Chapter 10
Collaboration within Multinational Learning Communities:
The Case of the Virtual Community Collaborative Space for Sciences Education European Project

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ABSTRACT

This chapter focuses on the investigation of essential features of a multinational virtual community that can promote effective collaboration and research among its members so as to overcome space, time, and language barriers. Specifically, a multinational Virtual Community Collaborative Space for Sciences Education has been formed in the context of the Socrates Comenius 2.1 European Project: "VccSSe – Virtual Community Collaborating Space for Science Education." In this project, researchers from five European countries (Romania, Spain, Poland, Finland, and Greece) participated in a multinational learning community where blended collaborative learning courses were formed in order to train teachers from these countries in the use of Information and Communication Technologies (ICT) in their real

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teaching practices. Within this framework, a number of specific software and pedagogical tools were formed to support collaboration and learning for the teachers and the researchers who participated in this virtual community. After the end of these courses, the teachers were asked to design their own virtual experiments and lesson plans and then to implement them in their classrooms. The analysis of the data shows that the researchers-partners of VccSSe effectively used various collaborative methods to produce the previously mentioned software and pedagogical tools. It has been also shown that teachers who participated in the VccSSe project were encouraged—by the use of the collaborative tools provided and the aforementioned collaborative blended course—to develop interesting virtual experiments and use them in their classrooms. Finally, it is worth noting that students who participated in those classes provided favourable feedback related to the implementation of virtual experiments in their everyday learning experiences.

INTRODUCTION

How should one define computer-supported collaborative learning? In a nutshell, Computer-Supported Collaborative Learning (CSCL) is focused on how collaborative learning supported by technology can enhance peer interaction and work in groups, and how collaboration and technology facilitate sharing and distributing of knowledge and expertise among community members (Lakkala, Rahikainen, & Hakkarainen, 2001). In the field of CSCL, technology meets psychology, philosophy, and pedagogy. Instructional designers and software developers, educational psychologists, learning theorists, computer scientists, and even sociologists are interested in this area of research.

Recent studies of e-learning have pointed out that involving learners in collaborative learning activities could positively contribute to extending and deepening their learning experiences, test out new ideas, improve learning outcomes and increase learner satisfaction, at the same time decreasing the isolation that can occur in an e-learning setting (Palloff & Pratt, 2004). Furthermore, collaborative learning situations can provide a natural setting for demanding cognitive activities such as explanation, argumentation, inquiry, mutual regulation etc., which can also trigger collaborative learning mechanisms such as knowledge articulation as well as sharing and distributing the cognitive load (Dillenbourg, 1999). Within the context of online collaborative learning, learners could also be provided with opportunities to be motivated to actively construct their knowledge and to enhance their diversity and their understanding of the learning concepts in question as well as to acquire a sense of belonging online (Scardamalia & Bereiter, 1996; Haythornthwaite, Kazmer, Robins, & Shoemaker, 2000). In addition, online learning has provided education with many benefits in terms of flexible opportunities to learn anytime and anywhere as well as to communicate and collaborate virtually throughout the world (Harasim, Hiltz, Teles, & Turoff, 1995). On the whole, CSCL has been recognized as an emerging paradigm of educational technology (Koschmann, 1996).

Appropriately designed educational software can also catalytically affect the changes in the whole learning context in terms of learning content, learning activities and the roles of both teachers and learners (Soloway, 1993; Noss & Hoyles, 1992; Jonassen, Carr, & Yueh, 1998). In particular, computers provide wide opportunities for the construction of various, different, linked and dynamic representation systems such as: texts, images, equations, variables, tables, graphs, animations, simulations of a variety of situations, programming languages and computational objects (Kaput, 1994). The use of Multiple Representation Systems (MRS) is acknowledged as crucial in encouraging the expression of learners' different