

Chapter 5

Design and Evaluation of Tamhattan: A Multimodal Game Promoting Awareness of Health in a Social and Positive Way

Roope Raisamo

University of Tampere, Finland

Sari Walldén

University of Tampere, Finland

Katja Suhonen

Tampere University of Technology, Finland

Kalle Myllymaa

University of Tampere, Finland

Susanna Raisamo

University of Tampere, Finland

Kimmo Vänni

Tampere University of Applied Sciences, Finland

ABSTRACT

Progress in the field of human-technology interaction offers interesting possibilities to promote health through gaming. The authors' objective was to carry out user-centered research to develop an interactive game called Tamhattan that was designed to promote health awareness of adolescents. The interactive gaming environment enables gaming in both mobile and PC contexts with games based on health knowledge. The platform supports socially networked gaming and learning. It enables input with game controls, positioning (GPS), and gestures, as well as multimodal feedback through visual and auditive modalities. The research started with a survey of the health issues that should be addressed in the games. Adolescents were engaged in design and testing of the games throughout the process. Finally, the gaming environment was used in actual teaching contexts in local schools. The results of these user and gaming experience studies are presented and discussed.

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INTRODUCTION

Health of young people has recently been under critical development in Finland as in other modern societies. The aim is to have an impact on the whole life cycle by educating the young through gaming into awareness and care of their personal health. We claim that in the future almost every aspect of our life will contain game like experiences. This means that also health education and other health-related topics will be gameified. Some game designers and psychologists are even convinced that the key to a society of healthier, more productive and more engaged citizens lies in bringing gaming into daily life. (Pavlus, 2010).

The objective was realized through development of an interactive gaming environment which enables gaming in both mobile and PC contexts with games based on health knowledge. The concrete target was to develop an environment which supports activation of the users with multimodal interaction, personalization, and presentation and scaling of information supported by multiple interaction technologies like mobile devices or big screens of home theaters. The platform supports socially networked gaming and learning by enabling input with game controls, machine vision, speech and gestures, as well as by enabling multimodal feedback through visual, auditive and haptic modalities according to the context of use and user preferences. The novel features of the games and their interfaces were aimed to arouse enthusiasm resulting in positive experiences of the young and thus motivating them to learn of their health.

The research was multidisciplinary applying computer science, usability, signal processing and health science, and aiming at comprehensive understanding and integration of the knowledge to realize the concrete goals in form of games. The games were tested and iteratively developed in a constructive research process that involved the young during the whole project. The research started with a survey of the major health problems

that should be addressed in the games. The focal research questions were: How multimodal interaction can be applied and utilized in interactive gaming? How young people can be engaged in social gaming to support the educational goals of the games? How this gaming can be supported with multimodal and multiplatform features? How health information can be structured into the game content so that it will have a concrete impact in promoting health awareness and health behaviors of the target group?

The target groups were adolescents aged from 12 to 15 years. They may have different lifestyles, values and hobbies. Differences between boys and girls are also arising within this age group. One challenge of the project was to analyze and classify these factors in order to find appropriate and interesting themes which can be used as the basis for the games and their strategies. Young people were also engaged in testing of usability of the games and, especially their playability to maximize the interest in the finished games. Finally, the gaming environment was used in actual teaching contexts in local schools.

The chapter will introduce the motivation, design, implementation and evaluation of a new multimodal gaming environment that was aimed to promote awareness of health in a social and engaging way. The iterative design process and the lessons learnt during this project are also discussed. Finally, we envision how this kind of serious gaming environment could be used in practice and how it could end up increasing health awareness in an effective way.

BACKGROUND

Health of adolescents is determined by individual and social factors. An individual behavior is determined to a large extent by social environment, for example, community norms and values. Yet, research on determinants of adolescents' health and health behaviors has mainly focused on the

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