Basic Elements on Game Design for Interactive Museum Exhibitions

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1 Introduction

Recent results in educational research suggest the benefits of creating learning atmospheres in which students actively engage with the material as well as other classmates [1]. The idea of creating such an environment using a multiplayer mobile game represents a natural extension of the ubiquitous audio guides offered by most museums today.

Aventura evolutiva is a videogame prototype [2], platform genre, with five progressive levels that summarizes human evolution main stages. The avatar transforms it-self from *Dryopithecus* (the first hominid), into *Homo sapiens* facing many situations that need to be solved with the appropriate tools and activities of each species.

2 Exposition

The most interesting questions raised by this work involve the relationship between devices and elements within the game and specific pedagogic objectives. In this section, we introduce the design process used to convey these issues into the game design of our prototype:

(1) Content Selection. We defined a template for the analysis and selection of exhibitions to identify candidates more likely to become a video game. (See template 1). Main criteria include educational potential, appeal, importance of topic and exhibition.

Museum section:	**Exhibition name:**	**Information Quality**	**Exhibition Aestetics**
Goal: Of two different nature: entertainment or academic and pedagogic. **Game mechanics:** In terms of game rules, player actions and universe objects, as well as interactions. **Global score:** (from 1 to 10.)			

Template 1. Exhibitions analysis for videogames candidates.

(2) Content Quality Assurance. We conducted a research to document and validate sources and ensure the validity and certainty of the information used in the game´s narrative. **(3) Game Design** was achieved through the definition of game mechanics and rules, narrative based on a coherence literary script, and game concept design through a storyboard. **(4) Application development** based on SCRUM methodology, Use Cases and User Stories as complementary techniques to identify requirements. In addition, we used the standard IEEE 830-1998 to prioritize those.

3 Conclusions

Videogame effectiveness was measured in two ways: by means of the mini-games that were incorporated at the end of each level of the videogame and by an experiment conducted on a total sample of 30 children, ranging from 10 to 13 years old. Randomly formed two groups of 15 children where those who play with the game, managed to retain more information than those who do not played. These result proved that the use of a videogame to communicate information allows the player to acquire and develop skills that will facilitate the production of new knowledge. However, more research needs to be done to ensure and validate proper knowledge acquisition and definition of an assessment system within the videogame.

[1] ILCE- Instituto Latinoamericano de la Comunicación Educativa. http://www.ilce.edu
[2] Project in collaboration with Centro de Ciencias de Sinaloa. http://www.ccs.net.mx

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