7.2 Implementing and Evaluating Collaborative Serious Games for Japanese Cultural Learning in 3D Metaverse

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This paper introduces Internet-based 3D virtual environment, or 3D Metaverse, that aims at assisting non-Japanese students in learning Japanese culture and practice. It also proposes a new framework of "collaborative serious game" where both newcomer and old-timer of Japanese culture learn each other through their co-playing and dialogs. Cultural comparison during their learning activity also serves as a trigger for them to obtain deeper understandings about each other's cultures. First, we introduce 3D Metaverse that we have been developing in SecondLife as the learning platform for Japanese culture and practice. There are virtual museums that exhibit Kimono and textile patterns in a 3D environment. Tangible cultural properties such as the Shinto shrine, buddist temple, and Noh stage are also implemented. Furthermore, users can experience Noh performance through their avatars on a virtual Noh stage, because it has a function to simulate Noh performer's body movements that were originally created from digitized data of body motions of a real Noh performer. Second, the paper describes basic user interface of the game mechanism. The function to detect a position of an avatar pops up when the avatar approaches to a certain point. For example, if an avatar moves in front of the main gate of shrine, the quiz about the color of the gate will be displayed. The quiz will be followed by answers and explanations. Thus, users can learn culture and customs in the right place at the right time from the quiz embedded in a specific position. Since these quizzes are about the custom in which the common Japanese can't answer, it is suitable for the task whereby the newcomer and the old-timer have a dialog for guessing the answer together.

Third, this paper reports the results and evaluation of our learning experiment conducted based on the collaborative serious game framework. In the process of the experiment, non-Japanese students were able to acquire knowledge about Japanese culture and custom from the explanation of quiz and dialogs with Japanese students. The non-Japanese students also could find out the commonality and differences between Japanese culture and their own culture. Moreover, Japanese students were able to learn various background knowledge in Japanese culture that they did not know before. They could also understand their own culture better through the comparison with another culture in dialogues with foreign students. Finally, the paper discusses the possibility of cultural exchange according to the framework of collaborative serious game. The combination of 3D metaverse and the framework could be an effective mediational means for learners to consider commonality and differences in their partner's cultures. As a result, it will not only give learners an opportunity for obtaining a deeper understanding about Japanese culture but also promote their cross cultural sensitivity