Data Play School: interactive fiction game as a tool to help learning the Database discipline

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***Abstract*—The teaching of the student's understanding comprehension discipline, a conceptual basis in their understanding, abstraction and logical reasoning. From this perspective, the use of a set of games can be a tool as an interactive tool to support the teaching of the discipline. To this end, this work presents a creation of a Visual Novel style game, the dataset entered in the database, the support to the teacher does not simply transfer the contents and the themes, circumventing a little the theoretical monotony of the subject. Data Play School is a game like an interactive fiction game and is validated with a course on Database in the top course Information Systems. In the end, the results show that Data Play School proved to be an instrument composed of attractive and valid elements to support the teacher and students in the teaching and learning process of the Database.**

***Keywords*-Database; Learning; Novel game;**

I. Introduction

Electronic games have always resulted in discussions about how beneficial or harmful they could be, although many believe that games make learning difficult in this article, it was thought just the opposite, there could be no better tool than using games. In the digital age such a resource gains strength, despite the small amount of games aimed at education.

One can define electronic games from the thought of [1] where he says that an electronic game is a playful activity that is composed of actions and decisions that cause in a final condition. These actions are limited by sets of rules and a universe, which in the scenario of electronic games, are dictated by the software. The universe contextualizes the player's actions and decisions, producing an appropriate environment for the game's narrative, while the rules determine what may and may not happen, as well as the implications of the player's actions and decisions.

Video games have advanced at a rapid pace today, with this advancement the games have brought to children, adolescents and adults specific knowledge about the content presented in the game, as well as giving the player a sense of immersion in the environment from the moment on. that is given the play.

The type of electronic game chosen to be developed in this work was interactive fiction games, which are environments emulation software that contains a narrative where players have text command options that can control the direction the narrative will go. to take. In this way the game can be understood as a decision making, as narrative literature and also as an electronic game.

Games put the student in the role of decision maker and expose him to increasing levels of challenges to enable learning through trial and error [2]. [3] points out that digital games that are intended to bring the player learning can contribute broadly and at the same time.

By creating an educational game based on the existing engine dynamics made for Visual Novels, we have identified a new use for this genre of games. Our goal in this case is to facilitate the creation and distribution of educational games where students can have fun during the learning process. An obstacle in this process is the creation of narratives that can involve both the student and present educational content.

Based on this it was taken foundation to develop this work, knowing that by playing the photographic memory of the human being can more easily capture those moments, then it can also become greater the possibility of the human being learning through the game.

This game was developed to be of the narrative fiction genre, where it is intended through the narration contained in the game to reflect differential aspect in the process of learning basic contents of the database discipline. With the thought that by engaging with the game the player not only has a sense of immersion, he will also play the role of protagonist where he will make decisions during the narrative at the end his photographic memory will have recorded several key themes on the subject.

II. Background

Authors such as [4] and [5] point out about the use of technologies such as computer games, since they are included in the educational process become collaborators

with learning regarding various aspects, be it interaction, communication and even construction. of knowledge.

It can be concluded about these two thoughts that when it comes to the playful can always be related to pleasure and that from this analysis it can be stated that the use of games in the educational process is a great resource to make the process easier. learning. In order to make the classroom environment something more playful, it was thought of this help technique (the game) where the student understands in a simpler way what was exposed during the course by the teacher.

As has been said in the above thoughts, electronic games can have advantages for the educational field, these advantages can be essential when it comes to teaching and learning. [6] mentions that networking with other players gives students a chance to share information and experiences, expose game-related issues, and help each other, resulting in a distributed learning context.

Several benefits brought to the context of learning through digital games can be cited, among them: the protagonism, the improvement of sensory and motor skills, besides acquiring knowledge and improvement regarding the subject's menu. This will provide the player with a unique and formenting experience and also contribute to the implementation of new teaching didactics to add to the traditional teaching methodology.

III. Methodology

This work was developed in an open source tool called Ren'Py Visual Novel Engine, which facilitates the creation of games that use mediated narration through a device. What led to the choice of this software was the fact that it supports several useful features to create the idea proposed for this work.

Support provided by the software has several subdivisions to be used for narration, such as saving, loading games, reversing previous scenes, multiple scene transitions, and various other features. In addition, the tool is available for various operating systems such as Windows, Mac OS X, Linux, Ubuntu, Debian and Gentoo.

The language used in the game's programming was that required by the chosen software, which is Python, high level where it is interpreted, totally object oriented, scripted, functional, imperative, strong and dynamic typing. The language as well as the tool is also open and managed by the Python Software Foundation, such a non-profit organization.

Using this language brings benefits to team members who are developing the game because of some of its features. These include ease of reading and interpretation of code, and the requirement for a few lines of code when it comes to other programming languages.

IV. Results

The game has a simple premise, rambling on the basic contents learned in the database discipline, along with a simple and interactive interface the game remains committed to being overly attractive to users. Its gameplay is a narrative using the Visual Novel method, as it emphasizes the storyline, leaving the player totally immersed in the story, which is a good approach when looking forward to passing content to the player.

Figure 1. Game Start Menu

Interactive in-game menus give the player the power to shape the story based on their choices, while keeping the right and wrong options, the game develops based on the answers chosen, where with each mistake the teacher corrects the student giving the information needed to proceed with the story, and in cases where the student gets the answer right, the teacher or the classmates congratulate him or her on their achievement, adding higher levels of morale within the game.

Figure 2. Interactive choices menu positioned within the game

About the end result of the game was successful in development where the narration of the game took the form of a classroom where in it the characters discuss basic concepts of database discipline, it is in this scenario that the student will take the role of protagonist choosing the actions and/or lines that the characters will express.

In addition to the scenario the game has won four characters they are: Chirs, Sara, Milly and Professor Aster. They are divided into three students: Chris is a disinterested, careless guy who hates being in class, Sara is a nerdy little girl who always knows everything and is very shy and Milly

is a student who understands the content but It's not as flashy as Sara and we also have Aster who represents the typical database teacher in this class, a guy who asks a lot of questions and helps students when they don't know the answer.

Figure 3. Dialogue about one of the course contents

A. *Preliminar Valitation*

In order to carry out a partial evaluation, 15 forms were selected with 15 students from the Database 2 discipline in an Information Systems course at the Federal Institute of Education, Science and Technology of Ceará. Sample size is justified by Nielsen as the ideal minimum number for a use assessment. To this end, the form consisted of 10 questions based on Likert scale of 5 points.

The application was made by the researchers over a 30-minute period, under the supervision of the subject teacher in a campus laboratory. The questions were grouped into questions of

- The use of the game stimulated my interest in learning database concepts;
- The presentation of the concepts in the game allowed a greater assimilation with the elements of the database discipline;
- I was able to interact with the game without any difficulty;
- The concepts were presented clearly;
- All dialogues were coherent and efficient in relation to the context of the game;

The following formula was adopted as a means of identification as the medium of each of the responses, as follows: Total / f x P. Figure 4 hows the results graphically for the 5 questions, organized based on *QST1* [Question 1]; *QST2* [Question 2]; *QST3* [Question 3]; *QST4* [Question 4]; *QST5* [Question 5]; .

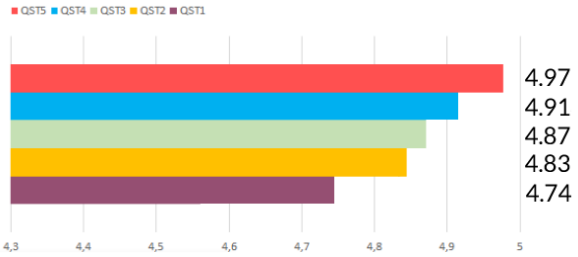

Figure 4. Results of Form.

V. Conclusion

When it comes to games it is often said that they are always linked to our memory with fun and enjoyable memories, so bringing them to the academic everyday minimizes several problems encountered in this scenario, in this context it can serve as a motivational tool, content review already studied in the discipline, all in a playful way to arouse in the student the attraction to the academic concepts already seen. In addition to minimizing dropout and failure rates.

The database subject has a very theoretical menu and this becomes for the student something monotonous, in most cases it becomes a difficulty in the learning process for the student who needs to capture the content as well as for the teacher who needs to transmit what will be captured by it. So, the integration of the game in the teaching methodology in that discipline brings ease in the process mentioned above.

With all this the present work intends to show to teachers and students that it is possible to use the game to assist in the teaching process in the database discipline, the game promotes an adequate presentation of content, dynamically details the theory and displays the syntax required to create/use a database.

As a final consideration, games, like a novel game, can be viewed as a great way to teach and learn content from computing disciplines, bringing a sense of protagonism in a fun way. Suggestions for future work and improvements: Engine adaptation or creation of its own engine to be more accessible to people without programming knowledge, in order to be used by teachers in the creation of content; Creation of a library of artistic resources such as character images and background images; Conducting a test in the field with the game, from suggestions brought through the teachers who will insert their methodology in the game and also through the students who are targeted where results are sought.

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