Analysis of Educational Digital Storytelling Software using the “Dimension Star” Model

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ABSTRACT

Digital Storytelling is a pedagogical tool that has been used for centuries to impart knowledge, values and attitudes. A few models have been developed for the analysis and evaluation of Educational Digital Storytelling Environments (EDSE). A useful, comprehensive and representative evaluation model of EDSE is the “Dimension Star” (Schafer, 2004). This model could be used in the analysis and evaluation of EDSE using twelve criteria-dimensions, namely: Concreteness, User Contribution, Coherence, Continuity, Structure, Cognitive Effort, Virtuality, Spatiality, Control, Interactivity, Collaboration, and Immersion. In this paper, twelve EDSE are analyzed and evaluated with the “Dimension Star” model. This study may be a useful tool for educational software developers especially in the early stages of conception and design of an EDSE. Finally, this study can help teachers to choose appropriate EDSE so that be able to fulfill specific teaching goals in their classrooms.

Keywords: Dimension Star, Educational Digital Storytelling, Educational Digital Storytelling Environments (EDSE), Evaluation, Pedagogical Tool,

1. INTRODUCTION

Education through storytelling has been tested successfully in almost all the history of mankind unlike formal education at universities and schools which is a relatively recent institution. The power of a good story lies in its ability to build bridges of understanding between people using concrete examples rather than abstract concepts which are hard to understand. In conceiving and constructing their stories, students become more cognizant of the contexts and backgrounds that shape their perspectives. This helps to demystify theory and empower students to become theorizers of their own historical and cultural experiences (Benmayor, 2008). Examples of how powerful stories can be, are the Iliad and the Odyssey by Homer. He is one of the first storytellers of mankind and it is thought that the epics we know today are the result of generations of storytellers passing on the material. It seems
that knowledge in any form (religion, technology, agriculture, hygiene etc.), is stored better in our brain if it takes the form of narration. According to narrative psychology, there are two modes of thinking: paradigmatic thinking (logico-deductive and classificatory discourse) and narrative thinking. Neurological findings seem to support this distinction, since narrative thinking (also called episodic memory) seems to lie in the hippocampus, while paradigmatic thinking lies in the cortex. Narrative is also an important epistemic modality (Papadimitriou, 2003). Epistemic modality refers to the way a speaker / writer communicates his doubts, certainties and predictions.

In recent years, however, advances in digital technology have changed the ways in which people interact with each other as well as the way in which people relate to information and knowledge, and consequently how they learn (Bottino, 2012). Especially, multimedia and digital technology gave a new dimension to storytelling, the digital storytelling. Digital Storytelling (DS) is therefore a modern expression of the ancient art of storytelling and derives its strength from the harmony between image, music, narration and voice, thereby giving bright color to characters, situations, experiences and ideas (Lowenthal, 2008). Firstly, there is a separation of active and passive digital storytelling. In the first case, the recipient of the educational process creates the digital story while in second case someone only watches ready digital stories. The next important distinction is whether DS is the result of individual or collaborative effort. Finally, a third distinction refers to the target group that has a digital narrative based on whether digital stories are designed for formal or informal education (e.g., museum, home).

The advent of DS in educational environments is based on theories by which learning is a result of knowledge building and not just a knowledge transfer. The possibility of visual literacy through digital storytelling is also stressed (Regan, 2008). It was also argued, that DS allows students to work in an authentic context, to develop narrative skills, to reflect their knowledge in a community of learners and get feedback (Coventry, 2009). A digital storytelling activity can also benefit students as writers, because they can exploit the advantages of technology to organize their ideas (Kullo-Abbott & Polman, 2008). Realistic images inspire students to write in more detail and think about the relationship between pictures and words. Lowenthal (2009) believes that digital stories are just stories in digital form to share an idea, usually the idea of the narrator. Digital stories are personal expressions. He also argues (2008) that as far as social contacts are concerned, digital storytelling helps to bring people close together. Building on modern social and constructivist views of learning (Piaget, 1952; Bruner, 1960; Vygotsky, 1978; Jonassen, 1999) DS is a great channel to apply these theories in practice. DS allows students to participate actively and not just be passive consumers in a society steeped in digital products (Ohler, 2005). Moreover, according to Di Blas and Boretti (2009) and Di Blas, Paolini, and Sabiescu (2010): (a) DS in an educational process helps students work in groups and strengthen the bonds between children in class, and at the same time between students and their teacher, (b) As far as digital literacy is concerned, students acquire several technological skills through storytelling, (c) Another social benefit is that creating digital stories helps the integration of disabled students or students with learning difficulties through taking with this opportunity an active role, and (d) Last but not least, a major educational benefit gained with DS, is the ability to narrate.

However, DS in education is still in its infancy and much remains to be done so that the DS gain a strong foothold in every day educational practices. One fundamental step in this direction is the formation of appropriate technical and pedagogical evaluation models and standards of DS environments. This means that the work towards technological innovation
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