

Development of an Interactive Story Applying Digital Narrative for Reading Comprehension

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ABSTRACT

This research seeks in digital narratives a methodology that contributes to improve the field of reading comprehension. Storytelling adds technological tools to the educational process. These strategies allow the student to participate, interact and build their meaningful learning. Thus, four interactive stories were designed and applied, with narrations adapted to the students' social environment. Storytelling and gamification were used through tools like: Vyond, Movavi, Powtoon, VideoScribe and Filmora. The participants are students of “Juan Jiménez” PCEI school, an intensive upper basic cycle, located in the eastern region of the Republic of Ecuador. And the students have obtained excellent qualification marks with this prototype.

Keywords: digital narratives, storytelling, reading comprehension, interactive

stories, gamification

INTRODUCTION

Language and literature subject develops communication skills. However, there are difficulties in reading comprehension of texts, finding that six out of ten children and adolescents do not reach proficiency levels in reading. The use of digital narratives as a methodology to improve reading comprehension is proposed in this research.

To support the proposal, this section details some research related to the use of storytelling as an educational methodology.

In (Sarica & Usluel, 2016) the effects of digital storytelling to improve writing skills in elementary school students in rural areas are investigated. A performance measure was performed before and after applying the methodology that resulted in: organization progress, words selection, improvement in writing fluency, and progress in technological literacy.

Also, the article (Garvis, 2018) that examines the creation of digital narrative meaning in children within a process of co-construction, concluded that this methodology allows a creation process of collaborative meaning, communicates experiences, organizes plots in a temporal and spatial way and provides opportunities for episodic meaning.

Likewise, the research (Schmoelz, 2018) inquiries about the use of digital narrative in the classroom. A total of 125 high school students participated in the study. The research data included personal and group interviews with students, teachers, as well as grades and videos of the activities carried out. The results showed among the participants, enthusiasm during the activities, a higher degree of cooperation, commitment and control.

Equally, (Hava, 2019) determines the effects of the use of digital narratives to improve reading skills and creativity in English classes. In a group of 24 students, Microsoft Photo Story 3 was used to turn the stories into digital. The results evidenced a greater participation in the learning process, improvement in reading, writing and creative skills.

Besides, (Koenitz, 2018) presents arguments aimed at creating an academic discipline focused on the analysis and design of interactive digital narratives. This under the premise that although the strategy has presented flattering results, when put into practice it lacks a legitimizing framework, resulting in difficulties in academic recognition and discontinuity in research on the topic.

Similarly, the article (Amvrazi, 2018) explores the development of literacies in the digital field. Digital tools such as wiki, Twitter, YouTube and software were used to

create digital narratives. The research carried out in Greece, shows in students a greater understanding about the concept of digital tools, and encourages the degree of cooperation, commitment, motivation in activities participation.

Simultaneously, (Sánchez-Martí et al., 2018) presents a study that encourages reflective thinking during the learning process through the use of mediated narratives. The findings of the study confirmed that through the use of the methodology, better levels of reflection were achieved, giving greater meaning and reinterpretation to learning.

Subsequently, (Mohamed et al., 2019) seeks to identify the effectiveness of digital stories in improving reading comprehension skills in fourth grade students, working with a group of 34 students divided into two groups of 17 (experimental and control group). The results evinced data about the improvement of literal, inferential and organizational reading comprehension skills in the group that used the digital narrative strategy.

Also, study (Sarı et al., 2019) seeks to find the positive visual and auditory effects of digital books. For this, 99 children between 4 and 6 years old from two public gardens in Bursa (Turkey) participated. It was concluded that the stories are attractive because of the visual stimuli but not always because of the music and other sounds, and even in some cases, they had negative effects.

Last but not least, (Sarı et al., 2019) investigates the use of digital literature for teaching reading in a state school in Ciamis (Indonesia). The study analyzes the methodology applied by teachers when implementing the use of digital narrative in their classes and the perception of students when using it. Research results showed that many students were more active in the classroom by understanding narrative text more easily.

This article is structured as follows: stage 2 describes the methodology, techniques and materials used in the development of the research. In stage 3, a description of the prototype is made, emphasizing the scientific and methodological aspects used. In stage 4, the results obtained from the proposal applied to the students are described. Finally, stage 5 presents the conclusions, the result of the research and also some recommendations focused on promoting the development of future research to promote the use of interactive digital stories.

METHODS AND MATERIALS

This stage details the methodology used in the research and the tools used for its development and application.

Methods

Storytelling

Storytelling is the transmission of knowledge and information through stories. Its application in education has proven to provide multiple satisfactory results.

This methodology seeks:

- The stories created convey values to the students, not just images.
- Generate emotions in the participants.
- Transmit information from a new approach.
- Bring something positive to the public.

Gamification

Gamification is based on the use of elements of video game design in non-gaming contexts, to make a product, service or application more fun, attractive or motivating. This methodology is used as a learning tool and also to develop collaborative attitudes and behaviors when studying autonomously. This method is expected to create links with the study contents and generate motivation in the students.

Materials

Materials are those tools, media and resources that, based on an established methodology, facilitate the teaching and learning process.

In this proposal, different digital resources were used for the creation and editing of videos such as software: Vyond, Movavi, Powtoon, VideoScribe, and Filmora.

Syllabus

The application of the proposal is carried out with students from the intensive basic section of “Juan Jiménez” PCEI blended school, “January 8” branch school, located in Sucumbíos, Shushufindi canton, eastern Ecuador. The class is made up of 20 students divided into two groups of 10 (control and experimental group respectively).

Table 1 details the topics, subtopics, activities and time spent using the tool. 4 topics to review have been structured; each one includes a subtopic aimed at fulfilling the study plan set out in the syllabus of the subject. The activities planned to comply with the schedule include 5 sessions of 45 minutes each, in the first there will be a process of awareness and guidance about the methodology to be applied and the remaining 4 meetings of equal duration to carry out the educational activities.

Table 1: Contents and activities details.

Topic	Subtopic	Activity	Time
		Sensitization	45 min
Different, but equal (equality in difference)	Linguistic varieties	Tale I “ Las leonas” and questionnaire I	45 min
Stories about gods and heroes	Myths as sacred stories	Tale II “ La sangre de drago” and questionnaire II	45 min
Origins, transformations and variants of the Spanish language	The story	Tale III “ El colibrí” and questionnaire III	45 min
Languages in contact	Linguistic diversity	Tale IV “ La envidia” and questionnaire IV	45 min

PROPOSAL DESCRIPTION

This stage describes the development of the proposal aimed at the creation of interactive stories and their application in class, through the methodology of digital narratives.

The project was developed in two phases. In the first, the didactic material was prepared under the following schedule:

- Bibliographic review of digital narratives.
- Selection of script type and its writing for each video.
- Podcast recording.
- Images or videos selection.
- Design of the interactive story with the chosen tools. Software like Vyond, Movavi, Scribe, Powtoon and Filmora were chosen for this purpose.

The number of videos produced was four. Each one focus on fulfill the learning topics established in the syllabus of the subject. For the elaboration of the topic to be dealt with in each video, the environment of the participants was taken into account. Hence, the stories are adapted to their reality and are related to the culture of the peoples of the Ecuadorian Amazon region.

Once the interactive materials to be used with the students had been created, the

second phase of the investigation began, that is, the application of the prototype.

The application of the proposal was developed in several stages.

The first stage consisted of socializing the use of the technological tool with the participants. That is, training on the management of a virtual learning environment (VLE): way to enter, browse and content search. The videos were uploaded to the VLE of the educational institution, which students belong.

For this, a first meeting was held, in order to explain the class methodology to the group, the schedule to follow and the application functioning.

The second stage of application took place in the classroom of the educational center. The schedule established to apply the proposal was developed over 4 weeks, with a 45-minute class session once a week.

Out of a total of 20 students, it was divided into two groups of 10 participants each. The first received classes in a traditional way, being the control group. The topics were explained through graphic organizers and other teaching techniques.

On the other hand, the 10 remaining participants form the experimentation group and worked with the proposal of interactive stories designed with the methodology of digital narratives. In each session of the experimentation group, three activities were developed:

- Diagnostic test.
- Presentation of the interactive story.
- Acquired knowledge test.

The evaluations, diagnostic at the beginning and structured base at the end of each session, are intended to assess the reading comprehension difficulties of the participants and the impact of the proposal once applied. Similarly, evaluations were carried out in the control group to compare the results of the two groups, draw the respective conclusions and recommendations aimed at improving the methodological proposal, which was the reason for this research in the participants.

RESULTS

The data that made possible to evaluate the impact that the methodology had on the students was collected from the evaluations carried out before and after the application of the proposal.

The evaluations were prepared under a closed multiple-choice question scheme. The number of items to be evaluated in each evaluation was ten with a score of one point per question.

First, a diagnostic test was applied to the two groups of students (control and experimentation). The results of this evaluation showed an average performance of 50% of the total grade in the two groups. This evaluation was aimed at assessing previous knowledge about the arguments dealt with in the stories and their relationship with the topics to be reviewed according to the syllabus of the subject.

The teacher then proceeded to present the topics. In the control group the class was developed in a traditional way using regular tools such as graphic organizers. On the other hand, with the experimentation group, the methodology of digital narratives in videos was applied (Guevara & Coronel, 2020).

After these activities, a new evaluation was carried out in order to investigate the degree of assimilation of the information based on the two methodologies applied.

The results show that the experimentation group that used the proposal suggested in this research achieved a performance that borders 90% of the total grade, while the control group reached an average of 70% performance.

The obtained results showed that 50% of students had found the prototype "accessible and easy to use into the classroom." And 90% of students understood the class content. To sum up, more than 95% of the students have obtained excellent qualification marks.

CONCLUSIONS AND FUTURE RESEARCH

The results obtained with the evaluations show that the use of videos using the digital narrative methodology has contributed positively to the students who worked with the tool. It should be noted that the participants are between 16 and 29 years old and their performance in relation to reading comprehension is reduced due to social conditions, since they live in a rural area where following a regular educational process presents drawbacks.

Under this premise, it is important to point out in conclusion that using audiovisual tools made with digital narrative allows to achieve positive results in improving student performance, regardless of the environment in which they develop, being urban or rural, due to the impact that the use of these tools generate on the participants, being at the author's discretion, appealing to the senses and therefore achieving better content retention.

On the other hand, it is also important to highlight weak aspects in the use of digital narratives and in general of all multimedia strategies and tools. This is access and knowledge of the internet with all that it involves.

Regarding this, the development of research that promotes the use of digital methodologies in education based on an adequate process of technological literacy and therefore a broad and equitable distribution of devices and connection networks

by the institutions is very important to achieve that new technological advances, reaching not only certain regions and sectors of society, but on the contrary, they become universal, allowing education to be available to all.

REFERENCES

- Amvrazi, V. (2018). Web 2.0 tools in action: Exploring Digital Citizenship in Secondary Education. <https://apothesis.eap.gr/handle/repo/39700>
- Garvis, S. (2018). Digital Narratives and Young Children. *International Perspectives on Early Childhood Education and Development*, 22, 183–195. https://doi.org/10.1007/978-981-10-6484-5_12
- Guevara, C., & Coronel, D. M. V. (2020). Multisensory Learning System Applying Augmented Reality. *Advances in Intelligent Systems and Computing*, 1211 AISC, 336–342. https://doi.org/10.1007/978-3-030-50896-8_48
- Hava, K. (2019). Exploring the role of digital storytelling in student motivation and satisfaction in EFL education. <https://doi.org/10.1080/09588221.2019.1650071>, 34(7), 958–978. <https://doi.org/10.1080/09588221.2019.1650071>
- Koenitz, H. (2018). Thoughts on a Discipline for the Study of Interactive Digital Narratives. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 11318 LNCS, 36–49. https://doi.org/10.1007/978-3-030-04028-4_3
- Mohamed, F., Al-Aleem, A., Al-Hameed, A., Abd, M., & Al-Shuair, A.-R. (2019). The Effectiveness of Using Digital Stories (On Internet) To Improve the Literal, Organizational and Inferential Reading Comprehension Skills of English as a Second Language. *Journal of Research in Curriculum Instruction and Educational Technology*, 5(3), 45–81. <https://doi.org/10.21608/JRCIET.2019.54142>
- Sánchez-Martí, A., Sabariego Puig, M., Ruiz-Bueno, A., & Anglés Regós, R. (2018). Implementation and assessment of an experiment in reflective thinking to enrich higher education students' learning through mediated narratives. *Thinking Skills and Creativity*, 29, 12–22. <https://doi.org/10.1016/J.TSC.2018.05.008>
- Sarica, H. Ç., & Usluel, Y. K. (2016). The effect of digital storytelling on visual memory and writing skills. *Computers & Education*, 94, 298–309. <https://doi.org/10.1016/J.COMPEDU.2015.11.016>
- Sarı, B., Başal, H. A., Takacs, Z. K., & Bus, A. G. (2019). A randomized controlled trial to test efficacy of digital enhancements of storybooks in support of narrative comprehension and word learning. *Journal of Experimental Child Psychology*, 179, 212–226. <https://doi.org/10.1016/J.JECP.2018.11.006>
- Schmoelz, A. (2018). Enabling co-creativity through digital storytelling in education. *Thinking Skills and Creativity*, 28, 1–13. <https://doi.org/10.1016/J.TSC.2018.02.002>