Chapter 9
Using an Educational Online Game to Stimulate Learning

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ABSTRACT
Digital games are increasingly being seen as effective learning resources. This is especially true because of how society is being transformed by the technological revolution, with adolescents as the key players in this transformation. In order to diversify teaching methods, schools in Quebec have been experimenting with educational games. This chapter reports on research that was based on a single group, pretest-posttest design. The findings showed that the online game STIs: Stopping the transmission, supported learning in terms of structuring of knowledge and integration of information for youth between the ages of 14 and 15. Several recommendations for further research have been made in the discussion.

INTRODUCTION
Educational professionals and theorists have mixed feelings as to the effectiveness of games as learning tools: games are very much used in primary schools, but secondary schools, colleges and universities have resisted their use. It appears that few of these institutions are exploring the educational potential of games. In many countries, the educational potential of computer games has been ignored (Piette, 2005; Prensky, 2006). In Europe, a study led by the European Union demonstrated a gap between the use of Internet at home and at school (Union européenne en éducation des médias, 2006). Many of the important uses for young people exist outside of school. For example, basics are learned mostly through self-teaching and learning with peers. These are important uses made available by educational online games.

The border between the virtual world of gaming and the real world of learning is still not clearly defined. According to Lisowki (2007), playing games and learning are two activities that make almost identical intellectual demands. The main difference lies in the context and environment in which the activity takes place. Educational games...
may provide a bridge between the virtual and real worlds to promote learning. But what do we mean by the term educational games?

A game is a fictitious, whimsical or artificial situation in which one or many players are put in a position of competition. Sometimes players square off against one another and at other times they are on the same side and are pitted against other teams. The game is governed by rules which structure their actions in view of a learning objective (educational game) and a purpose determined by the game such as to win or to take revenge. The notion of ‘artificial’ refers to a fictional activity with no referent in reality (e.g., Tic Tac Toe, Bingo) or one that is outside of the norms of reality. By placing oneself in a fictional situation, a player (or players) can experience fun by playing out imaginary and sometimes unrealistic situations (Sauvé and Chamberland, 2006).

In the context of this study, funded by the Social Sciences and Humanities Research Council (SSHRC, 2003-2008), we examined the impact of educational online games on cognitive learning. Based on modified rules from the board game Parcheesi, STIs: Stopping the transmission was developed as a method of health education for secondary school students between the ages of 14 and 15. In this game we aimed to create an online environment in which the player entered and progressed through the game by attaining the desired learning outcomes.

This chapter presents the results of the study involving secondary students in Quebec. They experimented with the educational online game on sexually transmitted infections. The first part of the chapter, discusses the place and the role of online games in schools. In the second part, the theoretical framework describes the type of cognitive learning that the educational game can encourage as it pertains to the structuring and integration of knowledge. The third part describes the pre-test and post-test research design used on a single group, the target population, the variables being studied, the measurement instruments, the variables of analysis, the educational game, and the successive steps in the experiment. In the fourth part, the results of the analysis starts with a presentation of the sampling, then moves on to the results in connection with the specific objectives of our study selected for this chapter in order to determine: (1) the students’ knowledge in the use of computers and the Internet as well as their perceptions of the importance of Information and Communication Technologies (ICT) and games in their learning process; (2) the degree of structuring of knowledge about sexually transmitted infections (STI), (3) the degree of integration of information on sexually transmitted infections and (4) if there is a difference in terms of learning through games according to gender. In the fifth and last part, a few recommendations are formulated in the discussion.

**PROBLEM**

The invention of the Internet and the growing possibilities available through the use of computers (including video games) provide many opportunities for society and for learning. However, some people worry about the potential negative effects on the social development of an individual that a phenomenon such as this might have. Nevertheless, no one can ignore the existence of the ‘digital natives’, represented by children and adolescents of today. This game culture fundamentally shapes their way of learning and behaving. Young people prefer experimenting and playing as ways of learning. Asakawa and Gilbert (2003), Bain and Newton (2003) and Prensky (2006) suggest that “the game generation” has developed a new cognitive style characterized by multitasked learning, which is usually not paid much attention to during the learning process, and a way of learning which relies on exploration and discovery.

Several recent studies show that games have positive influences on learning, particularly on the structuring of knowledge (Evreinova, Evreinova