Joy of Reading – Adventure Video Games and Literacy Skills

Eino Keskitalo, Topi Leinonen, Eetu Mansikkamäki, Toni Käkelä, Martti Similä, Netta Iivari, Marianne Kinnula, Tonja Molin-Juustila
Department of Information Processing Science, University of Oulu
P.O. BOX 3000, 90014 Oulu, Finland
eino.keskitalo@gmail.com, toplein@hotmail.com,
eetu.mansikkamaki@anvianet.fi, tkakela@gmail.com,
vermiselli@gmail.com, netta.iivari@oulu.fi,
marianne.kinnula@oulu.fi, tonja.molin-juustila@oulu.fi

Abstract

As literacy skills are essential in the contemporary society, we wanted to inspire and motivate male junior high school ice hockey players reading by developing a text-rich adventure game with ice hockey theme. Our initial data analysis shows that the players liked the game. They also read much of the texts in the game during playing and also clearly needed the textual hints to advance in the adventure. This indicates that text-rich games provide new possibilities to improve literacy skills of the youth. We also emphasize the potential of participatory game design for increasing children's literacy skills and wellbeing in general.

Author Keywords

Video games, Adventure games, Literacy

ACM Classification Keywords

K.8.0. General I.2.1 Applications and Expert Systems, K.3.2 Computer and Information Science Education

Introduction

United Nations' Human Development Index (HDI) is used to evaluate countries' progress in human development, in which significant is widening choices people have in their lives and generally improving their well-being [11]. Essential starting point for that is education and thus one of the three dimensions measured in HDI is the amount of formal education [11]. This is implicitly related to literacy, an essential skill for information exchange and education. Literacy is, however, more than just skills to read and write. It refers to "understanding, using, reflecting on and engaging with written texts, in order to achieve one's goals, develop one's knowledge and potential, and participate in society" [7, p. 41]. Although in the Western world illiteracy is not a major problem, there are concerns expressed related to the literacy skills of today's youth, especially boys. For example, the Program for International Student Assessment (PISA) results from year 2009 show that literacy skills of Finnish children are among the world's best, but there has been a clear decline compared to the results from

year 2000, especially in the skills of Finnish boys [10]. Considering how important literacy skills are in the modern information society, this is alarming.

In 2012 a national LUKUINTO ("Joy of Reading") programme was started, funded by the Ministry of Education and Culture in Finland, to find ways to improve the situation. One of the focus areas within this effort has been to get more understanding of the potential of information technology in increasing the reading eagerness and literacy skills of children. The current study explores the potential of digital games to inspire young boys to read more. We selected a very challenging target group of male junior ice hockey players for the study. These young athletes typically do not read almost at all – practicing ice hockey usually takes almost all of their free time [4]. We involved our target group in the design process of the game. Based on their own preferences, we created a classic text-rich adventure game, "Hockey Zombies – Escape from the Arena". Together with the selected genre, we also followed other persuasive strategies in the design process. We considered this type of game to have good potential to engage players to read more and to encourage them also to understand what they read.

Games and Literacy
Alongside the traditional literacies such as reading books, there is an increasing amount of conversation in research about new/emergent/digital literacies such as multimedia literacy, television literacy and game/ gaming literacy. Some researchers argue that playing games as well as other game-related activities, such as writing and reading about games, are much closer to traditional school-based literacy practices than commonly considered, and that games have

particularly high educational value in the field of literacy [1]. Others draw direct comparisons between playing games and traditional academic literacy and say that gaming is a legitimate literacy practice [9].

Adventure game genre is well equipped to support literacy practices [2]. In most of the adventure games there is a well-developed world and storyline and large part of that is offered for the player in text form. Thus, playing includes a lot of reading, even though the situation is different from reading books. Combination of reading and the built-in motivation for playing the game have been found to give significant learning gains especially for poor readers [6]. Some of the games are very time consuming and difficult but this encourages the player to try different ways of learning and thinking [3]. Stories this long can be also found from books, but instead of a prewritten plot, games also demand interpretive competence within the game world and its sounds, possible actions, and written text [8]. The player should be seen as actually co-authoring the game experience with the game designer [3, 5].

Hockey Zombies: Escape from the Arena
Our game aimed to inspire and motivate reading for the target group: male ice hockey juniors (12-15 years). Even though we started with a vision of the game based on personal gaming and game development experience, the target users from two junior high schools were actively involved in the study from early on. This included a specific sports class of junior ice hockey players. Three initial game concepts were presented to the pupils of this class (an adventure game concept, a gamified application with changeable texts, a quiz-based concept). The pupils chose the text-rich adventure game concept to be developed further

(Figure 1). Instead of using an existing game in the genre, the game was developed from scratch with a theme tailored to the target group and in their native language. The main character is a junior hockey player stuck in an ice hockey arena during zombie apocalypse - the setting and character are familiar to the target group, but the story sets it apart from the real world.
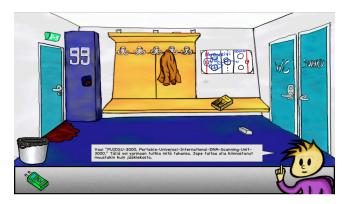

Figure 1. Screenshot of the game.

To reinforce reading in the game, puzzles of the game maintain high difficulty level, but the player gets hints by carefully reading what the main character has to say about the game world and items inside it. There are also many references to reading in the character's comments (for instance, the character recalls having read something from Wikipedia), and the items in the game world include books, with topics relevant to the game world and the target user group. The game includes ca. 13 pages of text available to the player on any play through, comparable to a short story. We consider this to be enough for the game to be regarded as text-rich. The game was developed as open source software (https://github.com/evktalo/ kiigame) and a

playable version is also publicly available (http://www. student.oulu.fi/~tkakela/kiigame/kiigame.html)

The game was tested with eight boys (mainly ice hockey players), four from each involved school. After a usability testing session, an adjective card selection method was used for inquiring the game experience. The participants were also interviewed. Based on our data, the puzzles seemed to be challenging enough to require reading comprehension. The game wasn't easily beaten by just blindly attempting every obvious action, so it seems that we reached our goal of making reading a natural yet required part of the game. The humor in the texts was found interesting by the testers. One of the testers, without any knowledge of our goals, mentioned that the game is useful as it encourages reading and activates reading comprehension. As a whole, reading in the game was perceived positively by all testers. The setting and the hockey-related theme of the game were mentioned favorably by those players who played ice hockey and with indifference by those who did not - therefore our aim to appeal to the target group (the ice hockey players) was a success. Four of the testers thought the game could really motivate to read more and the majority of them expressed that they would like to try out other text-rich games in the future. Finally, at least one player mentioned becoming interested in reading Wikipedia articles.

Concluding remarks

We developed a game for the target demographic of male junior high school ice hockey players and used persuasive strategies in game design to increase the joyfulness of reading. Based on the initial analysis of the data from the playtests, we consider achieving our initial goals. It is difficult to say if our game inspires the

players to read more in the long term, however. There was some indication in the comments of the testers, but confirming this is a real challenge that would require a long-term study with the target group. Moreover, at that time the game itself was quite a short prototype in need of further development.

Having participatory approach, we wanted to engage children even more in the further development of the game. We have already had two follow-up projects with the same age group from two new schools, with new game themes. We have given children tools to create content (storyline, puzzles, texts, and images) for the game by themselves, with a vision that this might inspire them to read more and to encourage them to analyze texts (and games) more carefully. We thus have developed a game editor for that purpose and have already tested the editor and got promising results. We argue that text-rich games provide an untapped possibility to develop literacy skills of people of all ages, and both playing this type of games as well as creating content for them provide interesting new possibilities in educational use. We also want to remind game developers that texts in games may form large part of reading for some people and that they have not only entertainment but also educational value. Furthermore, while learning skills through gamification and digital games is increasing currently, we wish to highlight the potential in participatory game design as a practice for increasing children's wellbeing in general.

References

[1]   Apperley, T., and Walsh, C. What digital games and literacy have in common: A heuristic for understanding pupils' gaming literacy. *Literacy 46*, 3 (2012), 115-122.

[2]   Fernández-Vara, C. and Osterweil, S. The Key to Adventure Game Design: Insight and Sense-making. In *Proc. Meaningful Play 2010*, (2010).

[3]   Gee, J. P. What video games have to teach us about learning and literacy. *Computers in Entertainment (CIE) 1*, 1 (2003), 20-23.

[4]   Kinnula, M., Iivari, N. and Vanhanen, M. Cultivating Literacies of the Youth. In *Proc. ACIS*, (2014), 1-10.

[5]   Lacasa, P., Martinez, R., and Mendez, L. Developing new literacies using commercial videogames as educational tools. *Linguistics and Education 19*, 2 (2008), 85-106.

[6]   Mitchell, A., and Savill-Smith, C. *The use of computer and video games for learning: A review of the literature*. Learning and Skills Development Agency, London, UK, 2004.

[7]   OECD 2011. *PISA 2009 results: Students on line: Digital technologies and performance, Vol. 6*. OECD Publishing, Paris, France, 2011.

[8]   Sandford, R., and Williamson, B. *Games and learning*. NESTA Futurelab, 2005.

[9]   Squire, K. D. Video-Game Literacy - A Literacy of Expertise. In Coiro, J., Knobel, M., Lankshear, C. and Leu, D. *The handbook of research in new literacies*, 2008.

[10] Sulkunen, S., Välijärvi, J. Arffman, I., Harju-Luukkainen, H,. Kupari, P., Nissinen, K,. Puhakka, E,. and Reinikainen, P. *PISA 2009 Ensituloksia [PISA 2009 initial results]*. Opetus- ja kulttuuriministeriön julkaisuja, 21, 2010.

[11] United Nations. http://hdr.undp.org/en/content/human-development-index-hdi