Chapter 21
Delivering Educational Games to Mobile Devices

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ABSTRACT

A new generation of students is accustomed to daily use of mobile devices, and educating them in the proper way is a complicated task. Video games are an ideal tool for communicating with students, and finding the right combination of using mobile devices with educational games is important for educating them. This paper describes a novel approach to educational game defining and interpretation. Application of a model-driven approach to educational game interpretation enables the use of the same game on different devices and platforms. The authors enable the interpretation of an educational game on any mobile device. These games take learning outside the classroom and provide a fun and interesting way of learning anytime, anywhere. The authors use an adventure game as an example using this methodology.

1. INTRODUCTION

The first computer games appeared between 1950 and 1960; from then on, their development gained more and more speed. It was almost impossible to assume that they would become one of the most dominant social phenomena and that they would generate more revenue than movie industry during the last decade of the 20th century.

Such fast development allowed computer games to become more complex, more attractive, to have rich content and, at the same time, to attract more players. The popularity of computer games led to them being the important part of modern society. Because of this, during the last few years, the idea of using games in educational purposes became more and more popular.

Educational games have gone through the evolution process, from simple 2D games with low knowledge integration all the way to the complex 3D game whose purpose is to pass the knowledge to the player without breaking the game flow.

It is reasonable to assume that making the educational game as interesting as possible will improve learning. Also, achieving increased player engagement involves adding deep emotional experiences to video games (Van Lent & Swartout, 2007).

There are several approaches to the development of educational games. Some games are using well-known, popular environment and set of rules, adapted for the purposes of education. On the other hand, some games are developed with a certain subject matter in mind. Games can also be used for teaching certain skills, or for simulations of real – life events. In some cases, the modification of popular games (game modding) was used for teaching.

There is also numerous scientific evidence that supports the claim that games can be helpful during the learning process. During the research conducted in 1998. It was noticed that game playing influenced on raising the dopamine level in organism (the substance that is in charge of memorizing chemical process). The recorded level was twice as high with game players as oppose to control group. During the game playing, the brain was preparing for the learning process (Koepp et al., 1998).

Mobile devices provide us with the great opportunity to engage students in learning outside classrooms and comfort of their home. This is especially important for students that usually spend a lot of time in transport with a certain amount of free time. Also their natural tendency toward using mobile technologies provides a great base for this approach. When learning is distributed to mobile devices such as cell phones or PDAs, it is called M-learning. The basic presumption of M-learning is that a user would like to interact with educational resources whilst away from their normal place of learning -classroom or computer. Mobile devices weren't the first occurrence of M-Learning. It is well known that M-Learning has been around for longer than e-learning, with the paperback book and other portable resources. However, technology is what shapes today's usage of M-learning. Technology now allows us to carry vast resources in our pockets and access these wherever we find convenient. Technology also allows us to interact with our peers instantaneously and work together remotely in ways never before possible.

The prime assumption of this work is that it is possible to bring process of learning and game-play and exchanging of knowledge to mobile devices, while saving or even improving the usability of such systems in compare to standard use via desktop computer. The challenges of proving such assumptions lie in limited performances regarding mobile devices such as small screen size, limited processing power, reduced input capabilities.

In our work we used an example of Adventure game genre. Adventure is highly used game genre for educational games, since it's more narrative and oriented to problem-solving skills, which are highly appreciated by educators. It can be applied on almost every domain. Enable controlled learning path and knowledge assessment path. In our example, knowledge is integrated into adventure game, received in controlled manner during interaction with NPCs.

Second part of this paper identifies the issues of traditional educational games development as well as presentation process. Next, we give a bibliography review concerning adequate research area. In part four we present our solution to the stated issues in part two. Finally, we present our conclusion on given matter.

2. PROBLEM STATEMENT

Educational games that are created using traditional methods provide us with many issues. A methodological problem is how to better involve

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