LEARNING, ASSESSMENT AND COLLABORATION IN COMPUTER-SUPPORTED ENVIRONMENTS

There is currently much research interest in the theoretical and foundation issues of computer-supported collaborative learning (CSCL) and the design of learning environments that support collaboration (Dillenbourg, Eurelings, & Hakkarainen, 2001; Koschmann, Hall, & Miyake, 2002; Koschmann, 1996; Stahl, 2002). Assessment studies in CSCL primarily focus on quantitative and qualitative analyses of collaborative processes and the evaluation and assessment of systems and designs (for example, see Dillenbourg et al., 2001; Chapter 6 by Jerman, Soller & Lesgold, this volume). By comparison, relatively little attention has been given to the assessment in CSCL from the perspective of learning, specifically, how assessment can be designed to support and characterise learning and collaboration in classroom context. This gap may exist in part because there are diverse views, models, and methodology in CSCL, making it difficult to integrate research and pedagogical perspectives on assessing collaboration and learning. More importantly, we argue that there is a general lack of alignment among learning, assessment, and collaboration in both research and teaching contexts.

This chapter examines assessment of student learning in CSCL and considers both the research and practitioner communities. In the research context, some dilemmas exist with the assessment of individual versus collective learning. Many recent CSCL studies have focused on detailed analyses of how students collaborate rather than what they have learned. Research studies that examine what students learn, tend to focus on assessing individual learning outcomes and processes rather than collective knowledge growth despite recent theoretical emphasis on the social nature of learning (for example, see Jacobson & Kozma, 2000). We propose that assessment approaches should both characterise and support learning, and be aligned with the theories, models, and metaphors of learning that inform the design of CSCL environments (see Chapter 1 by Kirschner, Martens, & Strijbos, and Chapter 2 by Lipponen, Hakkarainen & Paavola, this volume). Current debates on theories of learning have indicated the need to consider both cognitive and situated perspectives (Anderson, Greeno, Reder, & Simon, 2000; Anderson, Reder, Simon, 1997; Cobb & Bowers, 1999) and metaphors of acquisition and participation (Sfard, 1998). There is a need to consider ways to capture, assess, and characterise both individual and collaborative aspects of knowledge construction in CSCL.

In the teaching context, there are also misalignments among learning, assessment, and collaboration in CSCL. It is now widely recognised that assessment is part of the instructional process, and that it plays a central role in scaffolding
student learning (Gipps, 2002; Shepard, 2000). With the changing conceptions of learning emphasising the social and constructivist nature of learning, there is a need to develop social-constructivist assessments that foster collaboration and give students the responsibility to assess their own collaborative process. Although the idea of assessment for learning is now widely accepted, little attention has been given to the alignment of learning, assessment, and collaboration in CSCL. For instance, despite much enthusiasm for using online learning in higher education with professed high-level goals, assessment continues to focus on discrete knowledge and skills, and is often separated from instruction. Reeve (2000) described a case in which a virtual university in the United States spent 13 million dollars to put 130 courses online; however, course delivery by faculty was separated from course assessment administered by a different body. In other cases, even though contemporary notions of instructional design were proposed (for example, Enkenberg, 2001), there were no systematic approaches to align assessment with instruction in supporting collaboration.

The main argument of this chapter is that models and practices of assessment should be aligned with models of learning in CSCL. More specifically, assessment needs to be examined in ways that scaffold and characterise collaboration and learning in CSCL. The chapter consists of six sections. Following the introductory section, the second section outlines contemporary theories and perspectives of learning that underlie the development of computer-supported collaborative learning. The third section examines the difficulties of assessing learning in CSCL and identify areas that need to be addressed. The fourth section highlights the need to align learning, assessment, and collaboration with new forms of assessments. The fifth section provides examples of innovative assessment practice in computer-supported collaborative learning. Finally, we conclude by suggesting some guidelines for developing assessment practices in computer-supported collaborative learning in higher education.

1. CONTEMPORARY THEORIES AND PERSPECTIVES ON LEARNING RELATED TO CSCL

Traditionally, cognitive theories have examined learning as an individual process, and cognitive analyses have focused on assessing individuals’ mental processing and learning outcomes. In the last two decades, paradigmatic shifts have taken place toward views of learning that emphasise the social, distributed, and collective nature of learning (Bereiter, 2002; Brown, Collins, & Duguid, 1989; Lave & Wenger, 1991; Salomon, 1993). Some researchers emphasise interactions involving peers, the learning environment, and cultural artifacts. Thus, the cognitive resources available to students to complete a task are distributed, extended, and shared among students (Salomon, 1993). Other researchers propose that learning is situated in real-world contexts when participants engage in meaningful activities (Brown et al., 1989; Cognition & Technology Group at Vanderbilt, 1997) and fostered in cognitive apprenticeship with peer scaffolding (Collins, Brown, & Newman, 1989). Learning is not an isolated activity; it occurs in the context of a learning community in which