Work-in-Progress—The Role of Immersion When Designing Characters for Adapting Textual Narratives into Comic Strips for Online Higher Education: Trials Prototyping Characters

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***Abstract*—A critical factor in immersive educational narratives is identification by students with the characters. In this work-in-progress analyzes the process of rendering characters from textual narratives into visual form by non-artists (i.e., instructors). We tried to match archetypes with their visual representation through the platforms: Pixton, Powtoon (both 2D) and The Sims4 (3D). The limitations of characterization can impact students' narrative immersion. As future work we intend to test with the target group and observe the improvements needed to increase identification and sense of immersion in the narrative.**

Index terms—characters, textual narratives, narrative immersion, comics, online higher education

I. Introduction

Textual narratives have been employed in several applied fields of knowledge, for specific purposes and following various approaches, e.g., for patients narrating their healthcare experiences, narrative journalism [1] and indeed e-learning [2]. We adopt the concept of narrative immersion as one of the immersion dimensions reported in recent literature surveys of the field, which describes the feeling of engagement with the story from temporal, spatial, and emotional aspects [3]. This study looks at the process of rendering textual narrative characters in visual form by non-artists (i.e., instructors).

Considering that images and text can work together and give more meaning to the message [4]. Character archetypes were the starting point, with the expectation of increasing the students' immersion into the narratives of an online course on software engineering, transitioning from basic to advanced programming. The online course, "Software Development Laboratory", took place in the second semester of the second year of the Informatics Engineering undergraduate programme at Universidade Aberta, Portugal. This work in progress, exposed limitations in 3 current comic book design tools for creating characters with a focus on narrative immersion.

II. Background

Narratives have been used in various fields of knowledge applied to context. A narrative is a version of reality driven by its own need and purpose and is not necessarily a true or false story [5]. Feeling part of or inside the story, leads us to the concept of "(...) narrative immersion and its subcategories (temporal, spatial and emotional) are characterized by a degree of mental absorption or intense preoccupation with the story, the diegetic space and the characters inhabiting this space" [3]. To increase narrative immersion, characters with characteristics of the target audience were created in a Health Video Game to prevent childhood obesity [6]. Textual narratives were developed with the OC2RD2 technique [7] to generate narrative immersion [2]. They were applied in an online Higher Education Software Engineering course. Feedback from students mentioned the need for visual formats, such as animations or e-comics. This was one of the underlying motivations that gave rise to this work [2]. The rendering of textual narrative characters in visual form by non-artists, can be done through comics which are a sequential form of storytelling [8]. Scene with four different types of information (Fig. 1) The yellow rectangle in the upper left corner is the narrator's speech to introduce the scene. The character's speech is in text within the balloon; the shape and connection of the balloon to the character defines whether the character is speaking or thinking (e.g., "Right now the crowds are with us!...") and can reflect the nature and emotion of the narrative [8], translating into images the character's voice and thoughts as the scene is read. Although comics are presented in a structure of their own, we adopted the concept of their application to communicate the narrative with plot and characters to increase immersion narrative [3], [6], [9], [10].

Fig. 1. Avengers #16 vol 1, Marvel Comics, 1965.

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III. Pedagogic Context

SimProgramming is a didactic approach for software engineering education that focuses on the transition between beginner and advanced learning content [11]. This didactic approach is based on situated learning for self- and co-regulation of learning and formative assessment, called e-SimProgramming [12], applied in an undergraduate course of a Computer Engineering program in online higher education in Portugal. The course is structured in 6 topics, each lasting two weeks. In the textual narrative SimProgramming is a fictional software development company to create a narrative immersion in the course. The students are interns in the company and the content and activities are presented in each topic as narratives mediated by the characters: Catmming, Ada, Patavinas, Meiabola, Fezada and Boss, in three different scenes/environments. The target audience for the course comprises adult learners (23+ years old) from various parts of the country and beyond, typically working students [2].

IV. Methods

The methodology applied in these characterization essays was the DSR - Design Science Research [13]. Tests were carried out by interdisciplinary (Computer Science and Multimedia Education) co-creation for the visual characterization of the prototypes of the characters of the introductory topic of the course. The activities developed in the trials match to the nominal sequence of the process, following the steps of defining the objectives to be achieved, the Design & Development of the Artifacts referring to the prototypes of the characters for comic strips and, finally, the demonstration that it matches the visual characterization of the characters.

A. Archetypes of the Characters

Table I. presents the description of the Ada, Boss, Catmming, Fezada, Meia Bola and Patavinas archetypes, which were developed by the SCReLProg project team the following platforms were chosen for testing their creation: Pixton and Powtoon (2D) and The Sims (3D). The choice of 2D platforms was based on those with free accounts and a larger number of characters, accessories, and expressions. The differential of the Powtoon platform is that it allows the download of scenes in mp4 format.

TABLE I. Description Of the Character Archetypes

Character	Description
Ada	36 years old. Some Asian features (...). Short and round. Long dark hair with red highlights, hair caught up (sometimes a hair tail, other times a pull with a pencil catch, with a bit of hair loose on her face), Formal clothing: dresses and skirts. Permanent/characteristic object of the character: scarves.
Boss	Age 49. Caucasian. Medium build and normal. Always wearing a suit and tie. Gray hair and balding, like actor Jason Statham. Permanent object: top-of-the-line cell phone and headphones.
Catmming	Mascot -> Artificial Intelligence Catmming: A cat (Norwegian forest - technologist) with its tail connected to a laptop floating around like a "Genie of the Lamp"- It would be our Programming Genie.
Fezada	32 years old, Dark curly semi-long, loose hair. Dark/brown skin color. Medium height and slim build. Clothing: Jeans andt-shirts. Permanent/characteristics object of the character: Long earrings.
Meia Bola	Age 45. Caucasian. Tall and elegant. Hair gray and short but somewhat clumsy, lumberjack-type beard, clothing: wearing a pullover and classic Bermuda shorts. His permanent/characteristic object is a beret.
Patavinas	28 years old. Brunette. Short and a little round. Medium long dark wavy hair, pear type beard. Clothing: rocker style, dark leather. Permanent item: dark sunglasses.

The Sims platform (3D) was chosen because of its flexibility in creating character details and images at different angles. The visual prototypes of the 2D and 3D character archetypes were developed in seven tests, by an interdisciplinary team. The following features were explored: body shape, face shape, expressions, costumes, hair shape and color, accessories.

V. Results

A. Prototypes of Characters in Pixton

Fig. 2 shows the characters created on the Pixton platform. It was possible to implement 5 of the 6 characters, with characteristics above eighty percent of their archetypes, except for the character Catmming, for not having available characters such as robots or animals. As for the physical characteristics, the chief's gray hair color became gray. The character Meiabola was left with only a mustache, there was an option to insert a beard, as described in the archetype.

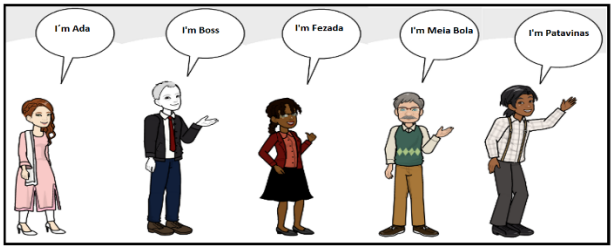

Fig. 2. Characters created on the Pixton platform.

B. Prototypes of Characters in Powtoon

The tests on the Powtoon platform (Fig. 3) showed better results compared to the Pixton platform.

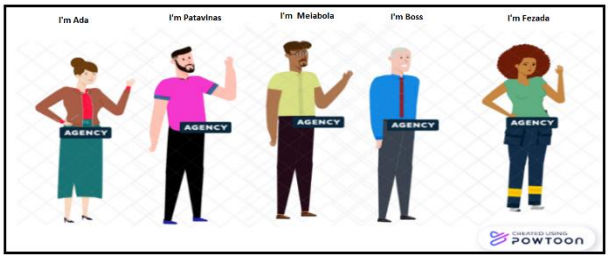

Fig. 3. Characters created on the Powtoon platform.

The shape of the face and hair also has limitations. It offers blue and green hair color options, which is an advantage over the Pixton, which is more conservative in this regard. The facial and body features, allow eyes to be configured in various shapes and colors.

C. *Prototypes of Characters in The Sims*

The Sims platform has many options for avatar creation, such as face and body modeling, accessories and clothing, and different types of makeup and hair. Therefore, with the descriptions of the archetypes it was possible to create several versions of the same character in an intuitive way. Fig. 4 shows from left to right Boss, Patavinas, Ada, Meia Bola and Fezada. It was possible to implement in 5 of the 6 characters, one hundred percent of the respective archetypes (Fig. 4), except for the Catmming character because there are no animals in the game by default, except through expansions like The Sims 4 Cats & Dogs.

Fig. 4. Characters created on The Sims 4 platform.

VI. Discussion and Final Thoughts

Character creation is a challenge and requires the definition of archetypes and their respective characterizations. Table II. shows a map of the implementable features on the platforms used. Although the Pixton and Powtoom platforms provide free accounts, characters cannot be characterized in a detailed and faithful way to the archetypes, which can impact the narrative immersion by the characters [3], [6]. The Sims 4 platform, although not a free version, made it possible to implement all the features in Table II. The tests showed that the transposition of textual narratives to visual form affects characterizations of the characters by the limitation of the platforms. This may affect students' identification with the characters and impact narrative immersion. As future work, we plan to test with students the impacts of characters in visual form and what improvements needed to increase identification with this target audience and increase narrative immersion.

TABLE II. TABLE II. Features Supported on the Platforms

Features	Pixton	Powtoon	The Sims
Body Shape and Face Shape	Partially	Partially	Yes
Expressions	Yes	Yes	Yes
Costume Design	Partially	Partially	Yes
Hair Shape	Partially	Partially	Yes
Accessories	Partially	Partially	Yes
Characters of Animal	No	No	No

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