Changes in primary school students’ use of self and social forms of regulation of learning across collaborative inquiry activities

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ABSTRACT

This study investigated how the occurrence of self and social forms of regulation of learning processes changes over time across the sequence of collaborative inquiry tasks. Two groups of three primary school students (7th grade) were videotaped while working in collaborative inquiry activities in a regular science classroom during a 7-week period, and participated in stimulated-recall and semi-structured interviews. The results show evidence that the groups engaged increasingly in more socially shared regulation along the sequence of collaborative inquiry tasks, whereas no meaningful change was observed in the occurrence of co-regulation processes over time. Moreover, different patterns of temporal change were identified for each group and for each individual group member, and appeared to be associated with the individual and group level characteristics.

1. Introduction

There has recently been increasing interest in the use of collaborative activities in almost all learning contexts. The benefits of collaborative learning are well acknowledged in the present literature (Johnson & Johnson, 2009), yet, it is also recognised that collaboration is a challenging process and its success depends on effective use of self and social forms of regulation of learning (Hadwin, Järvelä and Miller, 2011; Järvelä, Malmberg, & Koivuniemi, 2016; Panadero & Järvelä, 2014). Alongside engaging in the process of shared knowledge co-construction, it is crucial for collaborative learners to utilise the regulation of (meta)cognitive processes, such as co-constructing shared task representations, negotiating and setting task goals and plans, and monitoring the group comprehension and progress (De Backer, Van Keer, & Valcke, 2015; Järvelä & Hadwin, 2013; Näykki, Järvenoja, Järvelä, & Kirschner, 2015; Ucan & Webb, 2015). Moreover, when learning collaboratively, learners face a variety of motivational and socio-emotional challenges that can affect group’s collaborative interactions and motivational engagement in a negative way, and arise for a variety of reasons, such as differences in personal goals or expectations, conflicts generated by the group’s interpersonal dynamics or collaborative processes (see Järvelä & Hadwin, 2013 for a review). In overcoming those kinds of challenges, it is essential for group members to effectively regulate motivational and emotional aspects of their collaborative learning (Järvelä & Hadwin, 2013; Näykki, Järvelä, Kirschner, & Järvenoja, 2014; Ucan & Webb, 2015).

While there is increasing consensus on the importance of regulation of learning for the quality of collaborative learning, empirical research on the field is still limited and newly emerging (Panadero & Järvelä, 2014; Schoor, Narciss, & Körndle, 2015). The focus of previous studies has been mainly on validating the differentiation among the processes of self and social forms of regulation of learning (e.g. Grau & Whitebread, 2012; Iiskala, Vauras, Lehtinen, & Salonen, 2011), or exploring the nature, functions, and
emergence of social forms of regulated learning (e.g. Isohätälä, Järvenoja, & Järvelä, 2017; Khosa & Volet, 2014; Rogat & Linnenbrink-Garcia, 2011; Ucan & Webb, 2015; Volet, Summers, & Thurman, 2009). Less is known, however, about how students’ use of regulation of learning processes changes or evolves over time during collaboration (see Azevedo, 2014; Iiskala, Volet, Lehtinen, & Vauras, 2015; Molenaar & Järvelä, 2014), despite emerging consensus on viewing regulated learning as an interactive, dynamic and developing process. Accordingly, the current study aims to extend previous research by investigating how students’ use of self and social forms of regulation of learning processes changes over time across the sequence of collaborative inquiry science tasks through taking into consideration the personal, social and contextual factors.

1.1. Self and social forms of regulated learning

Regulated learning is described as an active process in which learners plan, monitor, and/or adapt cognitive, behavioural, motivational and/or emotional processes towards individually or socially set learning goals to attain optimal learning (Hadwin et al., 2011; Pintrich, 2004). While it was originally portrayed as an individual process affected and shaped by personal, social and contextual features, most recent research conceptualises the regulated learning also as an interpersonal process (Hadwin et al., 2011; Iiskala, Vauras, & Lehtinen, 2004; Schoor et al., 2015; Volet, Vauras et al., 2009). In this respect, there is currently growing consensus that in collaborative contexts, students can engage in three forms (or types) of regulated learning, which are self-regulation of learning (SRL), co-regulation of learning (CoRL), and socially shared regulation of learning (SsRL) (Hadwin et al., 2011; Perry & Winne, 2013; Schoor et al., 2015; Vauras & Volet, 2013). SRL occurs when students work individually or together in collaborative tasks. In either case, it is conceptualised as an individual process in which individuals purposefully regulate his/her own cognitive, motivational and emotional processes toward achieving personal or group goals (Järvelä & Hadwin, 2013). Often occurring implicitly, this self form of regulation requires individual awareness and responsibility, and can indirectly contribute to and shape collaborative activities (Miller & Hadwin, 2015).

CoRL occurs when group members temporarily guide, support or shape each other’s regulation of their own learning through asymmetrical interactions, mostly in the service of the group task (Hadwin et al., 2011; Perry & Winne, 2013). In collaborative learning, a partner(s), for instance, can co-regulate cognitive, motivational or emotional processes of a student(s) who may need help in relation to the group activity, or a student(s) can ask a collaborating partner(s) to co-regulate his/her own learning (Grau & Whitebread, 2012; Järvelä & Hadwin, 2013). In each case, co-regulation process is momentarily and unequally shared between the student and partner(s), and is aimed at affecting the student’s cognitive actions, motivation or emotional state with the purpose of achieving individual and/or shared goals. The roles in CoRL can shift among collaborating partners across time and tasks, depending on who needs and who provides support and guidance (Perry & Winne, 2013). Emergence of co-regulation entails group members to be actively aware of each other’s cognitive, motivational and emotional status as well as be willing to support one another when necessary (Miller & Hadwin, 2015).

SsRL is conceptualised as the process by which multiple learners jointly regulate collaborative learning processes in a genuinely shared way (Hadwin et al., 2011). In this form of regulation, group members negotiate and co-construct shared task perceptions, goals and standards, and share the responsibility for collectively regulating group’s cognitive actions, motivation or emotional state orchestrated in the service of a shared or co-constructed outcome (Järvelä & Hadwin, 2013). SsRL entails a high level of reciprocity and interdependence among the group members, as it emerges and is expressed when the learners assume equal responsibility for socially sharing and co-constructing regulatory processes toward a socially shared goal (Hadwin et al., 2011). SsRL is seen as a central process for the success of collaborative learning together with SRL and CoRL.

The current literature increasingly acknowledges that while working together on a collaborative task, the processes of SRL, CoRL and SsRL can alternate, occur simultaneously, unfold dynamically and evolve together over time across contexts (Azevedo, 2014; Molenaar & Järvelä, 2014; Vauras & Volet, 2013). Thus, it is seen essential to consider all forms of regulated learning to achieve an inclusive understanding of students’ learning in collaborative situations. Nonetheless, as the recent reviews concur (see Miller & Hadwin, 2015; Panadero & Järvelä, 2014; Schoor et al., 2015), the empirical research on self and social forms of regulation of learning is still scarce and emerging in collaborative learning situations. Especially, despite emerging consensus on conceptualising regulated learning as an interactive, dynamic and developing process, there is a little amount of empirical research examining how students’ use of SRL, CoRL and SsRL processes changes over time across collaborative learning tasks.

1.2. Research on the regulated learning in collaborative learning

Consistent with the view that regulated learning is an interactive, dynamic and developing process, presently, there is increasing interest in understanding how self and social forms of regulation of learning unfolds and changes over time across learning contexts. Yet, despite the recent calls for empirical research exploring the temporal characteristics of regulated learning (Azevedo, 2014; Iiskala et al., 2015; Molenaar & Järvelä, 2014; Winne, 2014), only few recent studies have begun to consider how the use of SRL, CoRL and SsRL processes changes over time within and across collaborative learning activities. For example, in a recent study conducted with two groups of primary school children, Grau and Whitebread (2012) examined the changes in the use of SRL, CoRL and SsRL processes (i.e., cognitive, emotional and behavioural) across collaborative science activities during an academic semester. Their analysis showed a general increase in the use of self-regulation processes within the groups, but the number of SsRL processes varied across collaborative sessions. In another recent study, De Backer et al. (2015) explored the time-bound changes regarding collaborative learners’ adoption of metacognitive regulation processes during a higher education reciprocal peer tutoring (RPT) intervention. Their results showed a significant positive change towards increased adoption of tutee-prompted CoRL and SsRL.
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