Promoting academically productive student dialogue during collaborative learning

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A R T I C L E   I N F O

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A B S T R A C T

Interest in the key role talk plays in the construction of knowledge, understanding and learning has gathered momentum in recent years as research has demonstrated how students learn from each other and how teachers, in turn, can utilise this information to structure classroom experiences to promote student engagement and productive academic dialogue. This paper discusses research that highlights the importance of structuring collaborative learning experiences that challenge students’ thinking and scaffold their learning to promote critical and creative problem-solving and enhanced cognitive understandings. Future directions include investigating changes to students’ cognitions as a consequence of specific types of dialogic interactions and the role of interpersonal synchrony in promoting prosocial behaviours and dialogic interactions.

1. Introduction

Interest in academic talk and its capacity to promote cognitive development and educational attainment has gathered momentum over the last three decades as studies have emerged that have demonstrated the key role social interaction plays in the joint construction of knowledge, understanding, and learning and how such interaction has the capacity to benefit students’ socialization and academic achievements (Mercer, 2000, 2008; Resnick, 1991; Wells, 2007). Rojas-Drummond and Mercer (2003) and Rojas-Drummond, Perez, Velez, Gomez, and Mendoza (2003) in reporting on studies conducted in British and Mexican schools found that when students worked in classrooms where there was a careful integration of teacher-led discourse and peer group interaction, students learned how to coordinate their thinking around the task at hand; promoting individual reasoning and learning. Wegerif, Mercer, and Dawes (1999) found that students’ individual reasoning ability, as measured on a standardized test of reasoning, was enhanced when they were taught how to engage in exploratory talk where they learned to articulate their reasons for specific decisions as they cooperated with others on small group tasks. The findings led the authors to note that the use of exploratory talk can improve group reasoning and that it can be taught to students and transfer to other educational contexts, leading to enhanced individual cognitive performances on a standardized non-verbal reasoning test.

Others who have investigated the powerful effect of talk on students’ thinking and learning include Resnick (1991, 2010), Resnick, Michaels, and O’Connor (2010) and Michaels, O’Connor, and Resnick (2008). Evidence has emerged from these studies that teacher-led discussion where students learn how to engage in reasoned arguments and debates supports the growth of disciplinary knowledge and a deeper understanding of complex concepts. The results of engaging in discourse-intensive instruction helped students to build on the ideas of others, seek clarification when needed, and draw reasonable conclusions, based upon the evidence presented. In so doing, they learnt to engage in dialogic discourse that is relevant to their discipline (e.g., math, science, literacy), enabling them to acquire the relevant discourse-based reasoning skills needed to promulgate an argument. Moreover, Resnick et al. argues that this type of discourse is more likely to emerge when students understand that they are accountable for the reasoning they
demonstrate and the conclusions they draw. This includes being accountable to their group or class (i.e., community), accountable to expected standards of reasoning (i.e., talk that draws logical and reasonable connections), and accountable to knowledge (i.e., publicly available facts, texts and other available information).

In science, Kuhn (2009, 2016) argues that repeated dialogic interactions on a topic enhances students’ quality of reasoning of that topic provided they, in turn, have regular opportunities to evaluate evidence and make causal judgments and predictions. Moreover, these higher-order thinking skills where students learn how to reason and problem-solve and engage in argumentation need to be actively promoted and consolidated through curricula interventions where students have opportunities to investigate topics together, address ambiguities and seek clarifications, propose potential explanations, and make connections to current understandings and knowledge.

In a corpus of studies that investigated students’ explanatory behaviours under different conditions, Webb (2009) and Webb and colleagues (Webb & Mastergeorge, 2003; Webb et al., 2008; Webb et al., 2014) emphasise the importance of teachers pressing students to explain their thinking to each other during their interventions with small groups and whole class discussions. While Webb et al. have found that teachers used different teaching strategies to encourage dialogic interactions, it is only when they probed students’ explanations to clarify their thinking and problem-solving strategies that students learned to engage with others’ ideas at a higher level. Moreover, it is this willingness to ask for specific explanations, persistence in seeking assistance, and the modification of help-seeking strategies that are associated with being able to solve group-work problems without additional assistance.

In summary, studies by Mercer (2000, 2008), Rojas-Drummond and Mercer (2003), Resnick et al. (2010), Michaels et al., 2008, Kuhn (2009, 2016), Webb (2009), Webb and Mastergeorge (2003), Webb et al. (2008), Webb et al. (2014) highlight the importance of discourse-intensive interaction where teachers play an active role in pressing students to engage in reasoned argumentation, and where students, in turn, learn to evaluate the evidence, explain their reasoning, and make causal judgments and predictions. Moreover, it is apparent that these higher-order thinking skills are promoted and consolidated when students have opportunities to interact with others, share ideas, challenge different perspectives, and draw links between current understandings and knowledge.

2. Structuring student interaction

Although students benefit academically and socially from well-structured learning experiences where they have opportunities to interact with others around tasks, Meloth and Deering (1999) found that students rarely engage in high-level discourse or explanatory behaviour unless they are explicitly taught to do so. Similarly, King (1999) observed that generally students do not elaborate on information, do not ask thought-provoking questions, and do not spontaneously activate and use their relevant prior knowledge without some external guidance. Chinn, O’Donnell, and Jinks (2000) found that students do not engage in high-level discourse unless they are explicitly required to provide reasons for their conclusions. This is a concern because King (2002) found that the cognitive and metacognitive levels of group discussions are positively correlated with students’ cognitive and metacognitive outcomes. In effect, task-related talk about information, concepts, strategies and thinking is very important to student learning yet it will not emerge unless students are explicitly taught how to exchange ideas, provide explanations and justifications, engage in speculation, make inferences, develop hypotheses, and draw conclusions: characteristics of high-level discourse known to promote thinking and learning (King, 2008).

Teaching students to engage critically and constructively with each other’s ideas, challenge perspectives, and discuss alternative propositions are important discourse moves students need to learn if they are to talk and reason effectively together (Rojas-Drummond & Mercer, 2003). Rojas-Drummond and Zapata (2004), in a study of 86 Grade 5 students who were taught to use Exploratory Talk (Mercer, 2000) as a way of engaging critically yet constructively with others ideas, reported that the students who had been trained to do so produced significantly more and better arguments, expressed their positions in a more cogent and explicit way, and provided more links and support to sustain their opinions than their untrained peers, and this had a highly significant effect on their capacity to solve problems. Likewise, Veenman, Denessen, van den Akker, and Rijt (2005) found when students were taught how to engage in helping behaviours during cooperative group learning, they demonstrated significantly more high-level elaborative behaviours than their untrained peers. Students thought aloud, verbalised their thoughts, and provided each other with extended elaborations and these results had positive effects on their thinking, reasoning and achievement outcomes.

Others who have investigated the importance of teaching students how to engage in dialogic interactions with their peers include Anderson et al. (2001) and Clark et al. (2003) who used collaborative reasoning where students are taught how to use different reasoning stratagems to advance an argument during group discussion. Collaborative reasoning essentially provides teachers with a framework for facilitating discussion among small groups of students. This includes encouraging students to listen carefully to the issues presented, explain their position, expand on their ideas and provide reasons and justifications with evidence to support their stance. As part of the dialogic interaction that occurs, students are taught to engage in reasoned argumentation where they learn to challenge others’ ideas and ways of reasoning, clarify different positions and make suggestions on how to improve future discussions, and, in so doing, they learn develop argument stratagems. Anderson et al. argues that once an argument stratagem has been internalized or appropriated and is used in a discussion, it will snowball and be used with increasing frequency by others involved in the discussion. In essence, children learn new ways of talking and thinking from interacting with others in collaborative discussions.

2.1. The teacher’s role in fostering student interaction

Teachers need to be strong advocates for inducting students into different ways of thinking and learning by making explicit how to express ideas, seek help, contest alternative propositions, and reason cogently (Gillies, 2004a). Gillies and Khan (2008) found that
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