

Tappetina: an Ecosystem of art, software, and research

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Abstract. Tappetina is a fairy tale about mentoring, social innovation and technology. A set of projects have been developed around the Tappetina concept. These include science workshops for teenagers and the associated material created by the participants, illustrations, a website, a video, a story telling game. These projects are all connected in an ecosystem of art, science, and research expressions. Participants are supposed to experience the works sequentially. Participants will be invited into the projects and encouraged to give feedback about how they perceive the experience. Sessions for playing the collaborative story telling game will be organized.

Keywords: Fairy Tales, Serious Games, Affective Learning, Empathy, Collaborative Storytelling

1 Introduction

We offer an as an artistic experience around an ecosystem of works. This ecosystem is formed under the novel of “The Little Doormaid: Tappetina” [3]. This story is authored by Letizia Jaccheri. When asked why she wrote this story, Letizia answered that she hoped it could inspire girls who read it to be more interested in technology. The story would not only try to combat stereotypes of girls in tech, but also create an emotional impact that creates interest in and even romanticizes technological concepts. In essence, it aims to build enthusiasm in kids to tech, and is thus used in IT workshops for learning IT and programming. The ecosystem that came out of this is an initiative to encourage nuanced views of people. It is formed under to combat the stigma surround women entering male-associated fields such as technology.

The novel has inspired several actors who have cooperated to produce workshops, a video, and a story telling game. This work, when exhibited will offer an experience of at least 20 minutes if one chooses to participate to a gaming session.

2 The fairy tale

Tappetina is a normal woman with children and everyday problems. At the same time, she is Doory Mentor, a superhero who helps other individuals to

succeed with their technology projects. There are four main characters in the story: the Little Doormaid, Doory Mentor, Sissi and Iva Aggressi. Each character has a unique personality and role to play in the story. As an everyday mother, Tappetina (the Little Doormaid) is drawn between everyday duties on the one hand, and, on the other, her role as Doory Mentor in a battle to save the world from a great threat. The Little Doormaid, she has low self-esteem in all areas of her life beyond taking care of children and preparing good dinners. Together with the other neighborhood doormat women, Tappetina spends much of her time talking behind everyone's back. Doory Mentor, on the other hand, is a strong and clear-headed superhero with ambitions and vision. As an enemy of harmful social status quos for women, Doory Mentor sometimes finds herself an adversary of the doormat women themselves. The doormat women do not know that The Little Doormaid and Doory Mentor are one and the same person. In the fairy tale, we follow Doory Mentor on her mission to protect an algorithm that can save the world from garbage. However, as is required in superhero stories, our superhero must have a nemesis. Doory Mentor's nemesis is the threatening Iva Aggressi, who wants to steal and destroy the algorithm and hurt Sissi. Sissi is the clever and hard working researcher and mum who has developed the anti-garbage algorithm. Doory Mentor flies over northern Italy on her electronic flying mat to prevent Iva Aggressi's plan, but she is stopped by a phone call. Will Doory Mentor find a balance between her domestic responsibilities and her determination to save the world? The narrative is expressed using language that creates a playful and visual experience of people and events. The reader is taken into an exciting fantasy universe with characters that do wonderful things. Yet there are many parallels to the real world. Many people -young and old- share the everyday dream of being an extraordinary person. In the real world, video games are an increasingly common and important leisure activity in which players can fulfill that dream. In a way, this is true for the Little Doormaid as well. The themes of technology, escapism and self-direction in the story make this fairy tale well suited to the video game format. At the conclusion of the tale, the fictional universe contains many unresolved missions for the heroine. The fairy tale is available in several languages at <https://tappetina.com/games-and-more/>

3 The website and the illustrations

The website www.tappetina.com functions as a collector for the other subsystems and a platform to recruit to our events. The illustrations were originally taken from XX and later they were commissioned to an artist.

4 The video

The video is available at <https://tinyurl.com/ybksf6dm> The project has been developed by a group of students [?] and aims to encourage teenagers to study computer science and promote the contribution of women in computer science by advertising the female character Tappetina. The group have developed an

animation video to support the character and the concept of women in science in general. The video will be used to promote the concept and increase the recognition of Tappetina. The team decided on developing an animation video since the video enables us to use social media and increases the possibility of the recognition of the concept. By promoting the character in social media via the video, the project intend to attract more people to study computer science. The project is designed as an innovative solution proposed for the challenge to accomplish the goal 4 and 5 described in UN Sustainable Development Goals. The proposed solution is expected to promote gender equality in computer science and increase the involvement of women from different parts of the world to the field. Consequently, customer need is analyzed also and the team challenges are reflected upon in order to develop a project. The results exposed in this report culminate with a user testing research and report to understand the feasibility of the proposal with a specific target audience.

5 The Events

5.1 Tappetina workshop Autumn 2017

In a two-day workshop [6] at a library in Trondheim, Norway, girls between the age of 12 and 15 were invited to code and be creative during Fall break. The workshop was in collaboration with the library. The workshop was conducted for approximately 9.5 hours including lunch, and the focus of this workshop was to introduce girls to the field of Computer Science, with a character called Tappetina from the book *Little Doormaid*. Tappetina is a rather ordinary woman with children and everyday problems, but she is also Doory Mentor, a superhero who helps people to succeed with their technology projects [4]. Tappetina spends time being self-conscious, while the superhero part of her is strong and clear-headed, as well as ambitious and visionary. [4] plays with language to create a playful and visual experience of people and events, with characters who do powerful things. The story appeals especially to girls who are known to be a minority in the field of Computer Science compared to boys [5] [8] [2] [1] [7] [9]. The girls would during their stay create a storyboard on cardboards, and a game related to Tappetina saving the world from an environmental issue. In this workshop, two student assistants were available for assistance if needed.

The first day consisted of the girls getting familiarized with Scratch and the basics of it. The girls could bring own laptops from home, but they were also able to use available laptops provided by NTNU or the library. In the beginning, the girls did exercises in Scratch individually, and around midday, Jaccheri and a student at NTNU presented the story of Tappetina to the participants. After lunch, the student assistants divided the girls into three teams and presented the concepts of storyboards, and why creating one was important. The student assistants also demonstrated an example game in Scratch to show the girls what could be done and started a discussion about environmental issues. After this, the girls were told to create a storyboard for the game they wanted to create.

One of the creative aspects of the Tappetina workshop was to create the storyboard in teams: The girls could choose between various materials for instance scissors, pens, pencils, colors, and cardboards to design them. Figure 1 shows how the girls were working on their cardboards.



Fig. 1. Tappetina participants working on their storyboard

On the second day, the teams continued to work on their storyboards. After this, each team presented their product and game concepts in front of fellow participants and student assistants. The remaining time of the workshop was used to create the games in Scratch, and at the end of the day, the girls held a presentation about their games and played the other teams' games.

5.2 games-culture-and-science-for-boys-and-girl



Tappetina

FEB. 19 Games, culture and science for Boys and Girls age 13 - 19
NTNU UB Gunnerusbiblioteket
Kalvskinngata 18, 7012 Trondheim

INTERNATIONAL CONFERENCE FOR TEENAGERS
Parents and educators also welcome

REGISTER NOW: info.tappetina@gmail.com

Dissemination speeches about science and culture by International researchers and artists from Japan, Europe and NTNU professors and Master students.
Practical activities in which the teen agers will try state of the art games and experience developed by the researchers and artists.

Language: english
*some refreshments will be served

www.tappetina.com

The event is partly sponsored by NTNU ARTEC, Gunnerus Library, IDI NTNU - www.ntnu.no/idi

Fig. 2. Invitation to the Event

A set of research projects were presented to teenagers.

- NOVELICA (by Nobumitsu Shikine Japan) is a game to make people forget their negative feelings on mathematics [?]
- Leo con Lula (Javier Gomez Escribano Spain) is a game that facilitates learning of reading skills for those with disabilities [?].
- UMI-Sci-Ed (Monica Divitini and Simone Mora Italy) (Exploiting Ubiquitous Computing, Mobile Computing and the Internet of Things to promote Science Education) is a Horizon 2020 project, which aims at enhancing the attractiveness of science education and careers for young people (14-16 year olds) via the use of latest technologies [?].
- Ark4 (Alexandra Angeletaki Greece) is a digital heritage library of games and quizzes that allow young students to learn while they play. Our games have subjects as archaeology, history, botany, literature, war history and are produced in three languages. Ark4 is exploring new ways to approach culture and heritage re-using digital content from the Cultural Heritage sector, mainly deriving from Gunnerus.no or Europeana and other libraries to reach a wider audience through knowledge games [?]
- Sindre Berntsen Skars Tappetinas Empathy is a game about exploring everyday stories and problems together. Players collaborate on telling a narrative that resembles modern social situations with the aim of playing with empathy and fantasy. The end goal is the same as the original Tappetina story: to learn about humans, social roles, and personal motivations
- An installation by Irene Dominguez Spain, Norway to stimulate curiosity about science, innovation, and empathy

The event was run with 35 participants.

6 The Game

This design of the Tappetina Empathy game begun with the possible goal of translating or interpreting this story of the novel into a digital game. Since then, this project has evolved into being a collaborative storytelling platform. Using the exploits of the novel's protagonists, Tappetina, the novel is determined on inspiring confidence and self-reliance. Tappetina continues on into this project, where she serves as the game's mascot, all while guiding the players along to tell their story.

The development has been guided by two main questions:

1. RQ1: What categories, concepts and potential learning impacts exist to design a serious educational game?
2. RQ2: How can a collaborative storytelling game make an impact on one's empathic ability?

Tappetina Empathy places around 3-5 players in a group, each with a smartphone. The goal is to build and present a story to each other. This is done by making use of story cues that the game gives them (see figure 3).

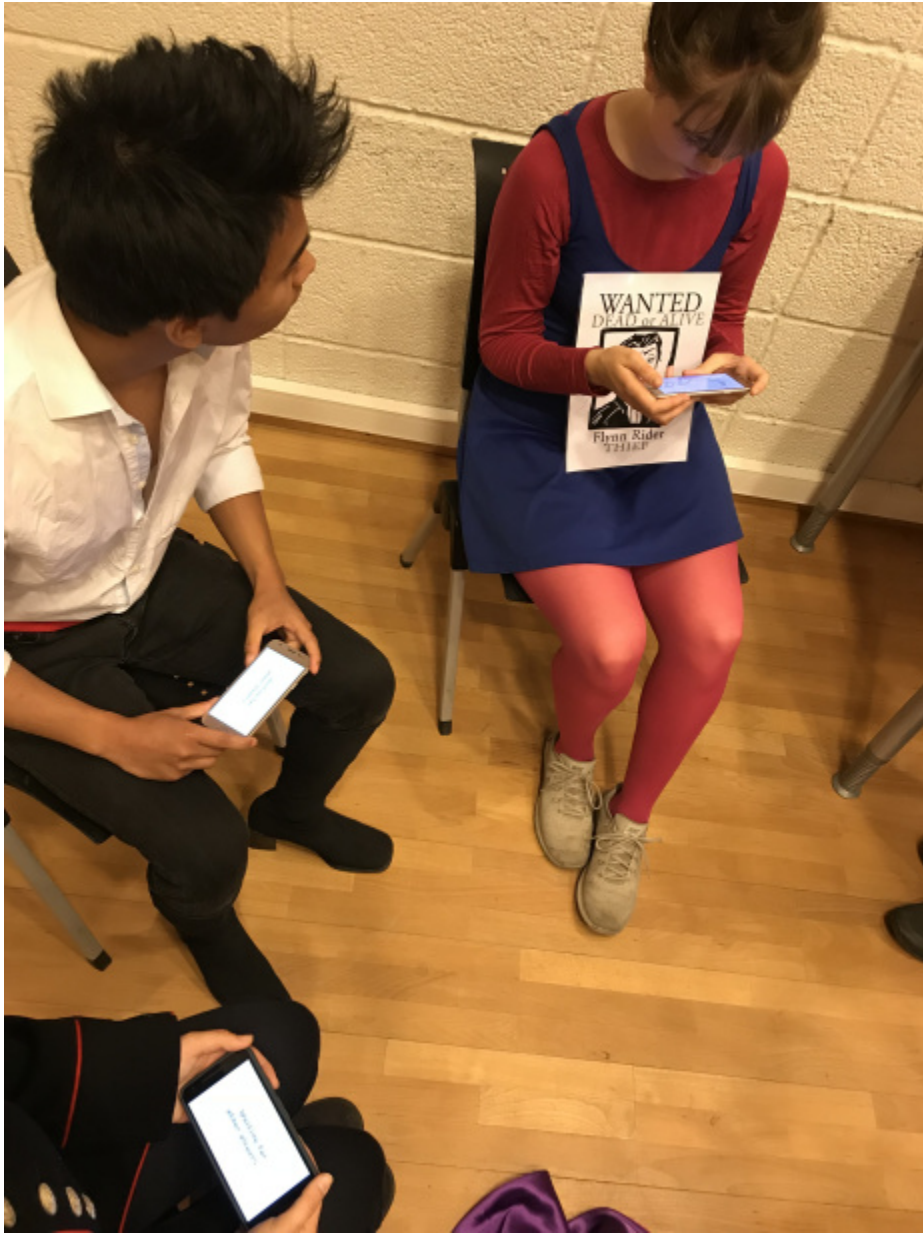


Fig. 3. Play session with Tappetina Empathy.

7 Bios of the creators needed?

Letizia Jaccheri (Ph.D. from Politecnico di Torino, Italy) is Professor at the Department of Computer and Information Science. Jaccheri's research is on: software engineering; entertainment computing; computational creativity; ICT-enabled social innovation.

Javier Gomez (PhD. from Universidad Autónoma de Madrid, Spain) is an ERCIM "Alain Bensoussan" fellow at Department of Computer and Information Science, NTNU. His research interests include human-computer interaction, assistive technologies and serious games.

Sindre B. Skaraas graduated from NTNU in 2018 with a Master thesis titled Tappetina's Empathy A Study of Serious Games Facilitating Empathy with Storytelling

8 Ongoing and Further work

Experiments Using Mobile Applications to Prevent Child Marriage and Tappetina and Blockchain

Acknowledgment

This work has been partially supported by NTNU ARTEC and by the ERCIM fellowship program. The authors would like to thank Alexandra Angeletaki for organizing the international experiment workshop at the Gunnerus library of NTNU and all the participants to the Tappetina workshops. We thank the students who developed the video: Biljana Arsenic, Farzana Quayyum, Kshitiz Adhikari, Letizia Balzi, Md Shah Newaz, Nazli Sila Kara, and master student Uyen Dan Nguyen (Mimi) and PhD student Sofia Papavlasopoulou for workshop design and evaluation. For the development of the game, the Unity Engine and editor was utilized, as developed by Unity Technologies.

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