Creative Muscle: the serious learning game

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Abstract. "Serious Games [SGs] are applications combining educational content with gameplay by integrating learning objectives into a game-like environment" (Thillainathan & Leimeister, 2014, p. 1). However, they have not been used much in language teacher education and training (Ulicsak, 2010). This paper describes the design of *Creative Muscle*, a SG and its use to train second language practitioners/ Master of Arts (MA) in Computer Assisted Language Learning (CALL) student-teachers in the use of Singularity Viewer Virtual World (VW) for online micro teaching. This game-based training was delivered in three one-hour sessions. *Creative Muscle* was based on creative writing as a metaphor. Data included the researchers' personal observations, screen recordings of students' participation, and the participants' reflective journal entries. The findings gave insights into the effectiveness of the use of the 3D SG as a VWs' training mechanism. Students' feedback further provided ideas for game improvement which indicated a good understanding of the game, and of VWs.

Keywords: serious games, virtual worlds, online second language teacher education.

1.   Introduction

"Entertainment games that educate players are widely referred to as Serious Games (SGs)" (Stege, Van Lankveld, & Spronck, 2011, p. 1). SGs represent an acknowledged potential for instruction where users can practice knowledge and skills, because they are able to strongly motivate learners of all ages and backgrounds with their immersive game-like environments.While SGs' potential for teacher education has been noted (De Gloria, Bellotti, & Berta, 2014), SG user studies in language teacher education and training have been underreported

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(Ulicsak, 2010). This paper describes how *Creative Muscle,* a story driven SG designed to train language teachers in the use of VWs, was used in an online teacher education programme.

Second/Foreign Language (L2/FL) teacher education programmes have only recently applied teacher training in the simulation field of VWs (Pappa & Papadima-Sophocleous, 2016). Although VWs have attracted a lot of attention, communication and disorientation issues within the VWs and the steep learning curve were addressed as influencing participants' performance in the use of this technology (Guichon & Hauck, 2011). For this reason, *Creative Muscle* was designed to train six language practitioners/MA in CALL student-teachers how to use a VW. It particularly aims to make them familiar with and develop skills in using the Singularity Viewer VW for their online microteaching. This intervention lies within the realms of possibility that SGs and VWs may offer a stress-free and safe environment for experimentation in a real life-like environment (Ulicsak, 2010).

SGs need to have a strong connection with the learning process so as to give the sense of an expanded reality. In an attempt to create instructionally sound and relevant learning experiences for language practitioners, the metaphor of creative writing was used in the game as a learning mechanism.

Creative Muscle was designed and developed by Researcher 1 (see Figure 1). Each level was designed by combining classical platform and role-play game elements with quizzes, puzzles, and riddles as learning mechanics. All elements are materialised through the metaphor of creative writing as the main learning mechanism. Creative writing was specifically chosen as it derives from practitioners' language learning and teaching context.

The game starts with a brief introduction in which the player is shown that the playable character is trapped in a dark isolated room. In the first level, the player is introduced to the communication and orientation techniques. The character has to move around the room to discover the tools that will help him to improve his memory and escape his reality, and in that way progress in the game. To achieve this, the player has to solve issues related to his present location, with the help of a non-player character. He must follow instructions and solve quizzes while exploring the room. In the second level, the player learns how to move faster in the environment and how to store and retrieve objects from his inventory. A riddle guides the level and upon its completion, the player teleports to the third and final level of the game. In the third level, the player is required to make decisions within limited time. To do this, he has to resort to everything he has learned during Levels 1 and 2.

Figure 1.   *Creative Muscle*: the serious learning game
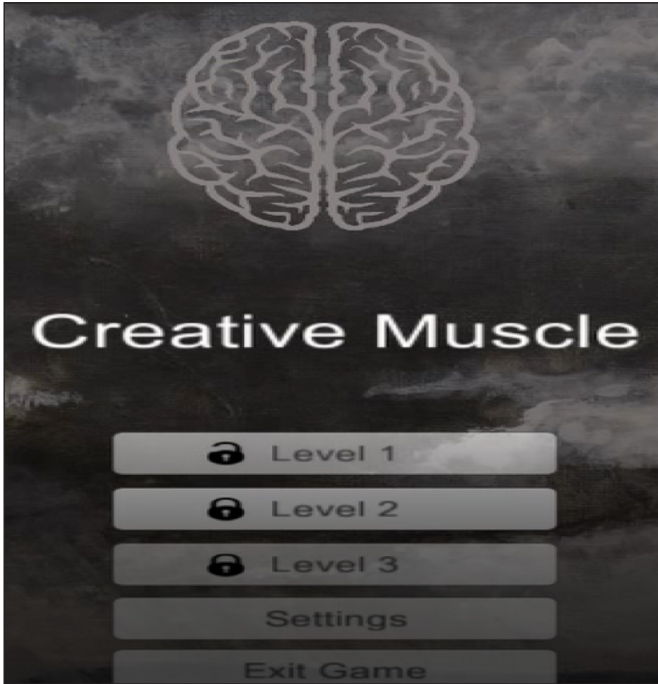
2.   Method

2.1.   Participants

The participants of this study were six female L2 practitioners from Cyprus, also full-time and part-time students of an online Master's programme in CALL. Serious gaming and VWs were completely new to all the participants.

2.2.   Procedure

The intervention took place online, as part of the participants' studies. It was designed and delivered in the form of three one-hour online sessions, similar to the number of levels of the game. During these webinars, Researcher 1 introduced the concept of SGs and its related use to the participants. This occurred during the sixth week of the academic semester 2016-2017.

The game was made available to the participants to use autonomously with no other guidance than a short explanation of its functionalities during level one. The participants screen-recorded their gameplay. Upon completion of each level, the issues encountered were explained within the game and over the pre-arranged one-to-one tutorials between Researcher 1 and the participants. Users thus had the opportunity to express their emotions and understanding to the researcher, reflect on their experiences, and record them later in their reflective journal entries.

2.3.   Data collection

This study used a mixed-method data collection approach. Data included the researcher's personal observations of Researcher 1, who was also the webinar tutor, screen recordings of students' participation, and the participants' reflective journal entries. The virtual performance of the participants was screen-recorded with the use of Atube catcher, both by the participants and the researcher. Students were instructed to record the whole procedure in order to evaluate their performance in their reflection journals at a later stage. Data were analysed qualitatively through a transcribing and coding process regarding their acquired knowledge of what a VW is and what tools can be used.

3.   Findings and discussion

This study investigated the use of the *Creative Muscle* SG as a teacher training for VWs to six language practitioners, new to the 3D environment concept. The most common theme emerging from all collected data was participants' anxiety for this new kind of training. As extensively reported in SGs literature, there are frequent feelings of initial anxiety or discomfort in the use of a new technology, especially when SGs do not create relevant learning experiences for language practitioners: "But I don't like or play games. How can a game help me in my classroom?" (Student 2).

Despite these negative feelings, all six immediately started playing the game and they all managed to complete all three levels at their given time, according to the researcher's observations: "It was a hands-on experience – while frightening in the beginning" (Student 4). The completion of the game and therefore, the participants' training relied heavily on the sense of presence. The feeling that "they were there" (Student 5) was the second highly rated aspect of their training: "Good games are immersive and challenge and support players to approach, explore, and overcome problems" (Bellotti, Berta, & De Gloria, 2010). As all

participants mentioned during their following-up tutorials, they were curious to see what a VW is like. They raised questions regarding how they could use VW in their practices and how VWs differ from SGs. The latter signified their progress in the 3D environment understanding. Their familiarisation with the VWs' provided tools was indicated by their point of interest: "Can we **store objects** from the game in our **inventory** and retrieve them in virtual world micro-teaching?" (Student 1). The skill of storing/retrieving objects was based on the immediate feedback they received within the game. The feedback enabled them to "remember what they had used" (Student 1). The progressive appearance of the key buttons for navigation and communication in the environment from the very first level appeared catalytic for the learning process of how to use a VW. This was proved with the completion of the final level of the game. The participants resorted to everything they had learned in Levels 1 and 2 in order to navigate properly and not get disoriented. One important finding was the participants' suggestions for improvement of the *Creative Muscle* on their own initiative. This could also be considered as proof of good understanding of a 3D environment through a SG.

4.   Conclusion

It is hoped that we provided a good understanding of what *Creative Muscle* SG is and can be used for. Changes are planned to improve the game and to further test it with more participants.

5.   Acknowledgements

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