Program with Ixquic

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A B S T R A C T

The goal of this paper is to explain the story telling, game design, game play and how is the interaction with the game Program with Ixquic. Here is the description about the new approach to this video game I called Program with Ixquic. Initially focused on an educational video game but now is a hybrid, now has more levels and provides moments of great fun, where each player can have some much fun in each different level and environments of interaction.

1.   Introduction

In this article we consider pertinent to ask the following question from which we set out to create this video game. How can you learn to program in object-oriented philosophy with languages such as Java?. To answer this question is that we created a video game that allows players to learn languages such as Java. This video game we call *Program with Ixquic* and we started to create it from the year 2014, conceptualizing and generating ideas, that would allow us to create what we now have a complete and very fun game. *Program with Ixquic.*

Program with *Ixquic*, is a game that started as an educational game to learn object oriented programming in Java language. After some changes now it's an entertainment game with a bit of the topic of education. Program with *Ixquic*, contains three game levels, consisting of a card game, hidden objects and a 3D environment, in Augmented Reality like a fairy tale, where the player can interact and play in different ways to learn   some programming.

Fortunately this game has evolved and with this improved remarkably. In this article we show an advance of this development that has been changing over time from being a simple 2D card game to a small *pandora* box full of incredible surprises that each player will enjoy to the maximum.

Program with Ixquic, is a game (in the future a complete *Serious Game*) that contains some ingredients related to training

applications, application that improving cognitive functions, memory training, development of mental skills and improvement of strategic skills.

However, there are many applications that are directed to control sensors to calculate heart rate, moods and is applied in either sensory, psychological or motor rehabilitation of the users [8].

2. Serious Games

2.1 How to define a Serious Games

"Serious Games are a mental contest, played with a computer in accordance with specific rules, that uses entertainment to further government or corporate training, education, health, public policy, and strategic communication objectives. [9]"

2.2 What are the objectives of SG?

SGs seek to improve a particular skill of the user interacting with the game. The idea is that while the player interacts more and more with the game will improve some cognitive, sensory or physical ability [9].

3. Story Telling Program with Ixquic

This is the story that starts this video game *Program with Ixquic*, described in a comic that tells the story of a girl named *Cucita* who is one of the characters of *Program with Ixquic*. The story begins in the CDMX in the traffic of a sunny day and *Cucita*

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in a moment of thinking about the immortality of the crab, in traffic imagine that it would be a good idea to create a programming application to learn to program in some language programming in basic form. This is the intro of *Program with Ixquic* and from there starts this video game [2], [7],[8].

Figure.1. Story Telling *Program with Ixquic*

4. Game play of Program with Ixquic

Program with Ixquic, consists of a card game, hidden objects and a 3D environment in Augmented Reality with expanded object display, where the player can interact and play in different ways by learning some programming.

To enter the game appears this interface of *Program with Ixquic*:

Figure.2. Interface *Program with Ixquic* [2].

4.1 User-Centered Design in Program with Ixquic

This is an example of how we were creating each level of play, for example, is the card game level, we first generated it with paper and pencil. We tested user to see if it worked and how it worked. Once we have finished, we begin with the design of each letter and each symbol representing an element of nature, a number or a Mayan symbol. This is an application where is involved the user in each phase of the development process which ensures that the final product responds to their needs and characteristics [10]. Then this is the result of the level 1 of the video game *Program with Ixquic.*

Figure.3.User-Centered Design in *Program with Ixquic*

4.2. Level 1. Card Game

A Card Game, was where we applying the design philosophy and a process related to User-Centered Design (DCU) [10], we understand the requirements and limitations of the end user then we create this type of card game that had magical symbols where we expected that the users can learn and practice in an original way topics related to programming.

This card games comes from ancient times and distinct places in the world: Egypt, India and China. In this case each card has a description of a data structure or a programming concept, thus giving a description of its function[1].
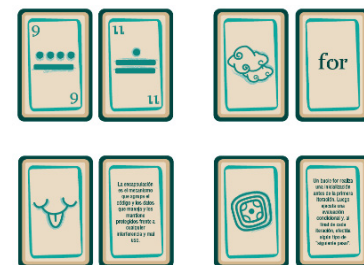

Figure.4. Basic programming concepts

4.3 Level 2 Hidden Figures

In this level called Hidden Figures, we show a landscape where each user have to find (photographs, drawings, graphs, etc.), that are hidden and have to be found. Those things are related to programming concepts or structures, maybe a question is done and then find the thing.

Here is an example of a landscape Yucatán, México, where an investigator have to find many things related to programming topics of Java [6].

Figure.5. Hidden Figures

4.4 Level 4 Augmented Reality

The third level in *Program with Ixquic* is a 3D environment in Augmented Reality with expanded object display. The concept of Augmented Reality brings together a wide variety of user experiences. There are three main categories of RA tools [4],[5].

- Augmented reality games generate immersion experiences.

- Augmented reality 3D visualizer, as it is the case of Augment, allows to place 3D models in real size in the environment, using a 'tracker' to move the model in space.

- Augmented reality browsers enrich the camera viewer with context information. For example, one can point his or her smartphone at a building to visualize a story.

In *Program with Ixquic*, we create a story tale and some interactions with characters in augmented reality technology (RA), and a book with scenarios come to life, allowing gamers to interact with them and experience stories that are told in a more engaging way. This books only need an Internet connection, a camera (it can be a smartphone, a tablet or laptop) to display the tale [2],[3],[4].
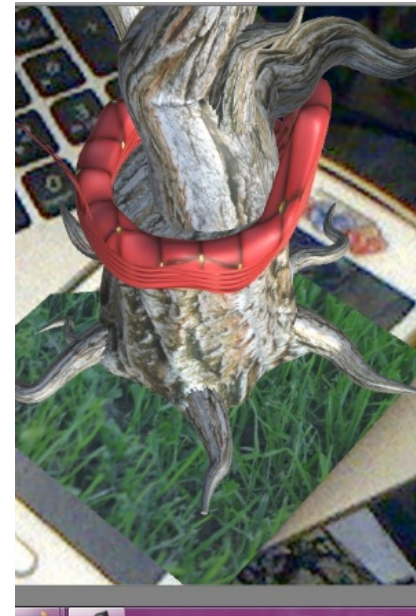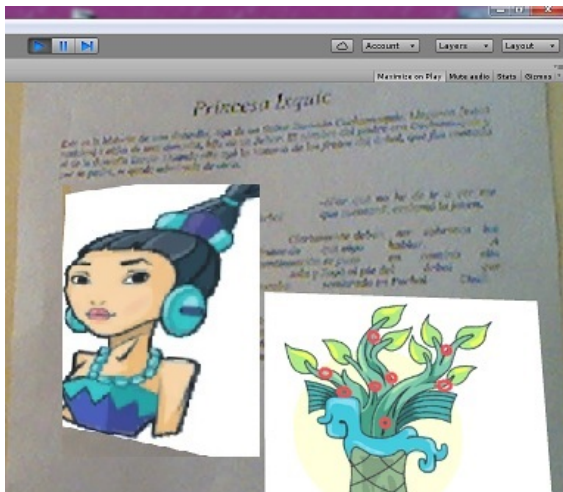

Figure.6. AR *Ixquic Princess Tale*

Conflict of Interest

The authors declare no conflict of interest.

Acknowledgment

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Journal articles: Journal titles should be abbreviated according to ISI Web of Science abbreviations.

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