Chapter 18
Games for Children with Long-Term Health Problems

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ABSTRACT

Games are designed to generate a high level of motivation and engagement in their players. Game players often display intensity in their interaction with and devotion (compulsion) to a game and play the game over and over. In this chapter, the authors present a framework of motivational constructs found in games that are applicable to the design of interactive health software. The framework includes four dimensions of constructs: control, competency, context, and engagement. The authors developed a platform supporting a variety of games that include these constructs, and through two focus groups we examined the impact of these interactions with children with long-term health disorders. The goal is to determine if games developed with health-related goals provide an opportunity to engage children over time with some responsibility for their own condition; that is, can we build games that function like personalized coaches?

INTRODUCTION

Digital games provide both personal engagement and social interaction for children and adults alike. In this chapter we explore issues related to the use of games and game-like interactions specifically for children with long-term health disorders. These children have to make and sustain a commitment to ownership of their own treatment, typically by some type of behavioral modification or adaptation of lifestyle that may include taking medication, pain control, exercise, food choices, and daily journaling.

We began this work with a literature review of the theoretical constructs of motivation from the psychological literature to form a basis for design choices in the development of appropriate games. An

DOI: 10.4018/978-1-61520-731-2.ch018

initial survey of university students allowed us to test the relevance of designated motivational constructs extracted from the review to game playing specifically. Using these results, a framework and architecture were designed within which specific games could be developed and tested. A focus group study examined the relevance of these features using prototype games with health-related themes targeted for pre-teen children in a health context. One of the games, chosen from the prototypes based on feedback from the focus group, was then developed further and tested in a second focus group setting. This game targeted young girls with inflammatory bowel disease (IBD). The goal of the game is to increase their motivation in maintaining their treatment regimes and to increase and maintain a positive attitude to this treatment.

BACKGROUND

Games have become very popular and have been shown to be effective in capturing the attention of children in the promotion of healthy lifestyles to help them learn about a variety of health conditions and treatments (Fishman, 1999; Games for Health, 2005).

Our goal in this work, however, has been to explore a new generation of health-related games that move beyond the educational phase to the longer-term support of children with chronic conditions. These children have individual treatment regimes, often on a daily basis, that stretch over extended periods of time. Can games be used to motivate these children to satisfy the treatment requirements and to maintain positive outlooks? For example, can games reinforce healthy choices, remind the child of treatment specifics, distract their attention, and at the same time maintain individual health status and treatment records? The success of digital games across a broad demographic has led researchers to speculate that game interaction can be used to advantage in health contexts. This is based on an observation made by Turkle (1995, p. 69) that users of *SimCity*® liked it because "even though it is not a video game, it plays like one." Supporting high levels of motivation in the players is crucial for young patients facing months and years of treatment. Games, whether single-player or collaborative, provide players with the autonomy to practice, use the computer as a coach, and yes, zone out.

While the focus of game play is largely entertainment, it is entertainment that includes challenges, skills, self-motivation, and simulation. Consequently, the use of game structures in other contexts has appeal where the goals of the context include as core values self motivation, learning, the practice of skills, and successful meeting of challenges. Chapman (1999) suggests that there should be increasing emphasis on learners "situating" themselves in the world of study, in order to explore possibilities from other perspectives. Games do this.

Most health-related games to date target the initial period after diagnosis, when the primary goal is learning. That is, the child and the family need to learn a great deal about the disorder, the treatment, and the effects of treatments. The long-term treatment phase, however, is not so much about education as it is about dealing with the reality of the disorder. This phase, which may span considerable time, has not really benefited from the use of games. The design of games for this extended period is, in some ways more challenging than the short-term engagement needed for the interactive learning of the diagnostic phase. Their focus is more on the child who would be expected to return to the game frequently over longer periods of time, during which the child may mature or simply get bored. As children mature, they may become eager for more sophisticated game interactions. Furthermore, over time the particular treatment and characteristics of the disorder may change. Consequently, the goals of games targeted for the treatment phase may be