Chapter XII

A Framework for Assessing Self, Peer, and Group Performance in E-Learning

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Abstract

In this chapter, we propose a framework that supports the analysis and assessment of collaborative learning of online groups of students working on a complex task (software project, or case study) in a real Web-based, distance-learning context. On the one hand, our approach is based on principled evaluation criteria that involve and measure a variety of elements and factors as well as on a combination of a basic qualitative process and a quantitative method that provide a grounded and holistic
framework to analyze and assess group and individual performance more effectively and objectively. On the other hand, the approach has been fully implemented and tested on an asynchronous collaboration platform. All in all, the aim of our work is to provide a better understanding of group interaction and determine how to best support the collaborative learning process.

**Introduction**

Computer-supported collaborative learning (CSCL) is one of the most influential research paradigms dedicated to improving teaching and learning with the help of modern information and communication technology (Dillenbourg, 1999). Collaborative or group learning refers to instructional methods where students are encouraged to work together on learning tasks. Collaborating in small groups may constitute a powerful means for promoting and enhancing learning and social interaction. However, the effectiveness and success of a group of learners depends on a variety of issues during its lifecycle (Pipek & Wulf, 1999). Furthermore, during task realization, students learning via CSCL technology and methods need guidance and support in order to collaborate effectively and achieve their learning goals successfully. This fact is especially critical when it has to do with collaborative learning practices that are carried out virtually, over a long period of time, mainly asynchronously, involving a significant number of tutors and students who have to work together to solve a complex real problem and participate in a variety of activities (Cameron, Barrows, & Crooks, 1999; Dobson & McCracken, 1997; Kiesler & Sproull, 1987; Thomas, 2000).

From the evaluator’s point of view, a critical issue in the groups’ lifecycle is how to assess self, peer, and group performance through efficient and functional assessment techniques (Barros & Verdejo, 2000; Martínez, Dimitriadis, Rubia, Gómez, & de la Fuente, 2003; Reiser, 2002; Soller, 2001). Most of the existing learning systems still have limitations when used by students in real settings. Some of the limitations are attributed to the fact that students have difficulties in developing metacognition on their own actions and processes or to self estimating the appropriateness of their participation in a collaborative group or a wider learning community. Students seem to need information (in a literal or visual form) on their own actions, that could support awareness, metacognition and thereby self regulation of their learning activity (Dimitracopoulou, 2004). Interaction analysis is a core function for supporting both students’ self regulation and evaluation in CSCL environments. On the one hand, both processes rely on the same basic functionalities (Jermann, Soller, & Muehlenbrock, 2001) and