Developments in classroom-based talk

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A B S T R A C T

The articles in this issue of the journal on classroom-based talk document recent international developments in this research and demonstrate the power of talk to affect how teachers teach and how students learn across a range of different classroom settings. In many cases, this research builds on previous theoretical perspectives and empirical research to profile new and emerging findings that contribute to new understandings and practices on the key role talk plays in developing student thinking and learning, albeit it through the expression of contrasting opinions or constructed shared meaning and negotiated classroom dialogue. In all instances, teachers play an active role in either implementing an intervention or classroom structure to promote critical reasoning skills or in recognising valuable teacher-learning opportunities for co-constructing and appropriating common knowledge from classroom discussions. The studies reported in this special issue contribute to the corpus of research on classroom-based talk by showing how student discourse is enriched and learning enhanced when teachers are active in implementing constructivist student-centred approaches to learning that challenge children's thinking in the context of guided, scaffolded teaching and learning experiences.

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1. Introduction

Interest in classroom-based talk and its capacity to promote intellectual development and educational attainment has gathered momentum in recent years as various studies have demonstrated the key role social collaboration plays in the joint construction of knowledge, understanding, and learning (Mercer, 1996, 2008; Resnick, 1987, 1991; Wells, 2007) and how such interaction has the capacity to build the mind (Resnick, Michaels, & O'Connor, 2010). While both individual constructivism (Piaget, 1950) and social constructivism (Vygotsky, 1978) advocate the importance of social interaction in the development of children's reasoning and cognition, it is only in the last three decades that empirical studies have begun to emerge that have demonstrated how children learn from interacting with each other and how teachers can utilise this information to construct experiences in classrooms to ensure the benefits attributed to such experiences can be developed and maintained.

Building on the Piagetian idea that children learn when they are confronted with information that challenges their thinking, Adey and Shayer (1990, 1993, 1994) conducted a series of cognitive acceleration (CA) programmes in science and mathematics in primary and secondary schools where children were confronted with cognitively challenging situations but in a classroom social atmosphere where the teacher mediated the process through guided reflective abstraction, "in a context of Vygotskian-like scaffolded teaching" (Adey, Csapo, Demetriou, Hautamaki, & Shayer, 2007, p. 89). The effects of these programmes on students' cognitive development and academic achievements were significant when compared to

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students who did not participate in these programmes. Furthermore, the gains recorded generalised to national public examinations taken up to three years later with gains not only in mathematics and science, the original targeted subject domains, but with gains also in English, demonstrating clear transfer effects.

The positive effects of CA programmes, Adey and Shayer (2011) maintain, can be attributed to three core principles embedded in these programmes: Cognitive conflict, social constructivism, and metacognition. The first principle, cognitive conflict, occurs when students are presented with situations that are challenging and puzzling. Situations where they experience a state of cognitive dissonance that compel them to reconcile anomalies in their understanding by reflecting on what they need to do to solve the dilemmas they are confronting. In order to reconcile any anomalous situation, students need to be active participants in the construction of knowledge rather than passive recipients so they engage in a process of constructing meaning where they reflect on experiences and organise them in order to adapt to the environment. Piaget (1950) believed that peer interactions where students have opportunities to reflect on what others have to say provides the contexts for students to revise their current cognitive perspectives and understandings, and, in so doing, construct new understandings and cognitions. Teachers promote cognitive growth in children when they use language that challenges their understandings, confronts discrepancies in their thinking, and requires them to provide reasons for their solutions (Gillies & Boyle, 2006).

The second principle, social constructivism builds on Vygotskian theory by emphasising that students co-construct knowledge and understandings through interaction with each other when they learn to listen to what others have to say, challenge each other's perspective, and build on one another's ideas to arrive at an agreed position (Palincsar & Herrenkohl, 2002). During this dialogic process, the teacher guides and scaffolds students' discussions, encouraging them to argue constructively, augment the ideas of others, and consider a range of alternative explanations for the phenomena they are discussing. The teacher's role in this process is critically important in helping students understand that they need to work together, seek clarification on issues they do not understand, contest misconceptions, and reason cogently, and, in so doing, help to generate new ways of thinking and doing (Mercer, 2008; Webb, 2009).

The last principle on which these CA programmes were based, metacognition, refers to the ability of students to reflect on their own thinking and learning. This involves students articulating the approaches they have taken to problem-solving and reasoning, thereby enabling other students to access other ways of thinking and evaluating issues related to the problem. Wiggins (1998) in his approach to teaching for understanding maintained that reflection involves being intellectually honest, being willing to self-assess, and to defend views and perspectives without being defensive of them. In short, metacognition involves students thinking about their thinking and what they have learned from the experiences they have had. The effects of CA programmes on students' thinking and academic achievement has been shown to have long-term effects on students' cognitive abilities and transfer effects to other subjects, including state-wide standardised testing (Hu et al., 2011; Oliver, Venville, & Adey, 2012).

Other researchers who have investigated the powerful effects of dialogic interactions on students' thinking and learning include Resnick (1987, 1991, 2010) and Resnick et al. (2010). Evidence has accumulated that learning occurs in interaction with others where students engage in discursive processes that include actively processing what others have to say, challenging their perspectives, and interpreting and explaining what is being discussed. In fact, Michaels, O'Connor, and Resnick (2008) argue academically productive talk, which they called accountable talk, only emerges when students learn that they are expected to listen to others, build on their ideas, engage in providing explanations and justifications for their propositions, and be prepared to challenge what others have to say when evidence is not supported or available. The teacher's discourse in this type of interaction often switches between providing authoritative knowledge to ensure that students acquire discipline correct concepts to being more dialogic where students are challenged and scaffolded to explore new ideas, ask questions, interpret findings, formulate hypotheses, and share their understandings. This type of dialogic exchange Resnick (2010) argues require teachers to be able to manage classroom discussions, including challenges to students' explanations and reasons while simultaneously re-voicing or paraphrasing students' attempts to articulate their thoughts and ideas so all students are helped to understand and share important concepts in different texts and tasks and through interpretative questions. The teacher's role is to ensure that students are guided through their directed conversation towards acquiring deeper subject matter knowledge.

Alexander (2010) drew parallels between his work on Dialogic Teaching and Accountable Talk arguing that both were discourse pedagogies that emphasised reciprocal dialogues, they occurred in a social or group environment that was supportive of students' discussions, there was a clear purpose to the interaction, and the focus was to build on the ideas of others to co-construct and create new knowledge to help students learn. Mercer (1996) and Mercer and colleagues (Mercer & Littleton, 2007; Mercer, Wegerif, & Dawes, 1999; Rojas-Drummond & Mercer, 2003) reported on a similar dialogic discourse which they called Exploratory Talk where students were taught how to engage critically and constructively with each other's ideas by learning how to reason and justify their assertions and opinions as they collaborate on group-based tasks. The results from a series of studies showed that not only did the use of exploratory talk enable students to become more effective in using language as a tool for reasoning and sharing knowledge but it also led to higher levels of individual achievement, and significant improvements in students' capacities to solve reasoning-test problems. These results led Mercer et al. (1999) to conclude that "the use of exploratory talk helps to develop children's individual reasoning skills. It appears that even non-verbal reasoning, like that involved in solving the Raven's problems, may be mediated by language and developed by adult guidance and social interaction amongst peers without the provision of any specific training in solving such problems" (p. 106). The authors further concluded that "...our results support the view that the induction of children into cultural language practices influences their use of language as a cognitive tool" (p. 106).