Chapter 20
Collaborative Design in School:
Conflicts, Contradictions, Agreements, and Disagreements to Learn

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ABSTRACT

This chapter presents a literature review on collaboration to learn with some illustrations to design adequate collaborative settings to promote learning in the classroom. From a socio-cultural approach of education, the authors present the way teacher and students participate together in several discursive activities to elaborate a shared understanding of the topic or task under study. This chapter offers two collaborative designs: an argumentative tool-based collaboration in astronomy and a creative collaboration in music education. Some examples are proposed in order to identify different conflicts, contradictions, agreements and disagreements between students to solve a problem, complete a task or create a product in collaboration.

INTRODUCTION

Learning in interactive groups has increased in scholastic contexts. Literature on cooperative and the one on collaborative approaches are intermixed (Menges & Austin, 2002; Thousand, Villa & Nevin, 1994) with several researchers reporting on cooperative and collaborative learning by students (Johnson, Johnson, & Smith, 1991, 1996; Bosworth & Hamilton, 1994). In a collaborative setting, student accountability is less prominent in collaboration than in cooperation, recognizing that knowledge is communal (Bruffee, 1995). As distinctive characteristics, in educational approaches to teaching and learning, collaborative learning involves groups of students working together to solve problems, complete tasks or create products (Laal, & Laal, 2012; Welch, 1998). Collaboration is a social interaction that evolves between individuals with a common purpose through ideas and shared knowledge (Miell & Littleton, 2008, Moran & John-Steiner, 2004; Sawyer, 2008). It

is a recurrent activity emerging during social interactions in favorable contexts but it sounds different in educational or professional settings where people are assessed individually rather than collaboratively. As a consequence, learning is often studied or explained as process relying only on the individual cognitive abilities. What happens when learning is defined as a collaborative discursive or dialogical activity (Baker, 2009; Grossen, 2010; Mercer, 2000, 2009; Perret-Clermont, 1996)? Such a sociocultural perspective of learning and social interaction implies not only tool and sign uses but also reflective uses of tools and signs (Gillepsie & Zittoun, 2010).

The main aim of this chapter is to review literature on collaboration to learn and to provide illustrations with special attention to the design of adequate collaborative settings to promote learning in the classroom. How can teachers design collaborative activities? How do students use tools proposed by the teacher, and in which conditions are these tools appropriated and used in a collaborative activity? In other words, this chapter proposes to examine how schools enable children's collaboration to learn. Relying first on literature about the conditions for "productive collaboration" involving the role of agreement and disagreement, the role of initial knowledge, the role of tools as well as resources or artifacts, and the role of discourse-based activity, we shed light on the relationships between students and between teachers and students in productive and collaborative activities. As a matter of fact, productive collaboration needs to be guided by the teacher in the classroom. It is not sufficient to command students to collaborate or work together to solve a problem, complete a task or create new objects. Inspired by Mercer (1995, 2004), collaborative experiences in teaching can require teachers to discuss with students by eliciting knowledge from learners, responding to what they say and describing significant aspects of shared collaborative experiences.

From a socio-cultural approach to learning and teaching, this chapter illustrates how teachers and students participate together in several discursive activities in which the elaboration of new ideas may emerge. As Saxe, Gearhart, Shaughnessy, Earnest, Cremer, Sitabkhan, et al. (2009) point out, the travel of ideas in the classroom has to be studied as and within tool-based activities. Specific collaborative aspects are proposed in this chapter to understand *(a)* how teachers construct devices and/or settings to permit students to collaborate and exchange about a topic to learn and *(b)* how students elaborate together new ideas (or become creative) in such settings. Rather than oppose guidance from adults for learning in peer groups or dyads, we examine situations where peer's collaborative actions take place under teacher guidance. We illustrate how children not only interact but also "interthink", or think together (Mercer, 2000) and the teacher's difficulty to guide these situations (Giglio, 2013; 2015). The teacher needs to change his or her actions to support creative collaboration in the classroom.

In such a context oriented by collaboration to learn, the teacher does not propose an answer to children but rather invites them to participate in different social and individual situations in which they are lead to act together, use tools and elaborate knowledge through dialogical activities. The teacher tries to initiate activities, render explicit points of view and make the children reflective regarding their own productions or others' productions. He or she organizes activities grounded in dialogue, exchanges of ideas using several systems of signs. How do tools proposed by the teacher become a sign for the pupils in an activity? This specific development in the use of tools/signs will be of particular interest in our examples.

The two case studies in this chapter illustrate

1. The difficulties for the teacher to guide learning in, through and after peer collaborative sessions and for peers to collaborate (in the

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