Exploring User Experience While Playing Educational Games: Focus on Temporality and Attractiveness

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ABSTRACT
The concept and methods of user experience (UX) are gaining momentum in the game industry. Designers and educational practitioners aim to provide rich and effective user experience through serious educational games. Nevertheless several phenomena that delineate the complex issue of UX in serious gaming remain unexplored. This empirical study sheds light on temporality of UX and attractiveness of serious games. More specifically it explores a) how pragmatic and hedonic UX quality affects attractiveness in a serious game and b) investigates differences between anticipated and episodic UX so as to capture how the UX develops over time. Key findings are presented and discussed.

Keywords: Attractiveness, Game-Based Learning, Game Design, Serious Games, User Experience

1. INTRODUCTION

Game design is a complex and dynamic process that is considered both an art and a science (Rollins & Adams, 2003). To create a rich experience for their game’s players, developers traditionally follow specific guidelines and principles on the development of three foundation game elements that play a major role in the user experience of the game player. These elements are core mechanics, interactivity and narrative. However, simply following guidelines and integrating standard components to games does not guarantee that the game will appear attractive to the gaming community. As the game market expands rapidly resulting in stronger competition, game developers have identified the importance of user experience evaluation in the success of the game (Bernhaupt, 2010). Due to the complex and stochastic nature of user experience, designers now allocate a considerable amount of resources and time in the integration of user-centered processes in both the game design and evaluation phases. Although video games mostly relate to entertainment purposes, during the last years

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we have seen a tremendous interest in the application of games for purposes other than entertainment. Such games are often referred to as ‘Serious Games’. One specific application of games exists in education. In spite of the fact that these games have an educational purpose, the requirements for fun, engagement and rich user experience are still important. As a matter of fact, these are the key ingredients to the successful use of the educational games, as learning occurs through play and immersion. There are challenges in the development of such games that raise a number of significant research questions such as how rich is the experience that educational games provide to the players, how does this user experience develop on temporal levels and how do pragmatic design qualities (i.e. usability) affect the attractiveness and therefore the success of the serious game. The answers to the above questions can help designers make decisions on how to create more effective educational games.

This study investigates the evolution of user experience in serious games by comparing anticipated and episodic data. Further to this, it identifies correlations between user experience qualities and the attractiveness of the game. Such results can help game designers understand the significance of the temporal dimension of user experience for the attractiveness and subsequently for the success of a serious game. Next section (2) provides background information on game-based learning and user experience and its emergence in the game design process. Section 3 describes methodological issues. Section 4 presents data analysis and results. Section 5 presents a discussion on the experiment and its findings. Section 6 offers directions for future work.

2. BACKGROUND

2.1. Game-Based Learning

The significance and success of games in education lies in the fact that learning takes place during play, a method which exhibits many advantages over traditional learning approaches. This emerging learning method is called Game-Based Learning (GBL) and is becoming very popular at various levels of education. Playing games is one of the most important activities for children, as GBL provides significant benefits to them. Games’ capacity to increase interest and engage users makes them powerful learning platforms. A major benefit of the utilization of games in teaching context is their effect on user’s motivation. Games augment motivation during learning processes, by providing learning tasks in meaningful context, fully controlled by the user himself through entertainment (Kirriemuir & McFarlane, 2004; Kim, Park & Baek, 2009). There are many studies that support how GBL improves user motivation (Cordova & Lepper, 1996; Rosas et al., 2003; Tüzün, Yılmaz-Soylu, Karakus, Inal & Kızılkaya, 2009). Tüzün et al. (2009) compared the motivation of students who learned in a game-based learning environment to those who learned in a traditional school environment, and found that students demonstrated significant higher levels of intrinsic motivation in the game-based environment.

During their interaction with games, children have to accomplish specific tasks in order to achieve the winning condition. McFarlane, Sparrowhawk and Heald (2002) found that by trying different strategies and solutions children can learn to understand their mistakes and determine alternative solutions that eventually lead them to the completion of the task. During this process, students practice and enhance their analytical and practical problem solving skills. With respect to an overall benefit of GBL, Papastergiou (2009) claims that games: (a) support multi-sensory and active problem-based learning and critical thinking, (b) activate prior, diverse knowledge that allows the participants to successfully encounter novel situations, (c) establish meaningful collaborative learning environments which can improve students’ social skills, (d) support immediate feedback which informs subsequent decision making and (e) offer opportunities for self-assessment. Another study by Healy and Connolly (2007) highlights the active learning process of GBL opposed to passive learning in traditional teaching. Con-
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