

Fizzees (Physical Electronic Energisers)

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Abstract

There is a current debate across Europe and in the USA about rising obesity figures and a decrease in activity levels generally, and particularly amongst young people. Many reports highlight the role of digital technologies in shifting children's play into sedentary experiences. This project explores the potential of mobile, wearable technologies to encourage an increase in movement and activity rather than a decline.

Fizzees is a prototype project that enables young people to care for a 'digital pet' through their own physical actions. The "Fizzee" lives on a wrist mounted device with no buttons to interact with it. In order to nurture their own Fizzee, keep it healthy and grow it, young people must themselves act in physically healthy ways. Their activity is monitored through an accelerometer in the wrist device in combination with a heart rate monitor chest strap.

The Fizees project has two objectives: to encourage young people to become more physically active, and to enable them to develop a better understanding of the components of a healthy, active lifestyle. The combination of these two objectives is for young people to develop applied understanding of a healthy lifestyle. By combining a complex maturation structure for the Fizzee, based upon research into healthy activity for young people, coupled with the development of a digital pet, this project aims to provide both the motivation and supporting information and resources to enable young people to develop such applied understanding.

Keywords: digital pet, obesity, health, education.

1 Introduction

Futurelab¹ is a research and development (R&D) lab based in Bristol, UK. The lab was set up to bring together policy makers, the creative and software industries and educational practitioners to critically explore the future of digital learning environments within school and informal settings over the next five to ten years. A not-for-profit organisation, Futurelab is committed to sharing the lessons learnt from our research and development in order to inform positive change to educational policy and practice. Once or twice a year Futurelab runs a "Call for Ideas" (Cfi) in which it invites people to send in ideas for prototype projects that demonstrate novel use of technology for learning. This paper describes one of the projects submitted through the Cfi programme.

The aim of the project is to develop a prototype that encourages young people to undertake a greater amount of physical activity and to develop an understanding of what constitutes a healthy lifestyle. The prototype accurately measures the player's exercise levels (specifically a measurement of heart-rate linked to movement that is compared to previous activity scores) which is then represented visually in the form of an

animated character 'living' on a wristwatch-type device – a Fizzee. The Fizzee's maturation and appearance changes are dependent upon the activity levels of the user: the young person cares for and nurtures their digital pet by caring for and nurturing themselves. A website is also provided as an opportunity for children to compare their Fizees with those of others and to enable further interrogation of their own health data. As young people play at caring for the Fizzee, they are encouraged to become an active part of the game world, controlling, caring for and nurturing their own Fizzee.

2 The underlying principles

One of the key principles on which the Fizees project is based, is the privileging of real-world knowledge within a game domain. For players to improve their Fizzee, they are able to ask their local doctor, family members or sports instructor for information about how to become fitter, and that information (when put into practice) will correspond to an improvement in the Fizzee's score.



Figure 1 The Fizzee wrist device and character levels

The Fizees scoring system is an attempt to provide appropriate feedback to players in relation to their physical activity as they undertake it (in this way, technology is used to support mobile learners). It attempts to privilege personal health data (within the recommendations from research into health/activity in young people) by rewarding amounts and types of exercise. An additional objective of the scoring system is to provide a model of 'healthy amounts of physical activity' for the players to follow through their game play. By investigating and discovering how to get the best score to improve their Fizzee, the player is uncovering the best ways for developing and sustaining a healthy lifestyle. Again, the link between real-world knowledge and game play becomes evident.

¹ Futurelab: www.futurelab.org.uk

3 Fizees scoring system

The Fizees scoring system is an integral part of the core concept of this project and is central to the effectiveness of the prototype as a learning device. Within game play generally, learners interrogate the activity/environment to work out the rule systems in order to maximise their scoring. Within the Fizees project, making sense of the scoring system will uncover the suggested components of a healthy (active) lifestyle as well as the recommended levels of activity for young people. In doing this, learners are revealing the recommendations for their own activity and therefore the scoring system must be closely based upon current research into the recommendations for physical activity for young people. In this way, the scoring system has been developed in partnership between Futurelab and the University of Bristol's Centre for Sport, Exercise & Health, taking particular reference from the Chief Medical Officer's Report: "Evidence on the impact of physical activity and its relationship to health".

The scoring system has many components that stimulate and award various activities throughout the day and the week. It has also a "safeguard" built in, in that over exercise beyond the maximum recommended amount will result in penalty points.

The scoring is based on intensity of movement and exertion (based on the heart rate data) and is personalized with respect to heart rate and movement. This means that within the Fizees game, an obese or unfit player will be able to perform at levels appropriate to them.

4 Feedback to the scoring system

The Fizee character progresses from a simple shaped 'young' character towards a more complex, animated appearance. Within each change of character (each step) there are several levels that indicate the health of the Fizee. This health is shown by the expression of the Fizee and in the later stages of each step, by the addition of hearts (heart health) next to the Fizee.

In addition to the development of the Fizee's appearance, further feedback is given through two types of animation: character animation and screen animation. The character animation shows the Fizee jumping up and down in reaction to the players' significant increase in score. This character animation is intended to both reward the players' activity and also to help develop the nurture relationship between the player and the Fizee. The two screen animations work in two different ways, first as an indicator that the Fizee is changing its state (a positive change to a new level) and also to represent that the wearable pod is being synced with the desktop computer and/or that the pod battery is being recharged. Further feedback and interactions are available on the Fizees website.

5 The Fizee prototype

The Fizee prototype consists of a wrist mounted device the size of a large watch (see fig 1) and a chest strap heart rate monitor that has a wireless connection to the wrist device. The wrist device is used to detect movement via an accelerometer and give feedback in the form of an animated character that "lives" on the screen. The Fizee develops, grows and is happy while the scores increase but becomes miserable and lethargic when the wearer doesn't exercise enough.

The Fizee can be connected to a PC via a docking cradle that has a serial connection built in as well as a charger. The wrist device needs to be put in its charger at night where the Fizee goes "to sleep" thus indicating that appropriate rest and sleep is part of a healthy lifestyle as well.

6 Summary of objectives

The Fizees project has two objectives: to encourage young people to become more physically active, and to enable them to develop a better understanding of the components of a healthy, active lifestyle. The combination of these two objectives is for young people to develop applied understanding of a healthy lifestyle.

By combining a complex maturation structure for the Fizee, based upon research into healthy activity for young people, coupled with the development of a digital pet, this project aims to provide both the motivation and supporting information and resources to enable young people to develop such applied understanding.

The key principles are:

- designing a virtual pet that players look after and nurture through their own physical activity
- long-term benefit to self shown in short-term benefit to Fizee
- accurate, personal health data shown in easily interpretable form
- match between recommended activity levels and the Fizee's scoring system
- applied understanding of healthy lifestyle.

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