporting collaboration not only facilitates SRL process, but also enhances students learning.

Since research about within-class collaborative work supports its effectiveness in learning, we propose three basic models for collaboration that are supported through sharing collaborative tools and structures within *gStudy*. First, learners can work with their own individual Learning Kits (LK) and share objects such as notes with one another (Collaboration model 1, see Fig. 1). Second, learners can work on one collaborative Learning Kit that is checked in and checked out of a document repository (Collaboration model 2, see Fig. 5). In this case, one student can edit the kit at one time and any changes (additions or deletions) are shared with the whole group. Thus, if one member made changes in the kit, these changes become part of every member's property. Third, students can work on individual kits, and upload objects (such as notes) to a collaborative or shared group kit (Collaboration model 3, see Fig. 4). This model is a combination of the first and second models.

4. Contrasting social aspects of SRL and corresponding supports in *gStudy*

This paper briefly compares three paradigms of SRL in terms of their treatment of the role of social context, interactions, and influence (see Hadwin & Oshige, 2006 for further review). Models were drawn from a broad continuum from socio-cognitive models (Zimmerman, 1989, 2000), to socio-cultural models (Diaz, Neal, & Amaya-Williams, 1990; Gallimore & Tharp, 1990; McCaslin & Hickey, 2001), through to social constructionist models of SRL (Jackson, Mackenzie, & Hobfoll, 2000; Yowell & Smylie, 1999). Specifically, this paper contrasts: (a) the role of social influence; and (b) the emerging language for describing self-regulated (self-regulation, co-regulation, or socially-shared regulation) at various points along a social continuum. It also discusses how each paradigm of SRL supports collaborations and how these collaborations can be enhanced by using *gStudy*.

4.1. Introducing a socio-cognitive model of SRL

The term *self-regulated learning* emerged largely from a socio-cognitive perspective. Self-regulated learning refers to strategic and metacognitive behavior, motivation, and cognition aimed toward a goal. According to Zimmerman (1989), "students can be described as self-regulated to the degree that they are metacogni-

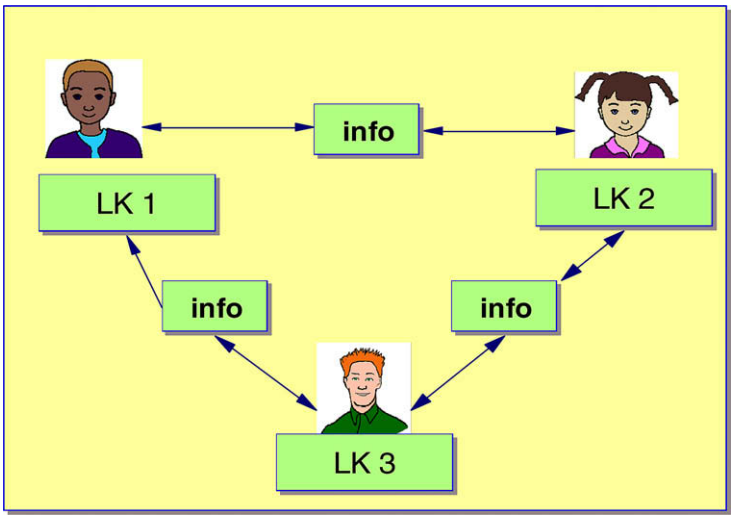

Fig. 1. *gStudy* collaboration model 1: individual kits.