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Socially shared regulation of learning and participation in social interaction in collaborative learning

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ABSTRACT

This study investigated how socially shared regulation of learning (SSRL) emerged during the fluctuation of participation in interaction in collaborative learning. Twenty-four student teachers in six small groups were video-recorded during collaborative tasks in mathematics. Manifestations of SSRL and students' participation were micro-analytically coded. Next, the concurrence between manifestations of SSRL and the fluctuation of participation was examined and illustrative examples were described. The results show that SSRL involved more active participation than task-focused interaction overall and that SSRL often coincided with increases in participation to a higher level than general. The findings suggest that manifestations of SSRL involved activated participation during the moments when interaction was needed to reciprocally resolve situative challenges and to coordinate activities.

1. Introduction

Social interaction in collaborative learning invites individuals to share and elaborate divergent perspectives and ultimately extend their thinking beyond individual capabilities (Chi & Wylie, 2014; Dillenbourg, 1999; Scardamalia & Bereiter, 2014; Webb, 2013). However, such interaction cannot emerge without the skill and will of individuals and the group as a collective (Hadwin & Oshige, 2011). Students' individual and joint learning efforts need to be fueled by strategic regulation of cognition, emotion, motivation and behavior (Pintrich, 2000; Winne & Hadwin, 1998; Zimmerman, 2000). The benefits of self-regulated learning for individual learning have been clearly evidenced (Zimmerman, 2000), but because learning takes place in increasingly interactive settings, it is necessary to explore regulation processes beyond the individual (Hadwin, Järvelä, & Miller, 2011).

Socially shared regulation of learning (SSRL) occurs as a group-level phenomenon where students collectively negotiate and align common perceptions of the collaborative learning process and take control of the task through shared and negotiated, iterative fine-tuning of cognitive, behavioral, motivational and emotional conditions (Hadwin, Järvelä, & Miller, 2016; Järvelä & Hadwin, 2013; Winne, Hadwin, & Perry, 2013). Previous studies about SSRL have explored, for example, the quality of regulation processes (Backer, Van Keer, Moerkerke, & Valcke, 2014; Järvelä, Järvenoja, Malmberg & Hadwin, 2013; Järvelä, Malmberg, & Koivuniemi, 2016; Lee, O'Donnell, & Rogat, 2014) and the relations between SSRL and knowledge co-construction (Volet, Summers, & Thurman, 2009), goals (Volet & Mansfield, 2006), feelings of difficulty (Hurme, Merenluoto, & Järvelä, 2009) and performance (Janssen, Erkens, Kirschner, & Kanselaar, 2012). However, despite the prevalence of using

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process-oriented data (Panadero & Järvelä, 2015), relatively few studies have explored the dynamics of interaction and the emergence of SSRL.

1.1. Emergence of socially shared regulation of learning in interaction

Socially shared regulation of learning is a metacognitive and adaptive mental process that is negotiated and fine-tuned in collaboration. While originating in learners' intents, beliefs and past socio-historical experiences, SSRL is also inherently transactive as it invites individuals to jointly co-construct shared perceptions of metacognitive, cognitive, behavioral and motivational processes (Hadwin, Järvelä, & Miller, 2016). A small number of studies have micro-analytically described the interaction through which SSRL manifests in collaborative learning.

Iiskala, Vauras and Lehtinen (2004) and Iiskala, Vauras, Lehtinen and Salonen (2011) analyzed shared metacognitive regulation during dyads' face-to-face interaction in problem solving. Their findings suggested that socially shared metacognitive regulation manifested when students externalized metacognitive thinking and complemented each other's utterances, creating a flow of comments. The authors noted that this flow of comments was not always detectable in isolated sequences but appeared throughout the collaboration, intertwining with cognitive processes. Similar findings were reported of interaction in asynchronous collaboration (Hurme et al., 2009; Iiskala, Volet, Lehtinen, & Vauras, 2015).

Järvenoja and Järvelä (2013) described how socially shared regulation of emotion emerged in a case group of university students. Narratives, flowcharts and transcriptions illustrated how a socio-emotional challenge emerged, how students elaborated each other's regulative utterances, and how socio-emotional balance was restored. The study suggested that SSRL emerged as a situative phenomenon which manifested through multiple connected utterances by multiple learners. None of the students' utterances could be indivudally defined as regulation but, rather, SSRL surfaced as a transactive phenomenon.

An in-depth study of social regulation in two case groups was conducted by Ucan and Webb (2015). The authors found that shared regulation affected the flow of group discussion. For example, shared monitoring facilitated and simultaneously occurred during cognitive processes. Shared emotional and motivational regulation, in turn, sustained students' reciprocal interaction by restoring socio-emotional balance. Episodes of shared regulation were marked by attentive listening and openness to divergent ideas.

The earlier studies highlight the importance of learners' reciprocal contributions. To elaborate these findings, the present study investigates SSRL from the point of view of participation in social interaction which affords reciprocal exchanges to occur. After all, participation in social interaction is the prerequisite for creating shared understandings (Clark & Brennan, 1991; Clark, 1996), and the importance of coordinated and cohesive participation has been repeatedly emphasized in collaborative learning research (e.g., Barron, 2001, 2003; Cohen, 1994; Erkens, Prangsma, & Jaspers, 2006; Kreijns, Kirschner, & Jochems, 2003).

1.2. Socially shared regulation of learning and participation in social interaction

Previous studies have suggested that participation is positively linked to the manifestation of SSRL in interaction. Early evidence comes from Volet et al. (2009b), who found that equal participation in interaction enhanced higher quality regulation of cognition. The authors focused on co-regulation, but their operationalization of high-level co-regulation came close to the concept of SSRL in interaction (also noted by Panadero & Järvelä, 2015). Their comparison of three groups revealed that a group with more evidence of high-level co-regulation also showed more participation by all group members. Other groups had less evidence of high-level co-regulation, and in most cases, the whole group did not actively participate.

These findings were supported by Grau and Whitebread (2012) in their study of self and social aspects of regulation in two groups of primary school children. The results indicated that the group showing more egalitarian participation also showed more SSRL than co-regulation. In contrast, the group with less symmetrical participation showed less SSRL in interaction.

Similar results were reported by Sinha, Rogat, Adams-Wiggings and Hmelo-Silver (2015), who revealed that engagement in social, task-focused interaction was connected to displays of SSRL. Their case study of two groups showed that a group with low-quality social and task-focused interaction, i.e., limited task work and low cohesion, showed less evidence of SSRL. Contrastively, more evidence of SSRL manifested in the group with active and cohesive task-focused interaction. These results bear resemblance to the findings by Rogat and Linnenbrink-Garcia (2011) who noted that interaction in a group with high quality social regulation was predominantly collaborative rather than non-collaborative, i.e., the group shared ideas and worked jointly.

The recent study by Iiskala et al. (2015) analyzed individual students' participation in exchanges that included socially shared metacognitive regulation in asynchronous online interaction. The results highlighted that all four students in a case group contributed to the displays of SSRL in interaction but their roles were somewhat different. For example, the contributions of some students produced more reactions and, thus, activated regulatory interaction.

In conclusion, earlier studies point to a close relationship between learners' active participation and manifestation of SSRL in interaction. However, previous studies have not focused on the temporal aspects of participation and the emergence of SSRL. While it is evident that participation in interaction is necessary for SSRL to manifest, there is a lack of process-oriented evidence of how SSRL emerges in relation to the dynamics of participation in interaction.