Chapter 15
Challenges for the Teacher's Role in Promoting Productive Knowledge Construction in Computer-Supported Collaborative Learning Contexts

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ABSTRACT

This chapter discusses challenges related to teachers' pedagogical activities in facilitating productive discussions among students in Computer-Supported Collaborative Learning (CSCL) contexts. In the light of two different cases from secondary-level and higher education contexts, the authors examine how teachers' pedagogical choices influenced the quality of students' activity, namely Web-based discussion. The results of our studies indicated that rich moments of collaboration were rare and distributed unequally among the students. The obvious weakness from the perspective of teachers' pedagogical activities was that in neither of the studies was the students' interaction in the discussion forum supported in any way. A future challenge is, therefore, to develop both pedagogical and technological tools to support the monitoring and enhancement of students' learning process during online learning. Furthermore, we discuss how teachers' professional development (TPD) is challenged by new technological tools in formal learning environments.

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INTRODUCTION

New technological tools challenge teachers' pedagogical activities and professional development (TPD). Recent empirical studies share the idea of teachers' learning as a lifelong and collaborative process in which learning environments are to support the growth of both individual and collective professional knowledge of teachers (Zellermayer & Munthe, 2007). This chapter explores teachers' pedagogical activities in facilitating productive knowledge construction and discussions among students in Computer-Supported Collaborative Learning (CSCL) contexts. We define collaboration as the process of shared knowledge construction in which knowledge is created and built on each other's ideas and thoughts (e.g., Baker, 2002; Barron, 2000; Dillenbourg, 1999). At their best, new technological applications offer tools for supporting collaboration within teams (e.g., Cobos & Pifarre, 2008; Fischer, Bruhn, Gräsel, & Mandl, 2002; Koschmann, 1996). However, often the web has been overrated as a tool for collaboration, and the term itself is in danger of losing its meaning, while most web facilities intended for correspondence or coordination across distances are marketed as "collaboration tools" (Lipponen, 2001; Roschelle & Pea, 1999). In addition, the new kinds of social networking technologies and content management systems, often called Web 2.0 technologies (O'Reilly, 2005), as well as more established communication technologies themselves are rarely designed with learning and teaching in mind (Laurillard, 2009). Hence, teaching with such technologies sets high demands and challenges for pedagogy and TPD. As learning is conceived as an active process of knowledge construction, the teacher should be seen as a facilitator who supports and guides students' participation and knowledge construction processes (Fischer & Dillenbourg, 2006; Rasku-Puttonen, Eteläpelto, Arvaja & Häkkinen, 2003). However, the transmission mode of instruction – the teacher showing and telling what students should know and then testing it – is well alive and present in schools even today (Weinstein, 1989; Wells & Arauz, 2006), and reflected also in students' shared activities (Arvaja, 2005). Even though this mode of instruction can be regarded as important for passing on cultural meanings, knowledge and practices valued in the culture, students also need more opportunities to explore alternative perspectives, and possibilities to develop and enrich the acquired knowledge and practices (Wells & Arauz, 2006). However, many recent studies imply that fostering student engagement in productive discussions and enhancing the dialogic mode of instruction are far from being an easy task (e.g. Alexander, 2006; Lyle, 2008). In this chapter, the key aims will be to characterize the nature of productive collaborative learning, that is, interaction that promotes learning; to illustrate teachers' instructional activities and pre-structuring in CSCL contexts with relation to students' collaborative knowledge construction; and to sum up the results in the form of concrete messages for practical applications.

THEORETICAL BACKGROUND

Collaboration and collaborative learning have become common terms occurring frequently in discussion among teachers, researchers, and politicians. In school curricula, collaboration and collaborative learning are mentioned as important means for developing learning and instruction in schools. This has been an answer to the requirements that an information society sets for its citizens. Contemporary work requires the ability to work productively with others, since a lot of work today is done in groups, teams, and larger networks. Furthermore, it has been suggested that modern work requires the ability to communicate, negotiate, and anticipate what is to be done in practice rather than just doing the job as such (Iedema & Scheeres, 2003). However, from the teachers' perspective, there are also other current