

## Chapter 32

# Integration of Educational Games in Synchronous Virtual Classroom: A Case Study

**Eleni Rossiou**

*University of Macedonia, Greece*

### ABSTRACT

*Higher Education could be seen as an ideal field for the development and wide use of modern technologies and pedagogical methods of cooperative and Web-based education. Many students today are digital natives and thus game-based learning is becoming increasingly popular and highly motivating because of their ability to use computers effectively. The aim of this chapter is to describe the integration of an educational multiplayer game in the context of a synchronous virtual classroom. In particular, what follows is the proposed design and implementation of an instructive intervention whereby many different technological tools are combined simultaneously (LMS, synchronous virtual classroom, and a Web-based Educational Game) in order to support the educational process of the course “Algorithm with C” in the Department of Applied Informatics of University of Macedonia, Thessaloniki, Greece. Furthermore, there is a presentation of the pedagogical and technological framework of the educational proposal that combines methods and techniques of network supported learning and places great emphasis on learning by playing.*

### INTRODUCTION

Students in conventional Higher Education are educated in a particular place, time and knowledge topic. The Information and Communica-

tions Technologies (ICT) enrich and develop the educational process. Thus, ICT change the production and dissemination of knowledge in Higher Education Institutes which enrich and complement their courses with services of Distance Education (Bates, 2000). European Com-

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mission acknowledges the role of education in the development of “Knowledge Society” with ICT as vehicle (European Commission, 2001). There are many ICT applications in education: from integrated Information Systems and automated creation of time-plans up to Learning Management Systems (LMS) and Tele-Education. Many Greek Higher Education Institutes meet the demand for the management of learning resources and communication between instructors and students by introducing *Learning Management Systems*, as e-Class, CoMPUs, Blackboard and Moodle. However, in those systems emphasis is mainly given in administration services for organizing and management of learning resources and less in supporting communication, interactivity and cooperation. Higher Education can be a suitable place for implementation and utilization of modern technologies and pedagogical methods of cooperative and Web-based education (Andreou et al., 2005; Karagiannis et al., 2006) because lecturers and students have access to appropriate facilities, there is a high-level experience in pedagogical approaches and, in parallel, there is a need for multiple support of educational process and active students’ participation. Examples that will be cited later on in this section include *Game-Based Learning*, *Blended Learning* and *Open and Distance Education*.

*Games* are a form of *fun and play* that offer *enjoyment, pleasure, intense and passionate involvement*. They give *structure and motivation* through *rules and goals*. *Interactivity* is a main characteristic, since players *do* something and this interaction leads to the formation of *social groups*. *Learning* is promoted by *outcomes and feedback*. Also, *competition and challenge* increases the level of players *adrenaline* and emotional involvement in their story (Prensky, 2001). Games as a whole are one of the most interesting ways for pupils to learn new things (Jaykathan, 2002). *Computer games* in general help the development of unique skills that are useful and valuable for children growing up in a technology-driven society. *Educational*

*games* are designed with specific educational objectives which are sensitive to both the requirements of teachers and the students’ needs. If they are incorporated successfully into an educational framework, research shows that a significant and positive educational outcome is likely to be achieved (Bergen, 2001). Furthermore, the goal of educational games is to engage students not just in the game, but in the subject matter itself. Educational games have incredible ability to hold the interest and attention of students for longer than more traditional teaching methods. Among the range of computer-mediated applications available for teachers to use with students are games and simulations. It has been suggested that by using online educational games to supplement traditional classroom lessons, teachers can place a greater emphasis on teaching their students other important skills such as critical thinking, social skills, sense of empathy, community involvement, respect for diversity, and interpersonal communication (Rossiou & Papadakis, 2008).

*Learning by playing* a game is a well established training tool for student management. (Jacobs & Baum, 1987). Researchers have argued that games engage students in a manner that promotes learning (Prensky, 2001; Gee, 2003). This learning takes place both during the game, where users develop their game and cognitive skills and outside the game, as they reflect on how they might play better, seeking tips and resources about game playing.

The concept of “*blending*” emerged after the experimental implementation of e-learning in various universities which gave an insight into its potentialities and weaknesses (Aydin & Yuzer, 2006; Papadakis et al., 2006b,). Although instruction is appropriate for online delivery, there are still many contexts in which it appears that learning is best served by some combination of classroom teaching, Web-based Training (WBT), and synchronous or asynchronous online delivery of digital resources (Douglass, 2006). *Blended Learning* supports synchronous and asynchronous strategies

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