Constructing Situated Learning Platform for Japanese Language and Culture in 3D Metaverse

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Abstract— This research aims at implementing an e-Learning platform where students from overseas can learn Japanese language and culture in 3D metaverse. First, we introduce the results of preliminary survey to international students regarding their study interests related to Japanese language and culture. Second, we outline the design and implementation of our learning platform in SecondLife (SL) based on the concept of situated learning that emphasizes embodied interaction with the external objects/environment in the process of learning. The platform includes traditional Japanese architecture, such as Shinto shrine, Noh stage, or Budhism pagoda. The learners can also explore those architectures in the virtual space with their avatar. Third, we elucidate the result of the analysis of our learning experiment in SL among international and Japanese student based on the interaction between learners and with objects in the virtual space. Finally, we discuss advantages and limitations of learning process in our metaverse platform in terms of situated leaning of Japanese language and culture.

Keywords: Metaverse, e-Learning, Situated Learning, Collaborative Learning, SecondLife.

I. INTRODUCTION

Recently the great interests on 3D metaverse have been growing not only as a communication platform or an infrastructure of online businesses but also as an infrastructure for immersive and embodied e-learning [2][4]. SecondLife (SL), the most popular metaverse service by Linden Lab, provides the environment for constructing online campuses, virtual museums, or place for academic conferences on the internet. Avatar, which is a user's agent in the 3D space, can walk around the virtual space composed by electronically constructed objects, and interact with other avatars. These features of the metaverse have the great potential as a platform for situated learning [3] and collaborative learning among a large number of participants that has been difficult to implement on the web-based e-Learning environment.

II. PURPOSE

We have been conducted the research on constructing the learning environment for Japanese language and cultures in 3D metaverse. One of major goals is to provide the international students in Japan the learning contents for the study of Japanese language and culture. The second goal is to understand the advantages and disadvantages of 3D metaverse from the perspectives of supporting platform for the situated learning of Japanese language and culture. Method

A. Preliminary survey

First of all, we conducted the survey on students' needs on the topics concerning Japanese language and culture to about 40 international students who are studying at the authors' university. The participants of the survey were asked to give responses by free description in Japanese regarding their needs in addition to demographic information such as gender, age, nationality, and the length of studying Japanese.

As a result of content analysis based on demographic information, there were differences related to gender. Concretely, the female students were interested in the flower arrangement, tea ceremony, or kimono costumes, while the male students were interested in martial arts, ninja, or samurai in of the old feudal era. Common topics to both genders were traditional architectures such as Shinto shrines or temples, gardens, or festivals. Many of them were also interested in the Japanese traditional customs.

Fig. 1. Learning environment on SL
B. Constructing e-Learning environment

We focused on the common topics raised by the international students. We particularly picked up the traditional architecture such as Shinto shrines and Buddhism temples. We constructed them in SL for learning of Japanese customs and manners while visiting sacred places. Figure 1 shows the snapshots of the learning environment we have constructed in SL.

C. Learning experiments

Next, we conducted two experiments in the metaverse environment. In these experiments, we adopted two theoretical frameworks of learning science. One is situated learning that emphasizes the interaction of learners in socio-cultural contexts. Second is the model of learning-by-teaching [1] which is one of key concept of collaborative learning. Figure 2 shows the scenes of the learning experiments.

(1) Experiment 1: Three pairs of an international and Japanese student were participated in the first experiment. All participants had little experience using SL. Each pair sit in front of the personal computer connected to SL, operated one avatar, and explored for the learning environment for about an hour. Japanese students explained to the international students about applause, money offering, or sacred lots based on the guide book of Japanese custom. The international student experienced those customs while operating their avatar. They studied by questioning on the reason to do so, and exchanging their opinions. During the experiment, avatar operations and conversations of each pair were video recorded. The chatting data in SL was also stored into the log file. After the experiment, all participants had a group discussion to review their experience and impression.

(2) Experiment 2: Same three international students from the first experiment had participated in the second experiment. Three Japanese students were different from last time. They also made a pair of international and Japanese student. All participants had little experience using SL. The hour of the experiment was about one hour. Contrary to last time, the international student had the guidebook, and explained the way of visiting Shinto shrine to Japanese student while exploring for the learning environment. Japanese student questioned when he/she had different understanding. They examined guidebook together when their opinion didn’t match on the custom of visiting shrine. Avatar operations, conversations, chatting data were also video recorded. After the experiment, all participants had a group discussion to review their experience and impression.

III. RESULT

(1) Experiment 1: After the first experiment, the record of avatar operation, the conversation log, chat data, and the transcribed data of review session was obtained. According to the data obtained, most of international students pointed that the operation of avatar in a 3D virtual space gave them understanding of Japanese customs in more concrete shape than just reading the textbook or receiving explanations in classrooms. Some of Japanese students mentioned that it was also a good chance for them to learn Japanese custom because they did not know the detail way of praying at Shinto shrine. On the other hand, some participants described the sense of incompatibility when they experienced something different from the real world, such as the uncoordinated motion of avatar, or unnatural movement of physical objects in the virtual space.

(2) Experiment 2: As a result of the second experiment, the international student expressed that using avatar in the virtual environment to explain Japanese custom to Japanese student promoted their understanding. Japanese students had an opinion that receiving the explanation from the foreigner was interesting and useful experience to reflect their own culture. However, some of them mentioned that it was difficult to adjust their response to international students especially when they denied international student's explanation.

IV. CONCLUSION

This study suggested that the metaverse-based learning could be effective for the learning of Japanese customs, language, and culture compared with the traditional way of learning with textbook or regular classroom. It was also suggested that the way of learning-by-teaching in metaverse is useful to promote the awareness on Japanese culture for both the international and Japanese students. On the other hand, it is revealed that the unnatural reproduction of the physical space in SL have no small effect on learner's recognition of the situation and context. It is also important to facilitate a smooth interaction between learners when there was a difference in knowledge among them.

Our future plan includes improving these problems and expanding the possibilities of the metaverse as a platform for situated learning on Japanese languages and culture.

REFERENCES