

A Digital Learning System of Elderly Dementia Cares for Nursing Students: Comparison with Text-Book Study

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1. Introduction

This paper presents the effects of a serious game learning material on the understanding of elderly dementia cares. For this purpose, a learning system as digital game-style was developed where the user of the system plays a role of a nurse in a hospital. An elderly woman with dementia stays in the hospital and the user of the game is to take care of her. She express some symptoms of dementia and the nurse is expected to react properly by selecting the most appropriate candidate words for what the elderly woman says. Her symptoms get changing in corrects or errors by uses' selecting as the game's scenes go on. They can experience dementia care by seeing her changes in virtual reality. The digital learning materials also contain the test from the previous national nursing exams. The effect of the learning system is evaluated by comparing the test performance of two groups, A : the students from one group studied the dementia care using the digital learning material, and B: the students from the other group studied from the conventional text book. The results of the comparison show significant differences in the each test performance before and after learning by paired t-test ($p < 0.05$) and the A group had more learning time and learning frequency than B group. A questionnaire survey was conducted for the students who had attended in the comparison test. The results of the questionnaire showed the advantage and the advantage of the developed digital learning system.

2. Objective of the Study

We developed a learning system as digital game-style (a serious game) where the user of the system plays a role of a nurse in a hospital. This paper presents the effects of a serious game learning material on the understanding of dementia cares.

3. Methods

3.1. A serious game for learning elderly dementia cares

An elderly woman with dementia stays in the hospital and the user of the game is to take care of her. She expresses some symptoms of dementia and the nurse is expected to react properly by selecting the most appropriate candidate words for what the elderly woman says. Her symptoms get changing according to the user's word selection as the game's scenes go on. They can experience dementia care by seeing her changes in virtual reality. The digital learning materials also contain the test from the previous national nursing exams.



Figure 1. Screen shots of the developed serious game.

3.2. Subjects

The participants were 18 nursing students (who had acquired credits of practical subject of Elderly Nursing).

3.3. Experiments

We divided students into two groups of A and B at random. A group: the students studied the dementia care using the digital learning material, and B group: the students studied it from the conventional text book. Both groups studied about the subject for one week. Before and after conducting the experiment, they answered 40 questions about dementia cares on tests and the questionnaire about this study and learning attitude (frequency, hours and so on) in each group after the experiment.

This study was approved by the Ethics Committee of the Nursing Department of the Kansai University of Social Welfare.

4. Results and Conclusions

The results of the comparison show significant differences in each test score before and after learning by paired t-test ($p < 0.05$) (Fig.2, Fig.3), but the test performance between A (9 students) and B (9 students) didn't show significant differences in this study. On the other hand, the learning hours (total) of A were an average of 50 minutes and that of B were an average of 17 minutes ($p < 0.05$) (Fig.4). The results showed the advantage (convenience, easiness, interactivity etc.) of the developed digital learning system for dementia cares.

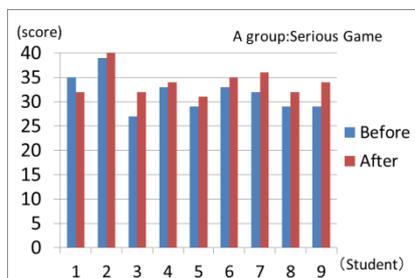


Figure 2. Effect of the serious game.

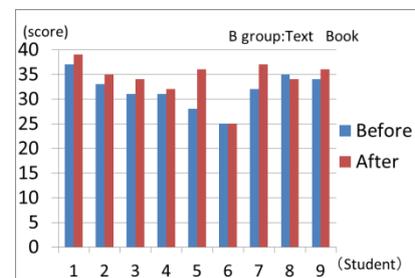


Figure 3. Effect of the conventional text book.

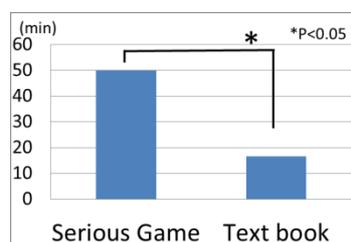


Figure 4. Comparison of the learning time.