

Contents lists available at [ScienceDirect](http://www.sciencedirect.com)

Computers & Education

journal homepage: www.elsevier.com/locate/compedu

The effect of digital storytelling on visual memory and writing skills



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ARTICLE INFO

Article history:

Received 21 November 2014

Received in revised form 26 November 2015

Accepted 30 November 2015

Available online 10 December 2015

Keywords:

Computer-mediated communication

Improving classroom teaching

Media in education

Teaching/learning strategies

ABSTRACT

The aim of this study is to determine the effect of digital storytelling on the visual memory capacity and writing skills of students. A total of 59 s grade primary school students participated in the current study. The randomized pretest - posttest control group design was used in the study. Students in the experimental groups completed the process through digital storytelling. The research was conducted over 13 weeks. The “Benton Visual Retention Test” and “Composition (Written Narrative) Evaluation Scale” were applied as pretest and posttest. In order to test whether there was an improvement within groups and to see if there were differences between groups, the hypotheses were tested using the t-test and obtaining gain scores. As a result, the findings showed a significant improvement in terms of the visual memory capacity and writing skills of students in both experimental and control groups, and the average gain scores were higher in the experimental group. Findings further demonstrated that digital storytelling created a significant difference in the writing skills of students. However, no statistically significant difference was observed between groups although the gain score averages of the experimental group students were higher in terms of visual memory capacity.

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1. Introduction

Digital Storytelling (DST) emerged from the integration of multi-media and storytelling in order to meet the various needs of individuals, such as communication and self-expression, and to facilitate teaching and improve skills. Since it is a dynamic tool, DST can be used for different purposes in different contexts and be created either personally or within groups. It has been demonstrated that DST provides opportunities for the improvement of students' skills including problem solving, cooperative learning, motivation, achievement and critical thinking, within the context of formal education (Belet & Dal, 2010; Frazel, 2010; Hung, Hwang, & Huang, 2012; Malita & Martin, 2010; Ohler, 2013; Yang & Wu, 2012). Moreover, researchers have reported that students can improve their literacy (digital, global, technological, visual, informational) and other academic skills by participating in the process of designing, creating and presenting their own DST (Hung, Hwang, & Huang, 2010; Malita & Martin, 2010; Ohler, 2013; Robin, 2008; Skinner & Hagoood, 2008; Yuksel, Robin, & McNeil, 2011). It has been suggested for teachers to employ DST within their teaching practice to help make abstract or difficult concepts more understandable and to facilitate discussion on certain issues (Ohler, 2013; Robin, 2008). Digital stories can either be created by the students themselves or teachers can use the ones created by others.

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Another important factor in the learning process is the way in which information is preserved and remembered. Memory plays a crucial role in the process of retaining, and when necessary, recalling information (Demir, 2011; Terry, 2009). As individuals actively participate in the writing based DST process, their memories are affected. Previous studies have also indicated that storytelling, including digital storytelling, can effectively impact memory (Aina, 1999; Drevenstedt & Bellezza, 1993; Ricci & Beal, 2002).

With that said, the following section explains the relationship between digital storytelling, visual memory and writing skills comprehensively.

1.1. DST and visual memory capacity (VMC)

Memory is the process of retaining and remembering events and past experiences. (Hudmon, 2006, p. 12). Memory has numerous functions and has been classified or named in various ways (e.g. sensory memory, working memory, long-term memory, visual memory, visual short-term memory, spatial short-term memory, iconic memory, photographic memory, episodic memory and semantic memory) (Solso, Maclin, & Maclin, 2007; Terry, 2009). Visual memory is the ability to recall or remember images, scenes, words or other information presented visually (Binder, Hirokawa, & Windhorst, 2009).

Within educational context, it is required that a student be able to visualize a stimulus in his mind without receiving any help. If such skill of student has not improved, he may have difficulty in placing visual stimulants during several operations (e.g. remembering general view of words in reading and writing, sequencing the letters) (González-Alvarez, González-Alvarez, & Bermejo, 2010). It is also stated in the relevant literature that visual memory is associated with academic success (Kulp, Edwards, & Mitchell, 2002), reading performance (Lyle, 1968), and written arithmetic performance (Solan, 1987). In this regard, the development of visual memory is important. Memory capacity develops from infancy to early adulthood (Terry, 2009). The preservation and recalling of information in the memory can be increased, through various associations, with the usage of memory strengthening tools (Solso et al., 2007). Acronyms, acrostics, key words and storytelling are among various methods used for strengthening the memory (Solso et al., 2007; Terry, 2009). On the other hand, stories also influence memory, and the storytelling process facilitates cognitive changes (Schank & Abelson, 1995). In the DST process, individuals play an active role. Gallets (2005) study, which examined the effects of storytelling and story reading on the memory of first and second grade primary school students, found that the students in the group where stories were told were more engaged in the process, their thinking and imaginative skills were more developed and their mental processes played a more active role. All of these were a consequence of the improvement of their ability to recollect and an increased level of impact on their memory. According to Aina (1999), this can be explained by the fact that storytelling requires more imagination in comparison to story reading. Thus, it can be possible to stipulate that digital storytelling process where visuals are created, drawings are performed, individuals have an active role and may be efficient in visual memory capacity.

1.2. DST and writing skills (WSs)

Writing is one of the most complex cognitive activities and involves a great number of cognitive components (Olive, 2004). In writing, ideas are extracted from long-term memory during the planning process of the transcript, and reorganized if necessary. Used as a method of communication to talk about ourselves and interact with others, writing expresses our feelings, thoughts, experiences, etc. through a required set of symbols and signs (Akyol, 2000; Sever, 2004). Individuals discover their own thoughts and the ideas they really wish to express in the creation of their stories through the process of writing (Miller, 2010). The initial stage of DST involves story/scenario writing, while the other subsequent stages are shaped in accordance with the story that is being written. Simply stated, writing is an important part of the process of creating digital stories (Lambert, 2013; Miller, 2010; Ohler, 2013; Robin, 2008). According to Ohler (2013), DST:

- Is based on writing. While writing may not be the final product of a digital story, it is the most important part of the process;
- Contains authentic writing, through which the writing skills of students can be developed in a unique and satisfying manner;
- Forms bridges to traditional writing. Students handle many different curricular or extra-curricular issues in a creative and explanatory manner and then synthesize them before effectively performing the first stage in developing digital stories.
- Requires deep thinking, which is an important aspect of the writing process, as stories embody one's own reflections in the intermutual relationship between the writing process and thinking.

With DST, students are able to learn the art of writing a good story, how text and art can be integrated and how technology can be used creatively (Miller, 2010). In addition, when students are fully engaged in the writing process, they embrace their stories and participate in the digital story creation process more effectively by developing a good scenario (Xu, Park, & Baek, 2011).

Previous studies have shown that DST develops students' writing skills and can be used as an effective learning tool, particularly in computer-assisted language acquisition. (Abdollahpour & Maleki, 2012; Bumgarner, 2012; Campbell, 2012; Chuang, Kuo, Chiang, Su, & Chang, 2013; Kuo, Chiang, Lin, Cao, & Yen, 2012; Xu et al., 2011; Yoon, 2012).

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