Chapter 21
Game-Based Learning: A Strategy to Integrate Digital Games in Schools

Begoña Gros
Universitat Oberta de Catalunya, Spain

ABSTRACT

Children and young people today are introduced to the virtual world via video games, and the way that they interact with technology is changing ways of learning and the production of knowledge. The design of a learning environment based on the educational properties of games seems to be an ideal way of increasing learning. Digital games offer a very good example of the principles of successful learning environments; they are users-centered, and they promote challenge, co-operation, engagement and the development of problem-solving strategies. Games can help students learn to collaborate, solve problems, collect and analyse data, test hypotheses, and engage in debate. But there are differences between using digital games for play and using them in a formal context. For this reason, methodologies must be developed for their use in the classroom. In this chapter, the author proposes examples of methods that can be applied to the use of video games in formal education.

INTRODUCTION

In recent years, electronic games have assumed an important place in the lives of children and adolescents. As a result, researchers and educators pay particular attention to them. The presence of video games in the lives of children provokes concern. Games have been a constant source of criticism – and even alarm – among teachers and parents. The potentially harmful effects of videogames have been linked to problems associated with sedentary lifestyles among youth, childhood obesity, addiction, socialization problems, poor academic performance, and aggressive behavior (Vanderwater, 2004; Gailey, 1996). At the same time, there is a growing consensus that learning takes places when people use games (Gee, 2003; Prensky, 2005; Shaffer 2006).

Support for the use of digital games as a medium for education is based on different approaches that

DOI: 10.4018/978-1-61520-897-5.ch021

we categorize as: (a) games as powerful context, (b) immersive learning, (c) development of soft skills, and (d) complex learning.

Games as a Powerful Context

The central argument of Gee (2003) regarding the potential contribution of video games to learning is the idea that semiotic domains are shared by groups of people, described as affinity groups, who share knowledge, skills, tools and resources to form complex systems of interrelated parts. Learners gain resources from fellow members which equip them to solve problems: "the learner needs to learn not only how to understand and produce meanings in a particular semiotic domain that are recognizable to those affiliated with the domain, but, in addition, how to think about the domain at a 'meta' level" (Gee, 2003: 23). Players have to understand the meaning of the internal design grammar and the ongoing social practice that determine the activity of play. This view makes players think about games as systems and designed spaces. "A video game is a set of experiences as player participates in from a particular perspective, namely the perspective of the character the player control" (Gee 2008: 23). In summary, digital games provide powerful contexts for learning because "they make it possible to create virtual worlds, and because acting in such worlds makes it possible to develop the situated understandings, effective social practices, powerful identities, shared values, and ways of thinking of important communities of practice" Shaffer &Clinton: 2005, 7).

Immersive Learning

According to Squire (2005), video games immerse learners in situations in which they use tools and resources in order to solve complex problems. As games become more complex, learners begin to use intelligent tutors, intelligent agents and scaffolding techniques.

An important point mentioned by Squire (2005) is that the main differences between e-learning and games are related to content. The most important element in e-learning is content, whereas in games it is experience. Games structure the entire experience around problem solving. For this reason, "learning through play, with games and with simulation is a part of more general process of learning in immersive worlds" (De Freitas&Oliver, 2006: 11).

Development of Soft Skills

School learning has traditionally focused on the transmission of knowledge from instructor to student. Schools do a reasonably good job preparing students in hard skills such as, mathematics, languages, and science. However, they have not done as well developing student competences in the soft skills such as, problem solving, communication, working in groups, and collaborative learning. Educators need to find ways of providing students meaningful experiences through which they can develop these skills in the context of their existing subject-matter. Videogames provide opportunities for students to develop soft skills and schools can take advantage of them to facilitate this work.

Complex Learning

The contexts that most video games provide are complex learning environments in which the player has to control many different variables, take decisions, establish strategies and constantly compare the effects of their actions on the system. Prensky (2005) establishes the levels of learning that summarize the complex learning environment provided by video games. The most basic level of learning that takes place during a video or computer game is learning how to control the interaction with the screen. In the case of games, this learning is always related to practice. One learns, gradually, after mastering the various