Emotion Through Narrative: Validation for User Engagement in Game Context

Yanick Trindade[(✉)], Francisco Rebelo, and Paulo Noriega

CIAUD, Lisbon School of Architecture,
Universidade de Lisboa, Rua Sá Nogueira, Pólo Universitário,
Alto da Ajuda, 1349-063 Lisbon, Portugal
`lamberttrindade@hotmail.com`

Abstract. In the development of a gaming experience guided by the perennial search for user engagement, one of the relevant conditions to ensure and validate, it's its narrative and context. If we associate this the dissemination of cultural aspects, the development of proposals able to give an engaging experience capable to attracting future visitors, is a relevant aspect to make known not only the place but also its culture. And so, the development of game narrative proposals can have a relevant function in involving potential tourists. Our goal in this study is to evaluate narratives in order to validate the one that will able to give an engaging experience, for later adaptation through a Virtual Reality game experience. The evaluation was performed using the Self-Assessment-Mannequin (SAM), Emotional Engagement Scale (EES) and Cognitive Engagement Scale (CES). After the analysis of the results of these two groups, it was verified that the long narrative was able to arouse great interest on these two groups. To achieve the goal, we have developed two narratives, (i) Neutral Narrative, (ii) Emotional Narrative. We started the analysis of the results for the participants of São Tomé island and it was verified that the results reveal that the longer narrative was able to arouse more interest of them. Considering the adaptation of this narrative in a virtual reality experience in a stand, we developed a second comparative study with an adult population of another country, in this case, the Portuguese. It should be noted that in this second sample we only use the narrative that aroused the greatest interest, the Emotional Narrative. The genesis of the comparison is due to the fact that the experience in a stand is open to a large and varied public, both by age and country of visitors.

Keywords: Narrative · Emotional design · Culture · Engagement

1 Introduction

Awakening interest in cultural aspects, by sharing objects, ways of being, thinking, communicating and diffusing, praises the relevance of sharing the intrinsic collective memories of a community. The historical heritage of the São Tomé culture is found in the reciprocal acculturation between Africans from southern Sahara and Europeans from Portugal [1]. And so, the aggregation of value through the connection of concepts such as game, digital, culture and tradition as well the interaction that enhances emotion, fosters mutual exchange between people from different origins. Since the

1950s tourism appears as a relevant economic sector and cause of social and environmental change [2]. As for the characteristics, they should be defined as: Intangible - for not being a product but a service; heterogeneous - each user behaves and lives the experience and service in their own way; Inseparable - is enjoyed at the destination; ephemeral - can't be resold after loss of opportunity at a given moment; lack of ownership - can't be owned, just a service [3]. Tourists are conquered by the place beauty and charm of the landscapes belonging to a certain destination; some of which come from the desire to feel and experience sensations from distant places [4] and others from the desire to discover something deeper than superficial, which derive from the knowledge of the social and cultural aspects of the place [5]. Narrative can enhance the quality of content that we want to share and provide. Narrative derive from the Latin word *gnarus*, which means "knowing", a telling story [6]. About "What is a narrative?" The common answer is "a story" whereas for the "narrative in general" it's "storytelling" [7]. But the definition can be deeper. History is essential for the narrative, having the central properties of an event/events, following chronologically in time and transmitted through a medium [7]. Narrative is a vital human activity. Through narrative we present ourselves as heroes or victims and find ourselves in the process of presenting ourselves and our experiences [6]. We warn others of lessons we have learned from our own experience or the experience of others. Through narrative, we remember personal experience, we translate knowing in telling. Because of their human importance, narrative have been in interest to scholars almost from the beginning of scholarship [6]. About narrative structure, there are scholar's wo articulate a structure of narrative that they believe to be universal. All narrative from all culture could be characterized in terms of structural opposition of nature and culture. Other scholars have documented ways in which each group tell narratives with structure rather different. Depside divergence, both fell that narrative structures are structures of minds or memories, whether inherited or encultured [6].

Engagement of user is a key issue to analyze and measure the experience we want to provide. Emotions are reactions to events, objects, and even memories, which invoke psychosomatic responses [8]. Emotions interact with the excitation mechanism, that can be classified as a dimension that goes from calm to excite [9]. Emotion and arousal combined are our feelings, remaining as a mood for minutes, hours or days, affecting our opinion about something. Good usability and aesthetics tend to trigger good emotions, like joy and pleasure, creating good memories [10].

1.1 Goals

This exploratory study belongs to a larger research work designed with the intention to promote cultural tourism in São Tomé through Virtual Reality experience. In this study, we focus only on the analysis of the emotional reaction through narratives. through Virtual Reality experience. In this study, we focus only on the analysis of the emotional reaction through narratives. We begin by analyzing two narratives and see which one was able to provide a more engaging experience with a participant group from the place where we want to promote their culture (São Tomé). After analyzing the results, we extended the study to the Portuguese adult participant group for a broader analysis and to have the vision of potential tourists. The reason why we do this study also on the São

Tomé island is to have an inside view of the content we want to offer to the tourists. Do the autochthonous like what we want to show? The data collected in this study will help us to define strategies for our main research work.

2   Methodology

2.1   Participants

This study was attended by 59 participants, divide in two groups. The first group is from São Tomé island, and the second group is from Portugal. Of these, 31 were male and 28 were female. Two types of narrative were created, the first was a neutral narrative and the second an emotional narrative. For the São Tomé group, we chose the between-subject to compare the differences between the two narratives through two subgroups of 23 participants for the neutral narrative and 21 for the emotional narrative, the age range was between 11 and 13 years old. In the group from Portugal, we only use the emotional narrative with 15 participants and the age range was between 23 and 35 years old.

2.2   The Visual Narrative

Participants visualized a mini-story called "SOIA-The Dream Island", which was created using INKSCAPE® (Fig. 1).

Fig. 1. Narrative name and the main character (Soia).

There are two similar narrative whose main character, location, and purpose are the same. The first narrative is neutral, where the objective defined is "find the center of the world". The second narrative despite having the same goal of the first, has a set of scenic elements of the geography and São Tomé culture, with the aim of provoking emotional reactions. The main character is Soia. The word Soia, comes from the dialect that is spoken on the São Tomé island and means history. She appears dressed in São Tomé traditional women clothing. The visual content was drawn in INKSCAPE®, and later attached to the Microsoft PowerPoint®.

– **The Neutral Narrative**

In the first narrative, we have a sequence with 6 slides: A screen with the story name is shown, and then the main character (Soia) appear and give the welcome end say her name, location and also give a challenge to the viewer, found the center of the world and the demand that he will live, the surrounding environment as well as the aspects of the São Tomé island culture that they will find in his journey to found the center of the world, located on the "islet of Rolas". Before ending, Soia extends her hand and tells the viewer to repeat with her the magic words that will take him to the imaginary world of the tales (these words are written in dialect that is spoken in the São Tomé island) (Fig. 2).

– **The Emotional Narrative**

The second narrative was created with 18 slides. At the beginning also appears the name of the story and the main character (Soia) who introduces himself and welcomes. After this intro, the narrative is already different from the first. Soia presents her grandmother and invites us to know the island of São Tomé through a challenge that is, to find the center of the world, showing the map of the challenge designed by her, saying that to get there, they need to believe in the power of imagination. Soon thereafter appears an animation of an imaginary place inspired by the landscapes of São Tomé island and then, she gives an encouraging message that we need to believe in the power of imagination. The next moment, the image of a place known by all inhabitants of São Tomé, the "Big Dog" peak, located in the natural reserve of São Tomé Island (natural park Ôbo) is shown. And suddenly the image of a giant appears too. Soia says that the giant is the guardian of magic water, this water has the power to cure any problem you have in your eyes (inspired by one of the traditional tales of São Tomé Island). Soon after, she says that she needs the viewer to bring the magic water that is in the imaginary world of the traditional tales of Sao Tomé, because she has a problem in her eyes. During the journey in the imaginary world of tales, the viewer will encounter objects, sounds and other particularities of São Tomé, passing through music, stories, painting, the green of the flora that surrounds us and the blue of the sky that is reflected in the beaches that nature offers us and that consequently will allow us to see the landscape and the intrinsic cultural aspects of this island. But she also warns the viewer that he will encounter some obstacles that he will have to overcome (like a game). Towards the end, she presents her doll with the name Luga. Luga in the imaginary world of tales comes to life and ceases to be a simple doll, but she tells the viewer that he needs to believe. Before ending, Soia extends her hand and tells the viewer to repeat with her the magic words that will take him to the imaginary world of the tales (same as the end of the shorter narrative).

Fig. 2. Some images of the narrative.

2.3   Measures

As evaluation tools we use: Self-Assessment Manikin (SAM): Evaluation technique through a non-verbal pictorial for measurement of arousal and pleasure, related with the affective reaction of the participant to various stimuli. For this, two scales were used: The Affective Valence Scale (Unpleasure/Pleasure) and the Arousal Scale (Calm/Excited) [11]. Emotional Engagement Scale (EES) with 4 questions related to: If they liked the content; If was interested in the content; If wished to see anything else; and the mood when viewing the content [12] and the Cognitive Engagement Scale (CES) with two questions related to: The concentration and the mood when viewing the content [12]. These three methods were used for more accuracy in the results.

2.4   Procedures

Participants provided the written consent form and the experience was performed under the same conditions. The experience was displayed with a notebook computer. The between-subject design was applied for the participant from São Tomé, divided into two groups that visualize the Neutral and Emotional narrative. Each group perform a pre-test using SAM to measure the emotional reaction, through generic examples to familiarize himself with the methods that will be applied few moments after they see the visual narrative. For more accuracy in the results, we also apply the Emotional Engagement Scale and Cognitive Engagement Scale. After seeing the visual narrative, the participant will respond the SAM questionnaire. After we apply also the Emotional Engagement Scale (EES) and Cognitive Engagement Scale (CES). In a second moment, we extended the study to the Portuguese adult population. It should be noted that in this second sample we only use the narrative that had the greatest interest in the previous sample.

2.5   Results and Discussion

Will present and discuss the reach results in order to give answers to our main goal. In particular, we want to know what kind of narrative is capable of engage the autochthonous participants from São Tomé island and potential tourist from another country. In addition, we want to know engagement differences between different age groups, due to the fact that we want to provide an experience in a stand that is open to a large and varied public. With the purpose of assessing and comparing the results obtained, we used three data collection tools, SAM, EES and CES. We started the analysis of the results for the participants of São Tomé island and it was verified that the results reveal that the Emotional Narrative was able to arouse more interest of them. With the aim to compare results from participant from different origin, we developed a second comparative study with an adult population of another country, in this case, the Portuguese. It should be noted that in this second sample we only use the narrative that aroused the greatest interest in São Tomé participants, the Emotional Narrative. Figure 3 present the results for Pleasure (unpleasure/Pleasure) and arousal (calm excited). It was found that for pleasure, both participant groups showed great pleasure

value (Portugal = 7,1 and São Tomé = 7,6). For arousal, the results for both groups are slightly above average (Portugal = 5.5 and São Tomé = 6), but there is a great dispersion of results for the participants from São Tomé (values between 3 and 9).
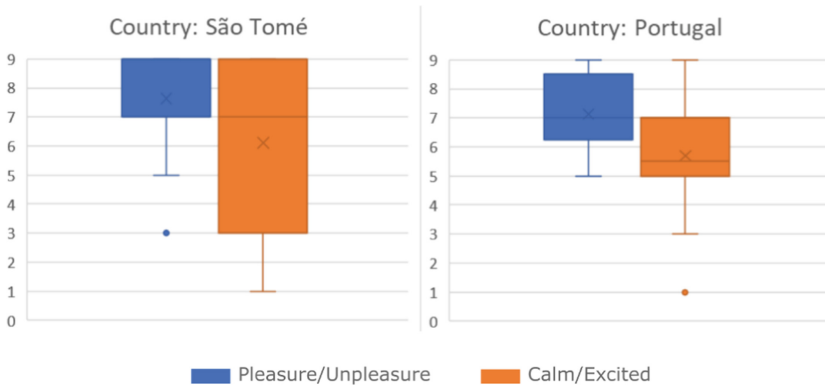

**Fig. 3.** SAM: Comparison of the results obtained between the participants from STP and PT.

The results demonstrate that the Emotional Narrative is responsible for very good levels of pleasure, however, it is not intense enough to trigger high levels of arousal, which is important for us to increase levels of engagement. Therefore, the results show the need to develop new approaches to increase participants' engagement levels, that is an important condition for an exciting and pleasurable experience. One of the approaches can be through development of this experience in an immersive environment through Virtual Reality (VR).

Concerning questions related to the Emotional Engagement Scale (EES), Figs. 4, 5 and 6 presents the results for the questions related to "Did you enjoy this history?;" "Was this history interesting?;" "Did you want to see anything else?;" and "Describe your mood during this activity". Regarding the first question "did you like the story?" (see Fig. 4), it was found that both samples (pink color = Portugal and green color = São Tomé) liked the story a lot. It was verified, however, that there is a greater dispersion in the participants of São Tomé. Also, we can see that the same story can be used for both groups, (São Tomé children and adults from Portugal). Regarding the next two questions, "Was this history interesting?" and "Did you want to see anything else?" both groups express their desire to continue to interact and to know more about the narrative (see Fig. 5). For the question related with mood "Describe your mood during this activity" there is a neutral tendency between "excited" and "bored" variables (see Fig. 6).

In short, the emotional involvement in the story for the first three questions was very good. For both groups, the story is adequate but the mood is neutral, justifying the need to give something more to the experience, such as transposing the story to a virtual reality experience with the intention of increasing the levels of "engagement " as previously referenced.
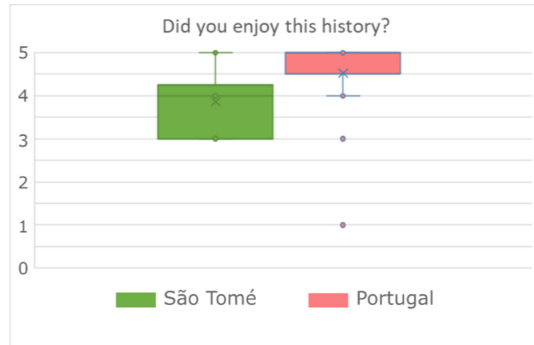
**Fig. 4.** EES: Did you enjoy this history?
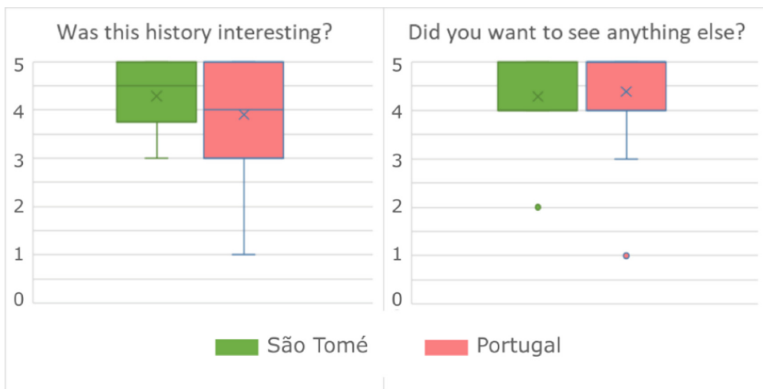
Fig. 5. EES: "Was this history interesting?" and "Did you want to see anything else?"
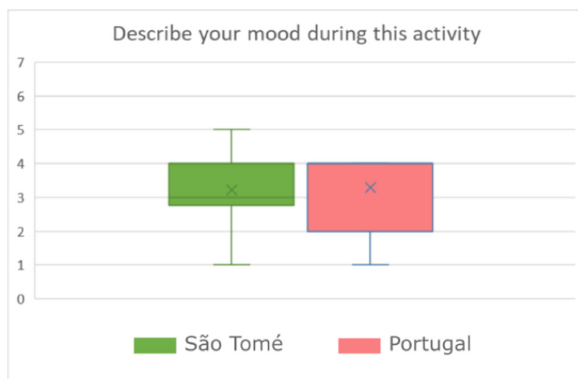
**Fig. 6.** EES: Describe your mood during this activity

Regarding the Cognitive Engagement Scale (CES), Figs. 7 and 8, respectively, present the results for the "How well were you concentrating?" And "Describe your mood during this activity:". Regarding the concentration (Not at all - Very Much), the results obtained were very positive with values between 3 and 5.
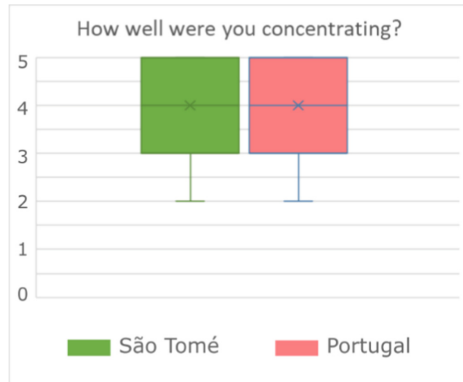
Fig. 7. CES: How well were you concentrating?

The same does not happen for the question of mood (Focused - distracted) where the values were closer to a neutral tendency.
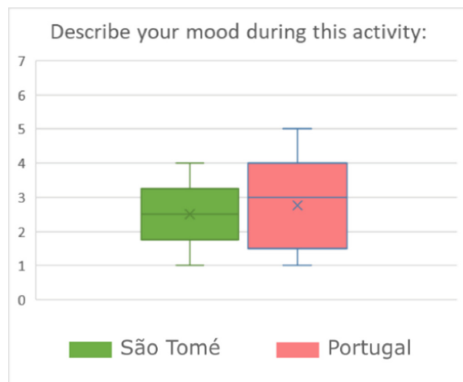
Fig. 8. CES: How well were you concentrating?

These results are in agreement with the previous one where it was verified once again that the mood of the participants must be increased.

3   Conclusion

This exploratory study belongs to the main research work and fits as a piece of the constructive process that will guide the creation of a virtual reality experience with the aim to seduce potential tourists to discover São Tomé e Príncipe culture.

In the first part of the study with São Tomé participant, the results show that a richer narrative in terms of visual content and sequence of events provides a more pleasurable experience compared to one with less content. After analyzing the results with the first participant group from São Tomé, we extended this study to the Portuguese adult population, having as an only comparative element the longest narrative, which was the one with the highest values in terms of engagement. We verified that the same story serves both age groups and local where they come from. However, there was a need to increase the mood for both groups. With the purpose of adapting the narrative to an immersive experience in the virtual reality environment in a stand, these results will help us in elaborating an experience for a diverse public. This indicator can be very relevant for the construction of a VR game narrative. Rather than constructing an extensive and rich narrative "at once", we can "break it into small pieces", i.e., incorporate small stories, to construct the whole, allowing the user to have periods of rest.

In the next stages, extending this study to the adult age group from São Tomé and young people from Portugal will help us to have all compare scope between an internal view of the inhabitants of the place that we want to promote and an external view of potential tourists who wish to visit and get to know the culture of another place.

References

1. Seibert, G.: Camaradas, Clientes e Compadres: Colonialismo, Socialismo e Democratização em São Tomé e Príncipe, 2nd edn. Vega Editora, Lisboa (2002)
2. Robinson, P., Lück, M., Smith, S.: Tourism, 1st edn. CABI, Wallingford, Oxfordshire (2013)
3. Benea, I.: Influences of Social Media on the Tourism and Hospitality Industry. Modul Vienna University, Vienna (2014)
4. Steenjacobsen, J.: Nomadic tourism and fleeting place encounters: exploring different aspects of sightseeing. Scand. J. Hosp. Tour. **1**(2), 99–112 (2001)
5. Gibson, A., O'Rawe, M.: Virtual reality as a travel promotional tool: insights a consumer travel fair. In: Jung, T., Dieck, M. (eds.) Augmented Reality and Virtual Reality. Progress in IS. Springer, Cham (2018)
6. McCabe, A., Peterson, C.: Developing Narrative Structure. Lawrence Erlbaum Associates, Hillsdale (1991)
7. Abbott, H.: Narrative. In: Logan, P.M. (ed.) The Encyclopedia of the Novel (2010)

8. Ortony, A., Clore, G.L., Collins, A.: The Cognitive Structure of Emotions. Cambridge University Press, Cambridge (1988)
9. Berlyne, E.: Conflict, Arousal, and Curiosity. McGraw-Hill, New York (1960)
10. Sutcliffe, A.: Designing for User Engagement: Aesthetic and Attractive User Interfaces. Morgan & Claypool (2009)
11. Bradley, M., Lang, P.: Measuring emotion: the self-assessment manikin and the semantic differential. J. Behav. Ther. Exp. Psychiat. **25**, 49–59 (1994)
12. Henrie, R.: Measuring Student Engagement in Technology-Mediated Learning Environments (2016)