

## Transmedia Storytelling Applied to Science, Technology and Society

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### ABSTRACT

The article introduces the results of the work did in the formal education field with transmedia storytelling to Science, Technology and Society topics in students between 14 and 16 years-old from a public school in Cartagena, Colombia. The objective is to describe the phases in which the mentioned methodology consists. The study relied on the qualitative approach and virtual ethnography. At the end, the results of applying this methodology and the benefits that occur when students produce transmedia stories based on Science and Technology themes that impact society are analyzed.

**Keywords:** Transmedia storytelling, Science Technology and Society, Formal Education.

### INTRODUCTION

The technology development has impacted in many aspects of society and the education has not been the exception. Rosales and Roig (2017) think that the new technological tools make easier for us to communicate and connect in a way that a bridge between education and technology has been created. From the previous statement it follows that teachers should take advantage of these benefits.

According to the previous information, it is necessary to constantly educate students in various technologies that are useful for the learning of our students. So that such education can be used to encourage and develop writing and reading skills.

In this order of ideas, the literary review presents papers like the one by Alonso and Murgia (2020) where they applied transmedia storytelling to high school students in Philosophy, aspects of literature and language. On the other hand Rodríguez (2021) also applies transmedia storytelling in Colombian legends. But unlike the cited authors, in this study the transmedia narrative is applied to topics of Science, Technology and Society. The above motivated to propose the following research question: How to implement a methodology to ensure that students between the ages of 14 and 16 in a public school can successfully apply transmedia storytelling to Science, Technology and Society topics? Given the nature of the proposed methodology, other important questions arise such as: What characteristics do the transmedia storytelling produced by students between 14 and 16 years of a public school have when they are inspired by topics related to Science, Technology and Society? What benefits can be achieved by applying the transmedia storytelling to Science, Technology and Society issues?

According to Hermann-Acosta and Perez-García (2019), transmedia storytelling is being used in formal education to teach from stories in various digital media, but the results of this study are mainly focused on proposing a methodology for implement transmedia storytelling to Science, Technology and Society issues so that students have various alternatives in accordance with their cognitive style to develop narratives that include their critical stance according to the concepts learned.

### LITERATURE REVIEW

#### *Transmedia Storytelling*

The concept of transmedia storytelling has been developed by the contribution of various researchers. In the first place, Laurel (2000) uses the transmedia concept for the creation of content, alluding to the emphasis that must be made in the development of materials that can be selected and arranged to produce many different forms. In the previous statement, the various forms for the production of content are highlighted and in accordance with the above, Jenkins (2001) highlights that the convergence is aimed to technologies, industry, content, audiences. Where it is observed that there is coherence between the cited authors because both have the diversity of materials in common.

Scolari (2014) adds to the previous contributions, who in addition to the previous characteristic confirms that the receivers not only limit themselves to consuming but also expand the narrative world with various textual pieces. The above definition makes it clear that in addition to the existence of various media, there must be production by readers. In this regard, the transmedia literacy project by Scolari (2018) is noteworthy, where he deals with the issue of transmedia skills.

According to Freire (2020) transmedia storytelling has the following characteristics: Fiction, Expansion, Connection of multiple media, Convergence and Independence. The interactions between them are given as follows: The fiction is expanding through multiple connections associated in some way with the original narrative that converge taking into account the media and the culture of participation and are independent because each narrative has a full meaning.

#### *Science, Technology and Society approach*

This approach is not so recent according to Membiella (1997) who considers that the educational movement "Science, Technology and Society" emerged in the sixties and seventies on university campuses but only until the eighties did it extend to secondary education.

With respect to his meaning, it is considered that it promotes the scientific and technological literacy of citizens so that they can participate in the democratic decision-making process and solving problems related to science and technology (Membiella, 1997). In such a way that it manages to prepare subjects so that they can make decisions that impact their natural environment and therefore affect them. In the same sense, Ratcliffe (2001) states that in the Science, Technology and Society approach, students can express their opinions on social issues while evaluating information on the subject.

According to Ratcliffe (2001) the topics addressed in the Science, Technology and Society approach are: Health and medicine, world population, food and agriculture, energy, mineral resources, industry in the economy, land and water resources. It is important to emphasize that they are all fundamental issues in our days since by using them properly, it will be possible to live in a better way on planet earth and therefore contribute to the necessary scientific literacy.

#### **METHODOLOGY**

The research was carried out through a qualitative approach of a virtual ethnographic type with a descriptive-interpretive scope that according to Ruiz and Aguirre (2015) is adequate to study the systems and interactivity environments that the Internet favors. Due to the various interactions that must be explored and understood according to Sampieri et al (2014), it reaffirms its qualitative nature.

The participants were students whose ages ranged from 14 to 16 years into formal education.

Procedurally, the pedagogical intervention was carried out from the following phases:

1. Initial phase: This phase consisted of training students in the use of various tools to offer them alternatives that would allow them to carry out their transmedia narratives.
2. CTS Phase: This phase consisted of presenting Science topics to students in a way that they were focused on real-world problems that have Science and Technology components to listen to the students' perspective (Yager, 1992).
3. Transmedia phase: In this phase, each group of students was asked to produce transmedia narratives where they made clear their position regarding the science topic addressed in the CTS phase.
4. Final phase: It consisted of each student individually writing an argumentative essay to defend her real position on the developed topic.

#### **FINDINGS**

##### **Methodology to apply the transmedia storytelling to the Science, Technology and Society approach**

1. How to implement a methodology to ensure that students between the ages of 14 and 16 in a public school can successfully apply transmedia storytelling to the Science, Technology and Society approach?

To carry out a pedagogical intervention that would contribute to achieving the objective, a methodology has been established to apply the transmedia storytelling to the topics of Science, Technology and Society, developed in several phases that are listed below: Initial phase or appropriation of the various tools for the development of transmedia storytelling, Phase of application of the Science, Technology and Society approach, Phase of development of transmedia storytelling and Final phase or preparation of the final essay.

##### **Characteristics of the transmedia storytelling applied to subjects of Science, Technology and Society**

2. What characteristics does the transmedia storytelling produced by students between the ages of 14 and 16 in a public school have when they are inspired by themes related to the Science, Technology and Society approach? The various narratives created by the students met the following characteristics, which according to Freire (2020) are: Fiction because they were unpublished stories that expanded through the sequel story and used various means to be represented and also converged on a common theme (human cloning for some groups and transgenics in

others) but each story was independent because they were recreated in different environments.

### **Benefits of applying the transmedia storytelling**

3. What benefits can be achieved by applying transmedia storytelling to Science, Technology and Society issues? In respect to the benefits achieved by applying transmedia storytelling to topics related to Science, Technology and Society, we mainly have that a number of options are opened for students to produce narrative writings in the way they like with the help of technology to demonstrate mastery of a given topic, thus achieving an estimate of the scriptural production by students in a novel and friendly way. The above can be considered as an innovation because after reviewing the Science, Technology and Society literature, it was not possible to find works that applied transmedia storytelling to these topics.

### **DISCUSSION**

By developing each of the phases proposed in the methodology of the study, the participating students show results of everything worked on in their personal blogs.

The order established in the phases of the methodology proposed in this work is justified in the following way: First, the phase of appropriation of the tools can be optional in case the students have an adequate level of management of various tools for audios, video, comic, etc. But if the teacher wishes, he can explain the use of tools that are available to students and offer them the possibility of them as an alternative to the well-known phase.

The phase related to Science, Technology and Society is one that according to Yager (1992) allows focusing on contemporary issues so that students are prepared in their roles as current and future citizens. It is important in this phase to consolidate the students in the good management of the information searches that analyze in depth the topics covered and the students debate those ideas found in a way that the advantages and disadvantages associated with the subject studied are known and thus the students can acquire a complete knowledge of the question.

The students published in their personal blog the analysis of the various joint actions of Science and Technology in the society of the subject studied. It is important to highlight that in this phase the students had to consult web addresses and documents that they had to analyze to create a solid report.

Taking advantage of the fact that the exercise consisted of each group having to argue according to a pedagogical position in favor or against the subject with the intention of making a broad analysis for all the students who in the end had a complete panorama that allowed them through critical thinking to have their own stance on the issue at hand.

In the development phase of transmedia storytelling, the students were asked to create transmedia stories whose messages gave a point of view of the pedagogical position assigned to each group, that is, some groups created transmedia stories supporting human cloning or transgenics and other groups created transmedia stories against human cloning or transgenics so that each group performed a main story and a sequel story supporting their defined critical stance. The results of such narratives were made in various media of which the following stand out: Podcast, comic, videos, text.

For the final phase, it is recommended to do it after having worked on the Science, Technology and Society approach and the various transmedia stories so that with a complete knowledge on the subject they can prepare an individual essay where their learning and personal opinion on the subject are expressed.

On the other hand, the transmedia stories created by the students as they are based on Science and Technology issues have the characteristic of being a literature with a scientific approach and it introduces them to the world of scriptural production in a different way and gives them sufficient confidence in writing with defined objectives and directed to the general population. Each group felt that their voice was important in the story and the story became a set of related stories but each one was independent of the other because of its characters and in turn only the theme united them.

The works created by the various groups of students at the end were in the ecosystem of the screens (Albarello, 2019) due to the various devices used by the students to make their readings and even to produce their stories according to the interests of the students.

The critical stance of each group in each story and the active participation of the students who created stories with their respective sequels against the stance that their classmates had developed was also noticeable.

### **CONCLUSIONS**

This work starts with the intention of presenting a methodology to apply transmedia storytelling to subjects of

Science, Technology and Society aimed to education academics. The qualitative approach of a virtual ethnographic type was used and it has been possible to contribute confirming the success of applying the proposed methodology to apply transmedia storytelling to subjects of Science, Technology and Society with students between 14 and 16 years of age. It is suggested to explore the application of transmedia storytelling to other topics by applying the methodology presented in this study, given that it motivates students by the implicit use of the various technological media that are attractive to them.

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