Storytelling to Learn: a serious game to help English learning as a second language

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Abstract—This paper presents Storytelling to Learn, a serious game based on Storytelling methodology to reinforce the process of learning and teaching of English as a second language. To present its development and operation, some aspects of English Learning and Teaching will be related. Besides that, this research will also present a validation study performed with English teachers and students that evaluate the tool in its current state, reflecting its potential use as a playful alternative to vocabulary acquisition.

Index Terms—Storytelling, English Teaching and Learning, Serious Game

I. INTRODUCTION

As one of the most powerful means of communication for people of different nationalities, English language learning has become increasingly important for global communication between people [1], [2], mainly for some reasons, such as career rise or requirement, prerequisite for higher education, scientific publications, research visibility and others [2]–[4].

English Language Teaching (ELT) and/or its importance is studied/stated in different researches [1]–[3], [5]. Nawaila et al. [5] affirm that technologies are an indispensable resource to facilitate the teaching and learning process, being used through different tools which provide an effective and easy process of learning a second language. Besides, these authors also underlines a global trend to integrate technologies in educational institutions worldwide, indicating its increased use in the process of teaching and learning English [5].

One of the ways to use technology to learn and exercise English language can be through games, which have some advantages for teaching, such as 1) less anxiety; 2) give shy students more opportunities to express their opinions, with an entertaining and motivating environment; 3) provide different experiences that sometimes are not possible in classes; 4) offer more fun in activities and 5) create a relaxed atmosphere that helps students to remember things faster and better [6], [7].

Another way to improve English learning is through the use of stories. According to Hidayati and Endayani [8], the stories provide playful, happy and pleasant learning environments for young learners. It is considered an ideal effective source for mastering the foreign language.

Combining the benefits of games, the need of learning English as a second language and the gains of the use of stories in this process, this paper presents the game Storytelling to Learn (SL), which provides a relaxed and interesting learning environment to help Brazilian students to learn English as their second language.

In next sections, besides the presentation of the proposed game and its results, some information about the use of storytelling in the process of teaching and learning the English Language and some related works are presented. Lastly, some final considerations are made about its current state and next steps.

II. STORYTELLING AS AN APPROACH TO LANGUAGE TEACHING AND LEARNING

The understanding of the process of learning a second language is fundamental for teachers to rethink and improve their methods and techniques. There are different ways of communicating knowledge, some of them are more effective than others and different people may have different perspectives of these methods. In most schools, English classes are based on a traditional method, with the translation and the teaching of grammatical rules. This approach isn't very effective, as it doesn't offer contextual knowledge or a clear relationship between the new language and aspects of the real world [9].

On the other hand, different alternative methods make the student an active agent in the learning process. Adopting different techniques or tools based on playful elements, such as songs, educational games, movies and storytelling, it's possible to enhance the learning effectiveness. Santos et al. [10] discuss that educational games are a powerful tool, as they can provide elements such as fun, interactivity and unpredictability.

Aligned with an educational environment, these elements are capable to support the build of new concepts and experiences.

Wright and Maley [11] point out that stories are important sources of linguistic experiences for children, what makes them a possible mechanism to improve their understanding of English. The authors also highlight that storytelling is able to awaken the students' skills, such as reading, speaking and listening comprehension, which are essential to developing fluency. Furthermore, stories have associated images and illustrations that help to understand unknown words and also provide contextual information. Mourao [12] underlines that stories represent a holistic approach to language teaching and learning, based on the understanding that learners need to interact with rich and authentic examples of the foreign language.

III. RELATED WORKS

The related projects were chosen by analyzing similarities with the project described in this work. Using search strings such as "contação de histórias" (storytelling) and "jogos educativos" (educational games), an initial search was conducted on SciELO (Scientific Electronic Library Online) and GS (Google Scholar) platforms. Nineteen works were found, but only one of them was about a similar educational game, titled "Learn With Tody". A second search was conducted on "Google Play Store", in which was found the game "Phrasal Nerds: Phrasal Verbs".

"Learn With Toby" is a game for English learning aimed at young people in the age group from 3 to 8 years old [13]. The game flow is based on making the user connect images and sounds, which provides an important playfulness characteristic. The game has different stages and each stage has different scenarios (e.g. school, park, and others) which represent a different subject that the player can learn more about.

"Phrasal Nerds: Phrasal Verbs" is a game developed by Auray Studios and it is focused on teaching English phrasal verbs in a playful way using storytelling [14]. The game flow is based on Alex's story, a mole that wants to travel to the moon to visit its grandfather, and to do that it has to find a hidden book with instructions to build a spaceship. That book is composed of phrasal verbs and the player needs to decipher them, while receives feedback and explanations.

IV. GAME DEVELOPMENT

Storytelling to Learn is a game developed for web platform, which currently presents two stories (scenarios) about Brazil's colonization, told in the English language by the character "Emilia", aimed at elementary school children. After each story, the child has the opportunity to check how much he/she learned from what was told and the apprehension of the vocabulary presented, through related questions and score.

On the home screen, the player will be introduced to the storyteller, "Emilia". The character will introduce herself and speak the objective of the game to the user.

After advancing to the next screen, the player will be presented with the home menu. In this menu, the storyteller addresses the type of story to be worked on the game, which is the history of Brazil's colonization. Besides, "Emilia" will introduce the option that allows the player to listen the audio of the text written in English, which is the click, at any time, on the character's own image.

Users are able to choose 2 different scenarios (**1-** Brazil discovery and **2-** The exploitation of its resources). When moving the mouse over Scenario 1 or Scenario 2, the player will have a preview of the story that will be told. The Fig. 1 represents the home screen of scenario 1. All the elements that the users can use to enhance their learning, during the story, are presented in the following items:

- The storyteller who will narrate the story present in item 2.
- The history of the current scenario, which has the vocabulary studied in bold, and the translation of the phrase, that will be shown when the player hovers over it.
- Option to increase or decrease the letter of the sentence, if the player has difficulty reading.
- Buttons used to advance and return to the scenarios of the history.
- Animation that represents item 2.

Fig. 1. Scenario 1.

After the vocabulary comprehension and acquisition stage, the student must test his/her knowledge with a quiz game (Fig 2). In this game, he/she must associate the elements present in the animation with what is being asked in the question. It is worth mentioning that the animation used in the game has already been presented to the user throughout the story.

In the story-based learning strategy, according to Corso and Corso [15], skills such as reading, speaking and listening are awakened in children. These skills, in the English language, are important to develop fluency in that language. As a support for the acquisition of the new language, storytelling also offers images and illustrations that help children to foresee or guess the meanings of words, or of the previously unknown context.

The stories have a set of specific vocabularies that the user will have to acquire in order to be successful in the game, and, consequently, improve his/her position in the game's ranking with the score offered to him/her as a reward. Although the game is Single Player, it is possible for teachers making

Fig. 2. Storytelling to Learn - Quiz Game.

a healthy competition among students, aiming at everyone's interaction with the game using its ranking.

V. EARLY RESULTS AND DISCUSSIONS

For the validation of the proposal an early study was performed to evaluate the learning object. To do so, the project was submitted to the Ethics Committee, because of its involvement with human beings (Presentation Certificate for Ethical Appreciation: 09095018.4.0000.0053). As planned, the research was only started after approval by the Committee. The main instruments and techniques used were: (i) questionnaire applied to students regarding the Storytelling to Learn, and (ii) observation and informal conversations recorded about the Storytelling to Learning usage and its potential as a learning object to improve English Learning.

Eight elementary students in a public school and two English-speaking teachers participated in the research, totaling 10 participants. All material collected from the questionnaires, speeches and observations during the validation were recorded for the purpose of further manipulation.

After playing the game, teachers commented about its use and these comments were transcribed to the logbook, some of them shown below. For them, this research did not use a post-validation questionnaire.

- Comment 1: *"I really liked the game. I think you should present it to the city's bilingual schools".*
- Comment 2: *"The good thing about this game is that it not only teaches English to the student. It is multidisciplinary, as the student also learns history with it".*

For the students, differently from the teachers, a questionnaire was used after their experience with the game. This questionnaire had 14 objective questions that were divided in three groups. The two first questions had the objective to evaluate the student's use of education games. In this sense, all students think that games are an important tool for learning the English language (**Q1**) and 75% of them had previously tried educational games in the process of teaching learning (**Q2**). The second group consisted of questions regarding the usability (**Q3**, **Q5**, **Q6**, **Q9**, and **Q10**), and the third focused on questions about the methodology adopted in the game (**Q4**, **Q7**, **Q8**, **Q11**, **Q12**, **Q13**, and **Q14**). These questions

were measured using the Likert scale with five levels (totally disagree, partly disagree, neutral, partly agree, and totally agree). Furthermore, there was a subjective question in order to collect opinions, criticisms or suggestions.

In general, the vast majority of questions regarding the game usability had a strong positive response - i.e., the approval rate was superior than 80%. In this sense, most of them agreed that the developed game could be easily played and understood (**Q5**), mainly because of elements such as a clear presentation of information (**Q6**), and a comprehensible visual interface (**Q3**). All students also had a great perception of the ranking, consenting that this element promoted a healthy competitiveness (**Q9**). Besides that, only the question about the feedback offered to the player (**Q10**) had a moderate positive response (50% partly agreement/50% strong agreement).

Regarding the methodologies applied in the game, the students answered questions about aspects such as storytelling, vocabulary and the game environment. These questions are listed below and their respective answers are described in Fig. 3.

- **Q4**: Educational games, such as Storytelling to Learn, help children to understand the English Language in a narrative context;
- **Q7**: The scenario of the story is important to understand the vocabulary that is being studied;
- **Q8**: The narration of the story is important to understand the vocabulary that is being studied;
- **Q11**: The game presents important information for students;
- **Q12**: Completing the stages of the game and seeing my name in the ranking gave me a sense of accomplishment and satisfaction;
- **Q13**: Using Storytelling to Learn, I was able to learn new words and use them in context;
- **Q14**: I would recommend the game Storytelling to Learn, to my friends, relatives and others.
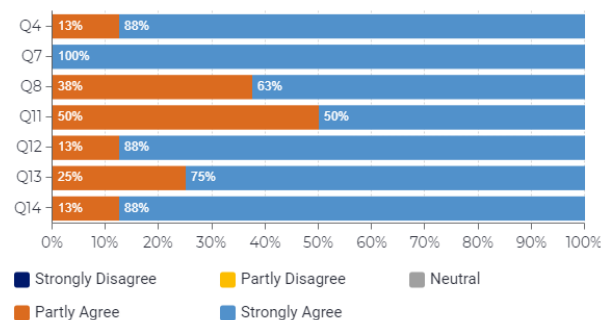

Fig. 3. Students' evaluation regarding the game didactic.

As shown in Fig. 3, there was a general positive feedback for all questions, evidencing either a strong or a partly agreement with the proposed methodology. None of the students gave neutral or negative answers.

Students were also asked to rate the game using five criteria that varied on a five-point scale. The criteria were: boring

vs stimulating, bad didactic vs good didactic, useless vs useful, disorganized vs organized, and difficult learning vs easy learning.

The Fig. 4 shows all criteria evaluation by the students. Each bar represents the answer regarding two opposite characteristics and values over 3.0 indicate that user evaluations reflect good characteristics, meanwhile lower values indicate bad characteristics. This way all the criteria evaluated revealed a good review, being 4.75 the lowest mean of the answers obtained, pointing that the game was considered useful.
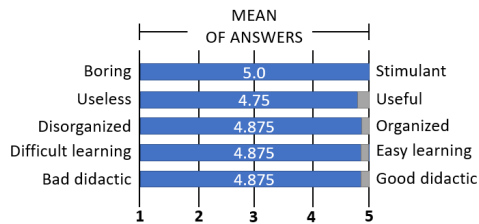

Fig. 4. Game evaluation by the students.

At the end of the questionnaire, the student should rate the tool on a scale of 1 to 10, in order to evaluate general aspects of the game. The average score reflected a good review of the tool, based on the 8 answers, the value obtained was 9.125 with standard deviation of 0.8345.

The observations of the students' open answers and recorded audios (some of which are transcribed below) confirmed the acceptance of the game, already seen through the objective responses.

- Student 2: *"Nobody would complain if we studied like this at school"*.
- Student 4: *"The teacher never brings this type of thing for us to learn, it would be nice to use this kind of resource more often"*.
- Student 8: *"I am first in the ranking, I can't believe it!"*.

The students' experience reinforced the theoretical information that educational digital games with reward elements, such as the ranking, provide a pleasant experience for the student. Given this, it is important to provide them with different and complementary experiences to the traditional ones, and the advantages that technological resources can bring to the field of education, and, in this case, to the teaching and learning of the English language.

VI. FINAL CONSIDERATIONS

As approached in this paper, English is considered as a language to global communication, chosen as a second language for many people with different goals that are related to social or professional reasons. In that way, new methodologies and tools are welcomed to help people in learning how to speak, write, listen, and read to fully understand and master a language.

Being considered as a supplementary resource to English's learning, Storytelling to Learn can be presented as an alternative to the teaching and learning process of language acquisition, using the well-accepted methodology of storytelling

in a digital game to help people in this process, possibly contributing to a playful rich learning environment.

At this point, Storytelling to Learn has already 2 scenarios developed and validated about Brazil's colonization. Beyond that, resources like reward and rankings were used to engage users' participation, contributing to their engagement with a challenging environment. The tests performed with students and English teachers pointed to its potential use in the learning process of English, being a powerful and accessible alternative that uses the storytelling methodology to provide a playful environment with rich content for those who want to learn English as a second language.

As further work, we intend to create an administrator role in the game that allows teachers to easily increment new stories and scenarios to Storytelling to Learn, this way, it can be used as a tool to learn and exercise different vocabularies for students about more diverse situations and subjects. In addition, we also expect to implement in the system the possibility of speech training, using a microphone as the game's input mechanism and a speech recognition technology. Lastly, we hope to perform new tests to measure how Storytelling to Learn is improving people's learning, applying pre- and post-tests with groups to evaluate their vocabulary acquisition with the tool's usage, besides, we hope to evaluate the game with validated questionnaires applied in a larger number of participants.

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