

Collaborative Digital Storytelling through Sharing Tool in Second Life®

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Abstract

Interactive technologies based on the Internet provide opportunities to create rich learning environments that actively engage students in teaching and learning processes. The purpose of this study is to offer a practical application case of collaborative digital storytelling in virtual reality. Virtual reality, such as Second Life, offers many benefits for expanding learners' experiences and limited human capacity via virtual reality learning and improving valuable interaction skills in education. Through these practices, teachers and learners may have improved learning experiences based on the open-ended learning environment via new media such as virtual reality.

Keywords: Collaborative learning, Digital storytelling, Virtual reality, Secondlife

1. Introduction

Computers are now widely used to assist learners in acquiring or in developing particular skills (Druin & Inkpen, 2001). Computer-mediated learning attempts to provide children with a rich learning experience by using varied instructional content. The interactive component of the computer-mediated learning environment has a significant impact on children's motivation and the effectiveness of the learning experience (Park, 2009; Weimer, 2002).

Interactive technologies via mediums based on the Internet provide opportunities to create rich learning environments that actively engage students in the teaching and learning process.

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Advanced technologies based on interaction, such as digital games and virtual reality, offer good environments for digital storytelling, from traditional storytelling driven textbooks to conversations. Digital storytelling has been defined as the modern expression of the ancient art of oral storytelling (Xu, Park, & Baek, 2011) where knowledge, information, wisdom, and values have been shared. Stories have been adapted to each successive medium that has emerged, that is, from the circle of the campfire to the silver screen, and now to the computer/digital screen, stories have taken many different forms. Digital storytelling is a process with various mediums, such as digital movies, texts, sounds and voice, music, video, and animation used to share a story based on digital technology (Baek, 2005) .

Storytelling is a natural method of human communication and is prevalent in all aspects of human social interaction. People tend to make better sense of complex ideas, concepts, or information when it occurs via storytelling (Chung, 2006). In this context, Ibanez, Aylett, and Ruiz-Rodarte (2003), Mello (2001), and Sadik (2008) have said that storytelling can be used to enhance a student's higher-order thinking skills and literacy, thereby increasing collaborative learning. According to Armstrong (2003), digital storytelling is the same as oral storytelling and written storytelling. However, its special feature in teaching and learning is that it shares information through multimedia. Thus, multimedia makes storytelling more accessible, acceptable and attractive to more people.

Furthermore, Second Life, one of the multimedia learning environments when based on virtual reality for digital storytelling, becomes a learning environment for storytelling that can be one possible application of human knowledge to real-world problems (Xu, Park, & Baek, 2011). Lowenthal (2009), for example, insists that digital storytelling is an emerging institutional technology, and states that digital storytelling can be applied successfully in educational practice. Learners can learn educational content with practical activities, via learning by doing (e.g. creating their avatar and exploring, creating objects, sharing information, and interacting in oral, written, and gesticulatory forms). Thus, Second Life as an aspect of digital storytelling has potential ability for the learner in these ways: first, it can provide a motivating and open-ended learning environment for experiential learning activities, that is, learning by doing.

Second, it can provide rich interactions from communication (Park & Baek, 2009); therefore further encouraging engagement through expanding human beings' limited physical or logistical capacities in the learning process (e.g. human flight or exploring a distant, culturally distinct location).

The purpose of this study is to offer a practical application case of collaborative digital storytelling in virtual reality. Second Life offers many benefits for expanding learners' experiences, and their less-limited human capacity via virtual reality learning aids in improving such valuable skills in education. Through these practices, teachers and learners may have improved teaching and learning experiences based on the open-ended learning environment. This brings us to introduce practical methods and a case built on collaborative digital storytelling in Second Life; the activity is a type of digital storytelling, a collaborative activity between group members (four to six participants to make a narrative by digital storytelling within an educational context. All the participation in this class was by pre-service teachers that had to try and achieve an educational goal of the subject (e.g. second language, society, ethics) through use of new media in the field of education. After completing such activity, educators can teach students various subjects in primary education through university level students.

2. Collaborative Digital Storytelling Activity in Second Life

Sanders and McKeown (2007) said in their research that three-dimensional immersive environments can be used to support communication and collaboration among learners. Hamada (2008) stated that virtual reality learning environments contain a multimedia information context that offers unique interactivity. In this context, Second Life's learning environments with immersive structures, may facilitate focus on users as learners acquiring and creating information, and provides more flexible ways of learning to fulfill learners' individual needs.

Sanchez(2009) asserts that the form of digital storytelling in Second Life is similar to general digital storytelling that uses multimedia technology. The difference between them is the type of final product. When it comes to Second Life, the result of acts is objects which are used to present the stories which give texture to the objects.

As shown in Figure 1, the characteristics of digital storytelling focuses on a virtual reality spectrum embracing diversity, flexibility, universality, interaction, engagement, and sharing. Digital storytelling in virtual reality offers the characteristics of diversity of narrative progress, such as variations of plots in an event, and making the synopsis of various versions, while focusing on the user getting away from linear traditional storytelling. Also, it has flexibility that can change the narrative through readers' input needs by new media technology, via a variety of visual and auditory effects. Crawford (1984) said that it offers the right of choice that can make the narrative progress with logical, interactive, and interesting aspects for the user. In addition, essential to digital storytelling in an Internet-based learning environment is rich interaction.

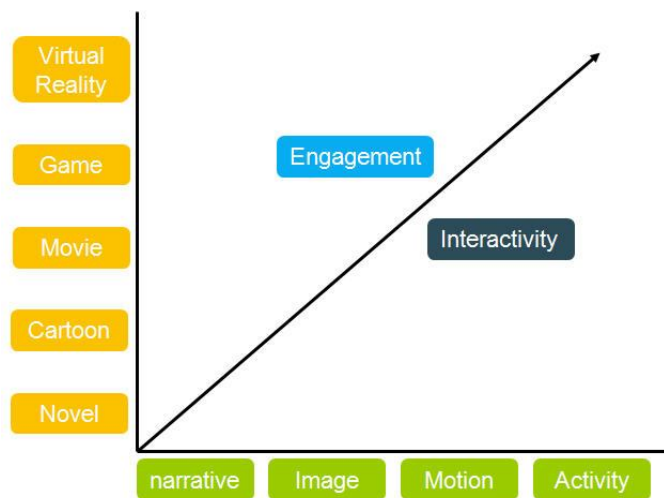


Figure 1. Engagement and Interactivity of Storytelling

Digital storytelling has a unique characteristic in that it has an interactive narrative structure made by the writer but produces another story, by changing the conclusion through making the narrative him/her self. Additionally, the nature of the digital storytelling in a virtual world permits nearly anyone to make a new narrative in an event, thus all users can become writers and readers.

Second Life (SL) as a virtual world supports experiential, active, and collaborative learning where learners can communicate and share experiences with each other in a virtual environment (Keskitalo, T., Pyykkö, E., & Ruokamo, 2011; Park & Baek, 2009). In this section, we introduce a case and method to use Second Life in an educational context for instruction and learning.

Digital Storytelling Activity by Learner's Engagement Level

Two types of storytelling which have their own special values for students were offered. One was a type of digital storytelling with low engagement level, which consisted of activities from listening to the narrative and activities from organization of the narrative environment. The other type offered was a higher engagement level via collaborative storytelling by making an object related to the most pertinent background images which mirrored scenes and narrative of the story in SL, with subsequent role-plays ensuing.

One type of storytelling, listening to the narrative activity, is focused on perceptual fun which is caused by receiving impetus from outside of our body. The other storytelling type, organization of narrative environment activity, is focus on cognitive fun which is caused by internalization of positive feelings, challenges, satisfaction, and interaction by perceptual fun.

During of the class lasted 4 hours where students first set up a role based on the chosen story with group members from outside of Second Life, they then performed the role of the character in the narrative. After the activity they watched a video recording of their performance as an actor/actress related to the narrative, and then they reflect by written paper. This procedure offered effective learning for digital storytelling and understanding of narrative content, empathy, and improving decision-making skills during the learning process.



Figure 2. Listening the Narrative

As shown in Figure 2, the first activity, a narrative listening activity that is at a low level for engagement and interaction where students just listen to the chosen story and use a headset to hear a storyteller in a virtual classroom in Second Life. There is limited interaction and engagement for the learner as they only listen to the narrative told by the storyteller who is another participant. After the student listens to the story, s/he interacts in a reflective activity with another group member about the story and character.



Figure 3. Role Play and Organization of Narrative Environment

The second activity is to teach how to organize a narrative environment which can provide the students with higher engagement levels and interaction than the first activities between group members. Students who participated in making a background and character images of the chosen story, experienced an activity that made collaborative storytelling through object making that built up most pertinent background images and narration of the story by the users in SL. Another collaborative act occurred when they role played via a team activity with group members. During the session, students represented the narrative via dynamic engagement by making objects for background organization of a story and then role played the characters for storytelling through a collaborative activity in order to use the communication with oral and writing, and object sharing functions in Second Life as shown in Figure 7. At the same time they share some values with the listeners as group members for storytelling. Furthermore, during the activity of making background images and narrative for storytelling, the learners experienced the following; first, in this activity, they changed from difficult key terms to easy content on total vocabulary and understanding of the story, especially, the vocabulary related to keywords in the narrative. Second, deletion of an unimportant character from the narrative structure facilitated communication; similarly, creating a new character when the narrative had been reconstructed also aided on fostering communication.

Function Usage Sharing of the Second Life for Collaborative Activity

Pantelidis (1996) said virtual reality has a few educational implications in that it provides educational experiences originating from engagement, offers a multitude of types of involvement, and facilitates multi-sensory interaction. This activity in Second Life supports the theory of participatory learning and experiences based on interaction (McLoughlin & Lee, 2007), and also provides an opportunity for students to share experiences. Therefore, Second Life is often called an educational environment providing life experience through group activities. Collaborative learning is a method of teaching and learning in which students group together to explore a significant question or create a meaningful project. Usually, students work in groups, mutually searching for understanding, solutions, meaning, or creating a product (Smith & MacGregor, 1992).

In this class, collaborative learning activities through making a narrative activity via learning by using Second Life's communication function(s) took place. For instance, gestures, local chat, instant message, voice chat, and/or note cards were instruments for communication. One important function for collaborative activity in Second Life, instant messaging, allows students to send a message to all members belonging to the group, and the learner must be a member of said group in order to send an IM; thus, they can share a special affinity within a group. In addition, the chat function allows voice and text message communication among players which facilitates dialogue and knowledge sharing. Chat function supports students' communication for collaborative activities, and also allows students to present their ideas and get feedback synchronously as well as asynchronously between group members.

During the session, the learners consist of several groups by choice of a given story outline such as Doggy Poo², Alice in Wonderland. One group consists of four to six students who all take a role in the chosen story. Then they work to create the narrative and background and character images with group members via a collaborative activity using Second Life's various functions aided in communication and making objects as shown Figure 8. Students changed the narrative based on the original story to make a new narrative, or imitated the narrative by role play based on an original story in Second Life. As shown in Figures 5 and 6, students made a narrative activity that accompanied the digital storytelling version for each team in Second Life.

²) Doggy Poo (강아지똥, Gangaji ddong) is a 30-minute stop motion-animated film from South Korea, directed by Kwon Oh-sung, based on Kwon Jung-saeng's 1968 children's book Doggy Poo, illustrated by Annie Rose Godsman. There are both English and Korean-language versions of the film.



Figure 5. Doggy Poo and Alice in Wonderland Activity in SL

Figure 7 shows the shared setting to make a new narrative and background environment for digital storytelling with group members. Students have only to click the option setting menu of General Tab on the Second Life as shown Figure 7 to begin collaborative work. Therefore, students made the narrative environment that became the background of the story, and then participated in the role play through each character in the story via the *build* function (Figure 7) as shown in Figure 8.



Figure 7. Setting of Sharing Object for a Collaborative Activity



Figure 8. Process of a Collaboration activity for Digital Storytelling

3. Procedures of Storytelling Activity in Secondlife

Second Life's persistent virtual environments enable students to work together synchronously and then return, individually or as a team, to then work asynchronously. This is particularly useful when students require more flexible schedules or need to work asynchronously on the same project (Linden Lab, 2011). Students in this study who participated in the education class of digital storytelling are pre-service teachers in the education field with average ages to be 21 to 23. The participants have computer skills for using Second Life through advanced teaching by an instructor.

Also, we checked the usage environments of Desktop Computers for using Second Life in our class. For this class, as shown in Figure 9, we used a revised digital storytelling model, which focused on a storytelling-centered teaching model as proposed by Ellis and Brewster (1991).

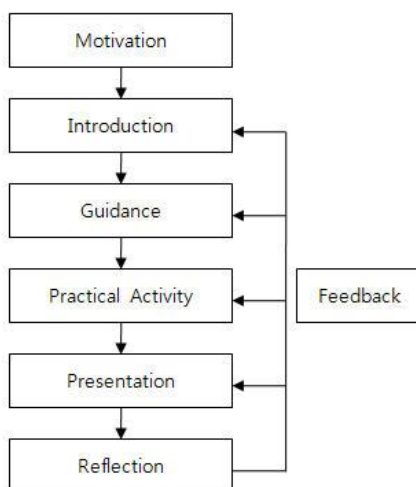


Figure 9. Procedure for Teaching and Learning in Collaborative Digital Storytelling

In the ***motivation phase***, students get their interests aroused in the storytelling activity related to learning content during this time. In this phase students experienced the activity through a part of the story of Doggy Poo, and was carried out with an advanced organizer that shows several digital images used in storytelling. They then discussed the story and reflected on it by their experience(s).

In the ***introduction phase***, students were given an educational goal and characteristic of the characters that appeared on the stage were explained. Each group had a choice of type and subjects for digital storytelling, and they then checked the content and type of narrative.

In the ***guidance phase***, the method of activity for storytelling in a virtual world was introduced, and the procedure of object making through a collaborative learning activity before the start of the practical activity was explained.

In the ***practical activity phase***, all group members made objects to collaborate with and make character faces and bodies, and outside environments based on the narrative of the chosen story via use of a Second Life communication function. For instance, students made the needed characters for Doggy Poo, a sparrow, hen, dandelion, and a lump of earth including objects of background environment images for the Doggy Poo story. They were assigned the dialogue of each character, and in this session, the teacher just supports the object making activity and other activities for the team, if asked for help.

In the ***presentation phase***, the group(s) presented the subject for about 10minutes, which was the prepared storytelling according to their virtual classroom in Second Life.

In the ***reflection phase***, the participants shared each other's opinions about what they experienced, feelings, positive values, difficulty of making an activity or performance and communication characteristics from the storytelling process through using the specific functions of Second Life (e.g. voice chat). Lastly, they wroteareflective journal on the blog.

4. Discussion and Conclusion

Meaningful technological integration is defined as curricula utilizing authentic tasks that intentionally and actively help learners to construct their own meanings from thinking about experiences (Jonassen,Peck, & Wilson, 1999).It provides the student with a learning environment to apply communication skills, work collaboratively, and think critically while addressing content and technology standards.Shin and Park (2008) claim thatdigital storytelling activity is conducted using digital technology as the medium or method of expression, in particular, using digital media like digital games and virtual reality in a computer-network environment. Furthermore, digital storytelling encompasses these key characteristics: flexibility, universality, interactivity, and community formation (Park & Seo, 2009).

The characteristics of collaborative digital storytelling via virtual reality are as follows; first, readers can write non-linear stories via the flexibility of mediated and represented roles of various characters. Second, it offers an opportunity for student interaction.

Digital stories always remain accessible in an on-line environment, connecting creator and audience, and all of users have a role of active participation different from passive reception, such as through movie, TV, or radio. A computer-generated interactive environment provides learning to students with these elements: learning by doing, experiencing, engaging in trial and error, providing repetitive stimulus and receiving responses, presenting similar stimulus material, giving immediate feedback after the response, invoking students' reflexivity, allowing exploration, and allowing self-assessment problem solving. These events contribute to effective learning.

The participants in this session of storytelling and virtual reality engaged in a dramatic effect, and the process of participation and interaction amongst them was to experience learning activities. The physical environment of the storytelling experience in the virtual environment, the subject of the production and use, takes time and effort and they were essentially required to master this activity. In addition, it was the first time interacting with other users in Second Life for all. However, participants in the process of group activities, the stage manager, the writer of the story, characters, sometimes known as the audience, can experience the diversity too. Storytelling in a virtual reality held in Second Life has effects that can be expected, such as concentration and fun. Naturally, in the virtual reality space, interaction with other users and the deployment of storytelling allows users to easily become immersed in the characters. The new technology features a fresh experience for our learners that can teach us the benefits of digital storytelling. However, storytelling in virtual worlds is only a brilliant technique to highlight the significance of the story, thus the origin of the craft should not be lost.

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