Chapter 9
CSCL Techniques in Collaborative Virtual Environments:
The Case of Second Life

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ABSTRACT

This chapter reviews and compares the most promising collaborative virtual environment platforms, which have been used or proposed for supporting educational activities in terms of their potential to support collaborative e-learning. The most promising environment according to the results of this review is Second Life. Second Life is further examined by validating the platform's features, philosophy and policies against some basic design principles for collaborative virtual learning environments in order to better assess its design adequacy for online learning. Furthermore, the chapter will present the features that the authors have implemented within the Second Life platform, in order to facilitate both the jigsaw and fishbowl collaborative e-learning techniques. Finally, the authors will present a case study concerning the evaluation of Second Life by undergraduate students in order to assess its potential to support these collaborative e-learning techniques.

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INTRODUCTION

Researchers have proven that collaborative learning activities generally lead to better learning and socialization results for the learners, which are further augmented when the learners' learning styles vary considerably (Heilig, 1992). In effective collaborative activities, less proficient learners can be helped by high-achievers, who learn better by teaching. Also, often the result of group work reaches a deeper level than the sum of what each individual member might obtain; group members support and motivate each other, take responsibilities for the outcome and also for the organization of the work.

More specifically, collaborative learning is the instructional use of small groups so that learners work together to maximize their and each other's learning. Benefits of this approach include the help, assistance and support learners provide to each other, the exchange of information and resources and the sharing of opinions or points of view. In addition, learners give and receive immediate feedback and help on their work, while engaging and challenging one another's reasoning as material is discussed, giving rise to critical thinking. Finally, learners influence one another to improve their methods and thought processes, they take part in the activities and develop the skills necessary for effective teamwork.

In his research, Taylor (1980) divided computer-based educational technology into three genres: (a) Computer as a tutor, (b) Computer as a tool, and (c) Computer as a tutee. With the advent of the Internet, we must add a fourth genre: Computer-Supported Collaborative Learning (CSCL).

BACKGROUND

The term MUVE (Multi-User Virtual Environment) is currently used to describe a persistent three dimensional graphical environment, accessed over the Internet, which allows a large number of concurrent users, represented by their 'avatars' to interact synchronously (Salt et al., 2008). In general, all MUVEs enable multiple simultaneous participants to access virtual contexts, interact with digital artefacts and represent themselves through "avatars" (in some cases graphical and in others, text-based). Furthermore, through MUVEs users are able to communicate with other participants (which in some cases are computer-based agents), and take part in experiences incorporating modelling and mentoring about problems similar to those in real world contexts (Dede et al., 2004).

A Collaborative Virtual Environment (CVE) is a form of MUVE. More specifically, it is a computer-based, distributed, virtual space or set of places. In such places, people can meet and interact with others, with agents, or with virtual objects. CVEs might vary in their representational richness from 3D graphical spaces, 2.5D and 2D environments, to text-based environments (Churchill et al., 2001). Access to CVEs is by no means limited to desktop devices, but might well include mobile or wearable devices, public kiosks, etc. It is interesting to note that CVEs have been around way before the World Wide Web was invented; but have not been adopted on anywhere near the same scale. This is possibly because of their complexity and base requirements being much more demanding, or possibly the content being much harder to create.

The CSCL field moved the focus of attention from individual cognitive approaches towards a socio-cultural paradigm, emphasising knowledge building in learning communities. Therefore, in CSCL learners use the Internet to learn from and communicate with knowledgeable members of the adult community. They can also become involved in educational online communities with individuals from different geographical regions. As is elaborated upon in the following paragraphs, this approach is grounded in social constructivism.

According to Dillenbourg (1999), any virtual environment that integrates the following features