

Swiping in the Wild: An Evaluation in the Wild of a Storytelling App for Children

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ABSTRACT

In this paper we report the preliminary results of an evaluation in the wild of a storytelling app, the *Lions of Time*, presenting an archeological story, based on the swipe story approach. A *swipe story* is a digital story that, with a simple and immediate gesture (namely the swipe) and a language based on drawings, images, words, games, sounds, movies and emotions, is able to start the young user to a new path of knowledge. We performed an evaluation in the wild the day the swipe story was launched at the 2017 Turin International Book Fair. Preliminary results are encouraging, especially regarding the children engagement in the fruition of the story and its related games.

CCS CONCEPTS

- **Human-centered computing** → **Empirical studies in HCI**;
- **Applied computing** → **Arts and humanities**;

KEYWORDS

Storytelling, swipe story, child-computer interaction

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1 INTRODUCTION

Since always, telling stories is a warm and friendly habit, but also a powerful tool to communicate, inform and teach. It's the easiest and the most immediate way to transfer knowledge [12].

According to story theorists like Bruner [3], stories provide a framework for making sense of events and their meaning [8]. For Paolini and Di Blas [9], digital storytelling is emerging as the most relevant way to deliver content in the digital age. They define a digital story as a combination of visual communication (slideshows, videos or animations) with audio. They claim that today digital stories are one of the best way for engaging users across several devices: from tablets to desktops, from smartphones to even phones, for audio only. Different narratives styles can be used and different situations can be envisioned, including immersive storytelling or augmented-reality storytelling.

According to Springer et al. [11] people process and retain information in narrative structures and stories are fundamental for the creation of meaning. For Springer et al. [11], the pedagogical dimensions of storytelling could be summarized as follows: *humanistic, cross-disciplinary, cross-cultural, multisensory, multimodal, constructivist, learning directed*.

The connections between digital storytelling and education have been also highlighted by Tyner [13]. According to Tyner, digital storytelling offers the advantages of an experiential approach to learning while combining oral and alphabetic literacies with those intrinsic to the new multimedia.

In cultural heritage access, storytelling has been applied to virtual tours in exhibitions [6], museums [11] and historical locations [4, 7], and also in the educational archeology field. Garzotto and Paolini [5] carried out a project with pupils combining several plugged and unplugged activities whose result was an interactive multimedia

narrative providing multiple reading paths and delivered as Web Site, podcast and CD-ROM.

On the side of pedagogical game-play, Ardito et al. [1] proposed games to support young students learning history at an archaeological site by making use of advantages provided by multimedia technology. They implemented two games on a large multi-touch screen, to support young students learning about archaeological parks during school visits. Students were encouraged to collaborate to solve the proposed challenges, but they can also play against each other.

In this paper we report the preliminary results of an evaluation in the wild of a storytelling app (developed by three of the authors of the current paper) presenting an archeological story, based on the swipe story approach. We performed an evaluation in the wild the day the swipe story *The Lions of Time* was firstly presented to the public, during the 2017 Turin International Book Fair. Preliminary results are encouraging especially regarding the children involvement in the fruition of the story and its related games. This paper is organized as follows: Section 2 presents the swipe story approach, Section 3 introduce the app *The Lions of Time* and presents the evaluation in the wild, and Section 4 concludes the paper.

2 BACKGROUND

A *swipe story* is a digital story that, with a simple and immediate gesture (namely the swipe) and a immediate language based on drawings, images, words, games, sounds, movies and emotions, is able to start the young user to a new path of living and stimulating knowledge. It enables an innovative storytelling able to:

- Welcome and initiate the user to a new path of knowledge, such as visiting a museum;
- Make the path of knowledge alive and stimulating, making the user interact with the elements that surround her and increasing her emotional involvement;
- Enhance the user experience favoring the consolidation of the knowledge acquired through in-depth studies, educational activities and games.

Realizing a swipe story means constructing a main narrative around a plot and developing it through a succession of events. Then the story develops with a series of scenes (frames) that make up a sort of tape. The user can move from one scene to another with the simple gesture of "swipe", which can trigger:

- Transitions over time (e.g. seasons or eras that follow each other on the same place);
- Transitions of space, with the crossing of places in spatial continuity.

To enrich the emotional dimension, transitions are characterized by a parallax effect (3D-simulated) in which the different levels of the design are made to move at different speeds and give depth to the scene.

The creation of the story is based on visual sketches (the scenes are not 3D reconstruction but real drawings), which go forward as tapes, and after that dialogues and audio come up. Digital storytelling is spread over several levels:



Figure 1: Example of points of interests in the Lions of Time.

- A level of narrative that allows the development of the emotional dimension, involving the user (by means of post-it and comics);
- A level of deepening able to propose scientific contents of greater detail and articulation (cards, images, films), developing the informative and playful dimension.

The types of points of interest (see Figure 1) are continuously improved with the activation of new user experiences. Currently in these points of interest are available:

- In-depth information (multiple sheets can be browsed on the two dimensions of a matrix with text, images and audio);
- Curiosity (two-sided sheet, question/answer type, suggestion/solution, etc.);
- Animated movies and clips;
- Games of association and correspondence.

3 EXPERIMENTING IN THE WILD

3.1 The story under evaluation

"*I Leoni del Tempo - Archeostorie del Friuli Venezia Giulia - The Lions of Time - Archeo-stories of Friuli Venezia Giulia*"¹ is a trans-media editorial project promoted by ERPAC (Regional Institution for the Cultural Heritage of the Autonomous Region of Friuli Venezia Giulia, Cataloging, Training and Research Service)². The swipe story is realized throughout a tablet and smartphone app, freely available in Google Play and App store markets. This swipe story supports an illustrated novel [2], and digital storytelling has been applied with the aim to bring the young audiences closer to the knowledge of the cultural heritage of Friuli Venezia Giulia, the Italian region situated further to the North East. To make the regional patrimony known to young generations, a series of illustrated, animated and interactive stories have been created, with which to follow the adventures of the Lions of Time (see Figures 1 and 2).

The story takes the user to discover the archaeological sites of Friuli Venezia Giulia, where the present is intertwined with the past, reality with imagination. Swipe after swipe, the user is walking in space-time in the company of the three characters (Eleonora, Leonardo, and Ruggero) between reconstructions of places, cities (Pradis and Aquileia) and ancient monuments, on the light wings

¹<http://www.swipe-story.com/app/ileonideltempo>

²<http://www.ipac.regione.fvg.it/>

of fantasy. The version of the swipe story under evaluation offers the user two stories, with illustrations, audio, comics and games, dedicated to Pradis and Aquileia. But in the future versions, the three characters will be in Cividale, Trieste, Udine, Zuglio and in other places in the Friuli Venezia Giulia region, which very rich in history, as all the Italian regions are.

3.2 The evaluation

During the 2017 Turin International Book Fair ³, Le Muse Archaeological Association ⁴ organized a public event at the Friuli Venezia Giulia stand, for presenting to the public the swipe story "The Lions of Time".

For collecting an initial and spontaneous feedback from real users, we invited to the event a group of families having children in the 7-9 age range. The children who participated at the event were 12, 5 females and 7 males. 9 of them have extensively played the swipe story, and we have based our main observations on their interactions. For the trial, we had 7 Android-based tablets and 2 Android-based smartphones.

We left the children free to interact with the swipe-story, giving as little instructions as possible, telling them only that they were there for the launch of a new app for children, and they would be the first to try it. In this way, we could follow the evaluation in the wild approach, according to which empirical studies are carried out in situ and participants are free to use the evaluated application without constraints and for their own situated purposes, while their activities are logged unobtrusively [10]. In fact we were there in 4 observing them, and one of us video-recorded the children and their interactions for further post hoc analysis.

In general, we observed that, probably due to their young age, the children tended to listen and pay attention to the narrative voice of the story, from one scene to another, and they run towards the games at the end. Only 2 of them clicked on the question marks on the screens and on the symbols, through which are opened further information about points of interest (Figure 1), providing more historical-pedagogical information. These last ones were realized in very long texts that replace the animated and sound narration with a static caption, breaking somehow the narrative rhythm.

Re-analyzing the video we noticed that the children have no problem with the swipe-based progress of the story, also because a hand-shaped affordance suggested them how to go ahead. We have noticed that 3 of them followed the story with limited interaction, while on the contrary, 3 others continually tapped on the screen to move the story forward more quickly, and 2 others instead swept continuously to proceed faster.

It seemed that those children felt the need to interact more than they should with the story, but continuously touched to keep the tape going faster and get there first, not so much to read. Most of them spent a lot of time interacting with games at the end of the narration (realized with the aim of developing knowledge or other skills), spending a lot of time on the memory and the puzzle games, less with the game for discovering how a city was made in ancient times, which was perhaps even less easy, because the affordances did not suggest the right actions to be taken. They all seemed to



Figure 2: A screenshot from the Lions of Time.

be very engaged in this last part of interaction with the app. On average, they spent 15/20 minutes (including 5/10 with the true story) to interact with the app and then get fed up

4 CONCLUSION

This limited and initial evaluation in the wild showed how the mobile app has been specially developed in order to win the attention of the little ones. The children, despite being very young, have not had any problem in the immediate use of the story, a sign that the digital natives are used to using new technologies not only to play, but also to communicate and above all to learn.

In the short period of use they managed to quickly learn what the app showed, even if with important and culturally advanced contents, without getting bored or learning difficulties.

As future improvement, we should think of a series of images with comics and/or narrating voice also for the in-depth analysis provided when clicking on question marks, in order to improve the level of the engagement proposed by the app.

Another improvement could be that of expanding the quantity of games proposed at the end, also linking them to moments of didactical learning and deepening, and introducing gamification mechanisms to increase the children involvement.

As long-term goal of the project, the ambition is to bring the application of the swipe story methodology to every possible application context even beyond the management of resources and cultural heritage. The current challenge is to imagine the ways in which a better ability to narrate can create value for individuals, businesses and society as a whole. In the future we want to continue to spread and enrich knowledge, bringing the narrative methodology of the swipe story in the most diverse social contexts.

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³<http://www.saloneLibro.it/it/chi-siamo/storia/edizione-2017.html>

⁴<http://www.lemusestudio.it/home.html>

Editrice Universitaria Udinese, and digital storytelling by Swipe Story s.r.l. (edd. Giuliano De Felice and Vito Santacesaria). The event at 2017 Turin International Book Fair was organised by Le Muse Archaeological Association.

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