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Implementation of Design Project to Foster Creative Nurses

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Abstract. In this research, we designed a learning environment to foster creative nurses. We conducted a design project in the 2009 academic year for second-year nursing students of Aichi Kiwami College of Nursing. In the project, the students were challenged to design tools for rehabilitation. The students were also challenged to undergo rehabilitation using the tools they designed. We examined what the students learned based on the students' report. As a result, we confirmed that the students understood and acquired creative attitudes through the experience of design activity.

Keywords: nursing education, instructional design, tools for rehabilitation

1 Introduction

In recent years, the fostering of a "creative attitude" by which one thinks and acts independently is being demanded of school education (Yumino, 2005). For nursing education, the subject of our research, developing creativity is also a critical challenge. Until now, the practice of nursing has concentrated primarily on activities within medical facilities. However, because of the rise in the number of people living with illnesses or disabilities in recent years, there is growing demand on nursing to adapt to a variety of living scenarios. Therefore, it is critical to develop "creative nurses" who not only have knowledge of customary methods of nursing care, but also meet the needs of patients in flexible yet appropriate ways.

At universities and nursing schools, nursing students learn knowledge and techniques from classes and exercises. Afterwards, they receive practical training in hospitals. Patients under care during hospital training have a variety of illnesses, possess different personalities, and come from a various family environments. Also, the period of time that a nursing student cares for a single patient is short. Because of these reasons, it is difficult for nursing students to learn many different things during training.

To deal with these issues, for this research project we planned and implemented a design project that sought to develop the knowledge and attitude necessary for a "creative nurse" prior to practical training in hospitals. The project has the following two features.

(1) Communicating with patients

To deepen understanding of the feelings of patients and their families in class, role playing has been widely used (Ishii et al., 2007; Yokoo K et al., 2008; Hattori et al., 2009). In these role plays, teachers and students enact the roles of patients and family members. Role playing is effective for understanding the feelings of patients when they are receiving care. However, to foster "creative nurses," it is desirable for the nursing students to experience conditions closer to actual nursing situations. Thus this project established opportunities to communicate with real patients who have residual disabilities due to stroke.

(2) Designing rehabilitation tools

To become a "creative nurse," it is critical that one has clear intentions when communicating with patients, and be actively involved in improving problem areas in the patient's life. Thus we assigned design activities in which nursing students create rehabilitation tools for patients with stroke-related residual disabilities. The nursing students form groups to carry out the activities. The activities range from designing the rehabilitation tools to implementing them.

2 Rehabilitation Tool Project

2.1 Targeted Subjects and Participants

Parts of Aichi Kiwami College of Nursing's "Psychology" course, held during the first semester of the 2009 academic year, and the "Information Science" course, held during the second semester of the 2009 academic year, were used to plan and carry out the rehabilitation tool project.

About 80 second-year nursing students from the college participated as part of these classes. Also, nine employees with stroke-related residual disabilities from "Dream," an NPO that supports persons with such disabilities, also participated.

2.2 Summary of Project

The rehabilitation tool project is composed of the following seven phases.

(1) Understanding problem areas in the daily lives of persons with stroke-related disabilities

The teachers interviewed a rehabilitation specialist about the state of rehabilitation today for patients with residual disabilities due to stroke. The teachers presented the results of the interview to nursing students. The students watched a video that showed the daily lives of persons with stroke-related disabilities. Afterwards, they participated in group discussions and discussed what kinds of activities are difficult for these disabled persons.

(2) Creation of rehabilitation tools

The teachers introduced rehabilitation tools used in hospitals and their methods of use. Afterwards, nursing students were asked to create tools that can be used enjoyably in rehabilitation. The students purchased materials at 100-yen shops and created the tools.

(3) Evaluation of rehabilitation tools

The rehabilitation tools created by nursing students were used by participants in a rehabilitation workshop organized by the NPO "Dream." The participants then evaluated the tools' functionality and enjoyment. The teachers took video of the participants using the tools. Afterwards, they provided feedback to the students as they watched the video.

(4) Improvement of rehabilitation tools

Based on the feedback from users, the nursing students improved their rehabilitation tools. Furthermore, they created instruction manuals for the tools.

(5) Discussions of experiences of persons with stroke-related disabilities

The nursing students were divided into three classrooms. In each classroom, representatives from Dream discussed the changes in their lives as a result of stroke and the content of their rehabilitation.

(6) Implementation of rehabilitation

Each nursing student group explained how to use the rehabilitation tools that they created. Next, each group conducted actual rehabilitation of persons with stroke-related disabilities. The teachers filmed the rehabilitation. After the end of rehabilitation, discussion was held with members of Dream to evaluate their experience with the rehabilitation tools and areas for improvement.

(7) Report writing

The nursing students reviewed and evaluated the contents of their activities while watching video films of actual rehabilitation conducted by their group. Afterwards, they provided a report of their activities up to this point.

3 Rehabilitation Tools Created by Students

For this project, nursing students were divided into 20 groups and worked on creating rehabilitation tools. As a result, more than 20 types of rehabilitation tools were invented. Below, we introduce some representative examples of these tools and their usage (Fig 1). We also present evaluation from users (patients and rehabilitation specialists).

(a) Building blocks for rehabilitation use

Taking a cue from the game Jenga, a group of students created building blocks for rehabilitation use. The patient rehabilitates his or her entire body while stacking the blocks and pulling blocks out from the pile of stacked blocks.

From the users, we received evaluation comments such as: the blocks could be naturally used with two hands because they were big; the blocks were safe because they were light; and the users were happy because messages such as "Don't give up!" were written on the blocks. On the other hand, some users commented that because the blocks were light, the stack quickly collapsed.

(b) TV turntable stand for rehabilitation use

A group of nursing students created a rehabilitation tool using a television turntable stand. The patient places the tool on top of a desk. The patient grips the tool's handle with one hand and moves his or her entire arm in a circle to habilitate his or her movements of the hand, wrist, arm, and shoulder.

As evaluation, users commented that because the size of the turntable stand was compact, it did not get in the way when not in use, that it was effective not just for exercising the arm but also for practicing shifting balance, and so on. On the other hand, some patients with poor joint movements commented that the handle was difficult to grasp because it was big.

(c) Color-matching game

A group of nursing students invented a color-matching game for rehabilitating the lower body. The patient sits on a chair and throws dice painted with different colors on their sides. Next, he or she uses his or her feet to indicate the locations of characters with the same colors as the dice. The patient first plays the

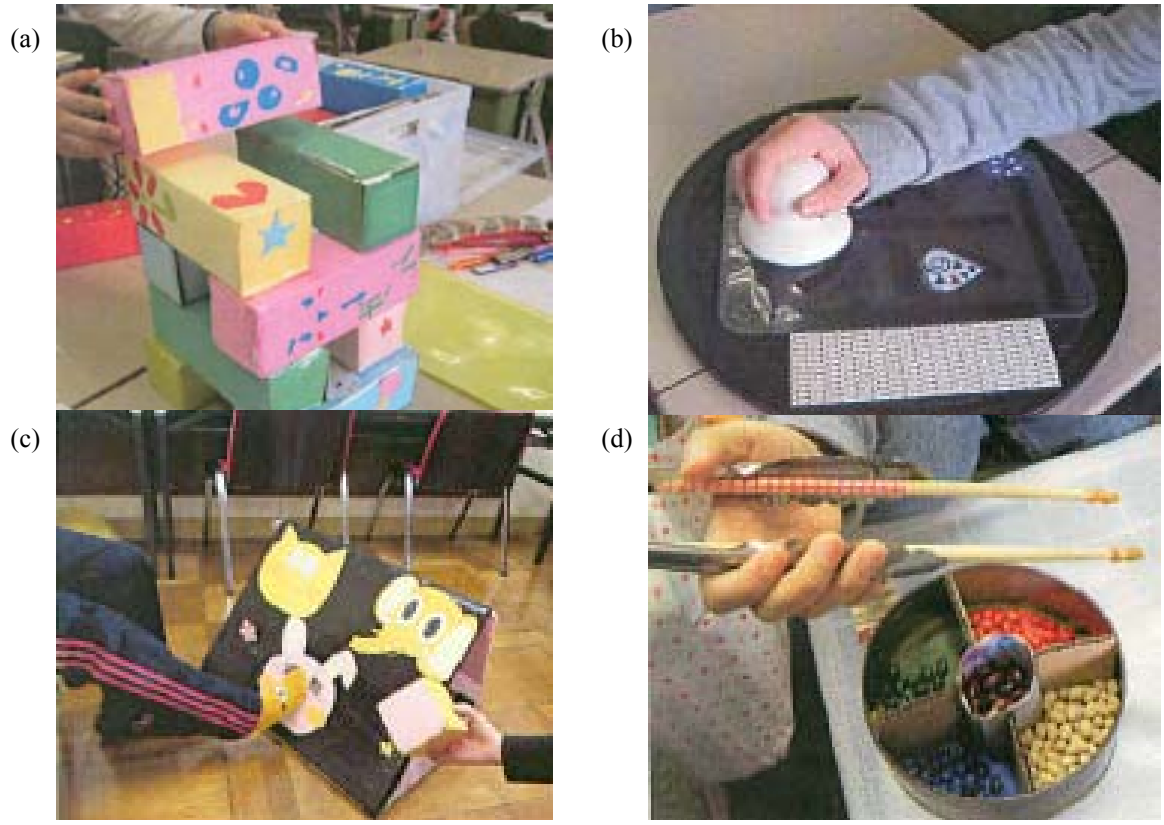

Fig. 1. Rehabilitation tools created by students

game in a regular way, then plays the same game while blindfolded.

We received comments from the users such as: they were happy that they could experience rehabilitation as a game, and that blindfolding promoted positioning and moving the feet through visualization. On the hand other, some patients expressed the comment that they felt a sense of danger while blindfolded because of the unstable situation created when they lifted their feet off the ground while sitting in the chair.

(d) Bean-picking game

A group of nursing students invented a game of picking up beans to rehabilitate hands. For the game, the students created a pair of chopsticks that were easy to use even for patients with disability of the hands. Using the special pair of chopsticks, the patient races against the clock to pick up beans of a color that is determined beforehand.

Evaluation from users included comments that they were glad they could use their free hand to use the chopsticks, and that although this kind of rehabilitation would become trying because it involved simple tasks, the game made rehabilitation fun. Some users said that they wanted to use the chopsticks after rehabilitation was over.

4 Evaluation of Rehabilitation Tool Project

To evaluate the rehabilitation tool project, we analyzed the reports written by the students. The results show that changes in the students' attitude could be seen in the following three areas.

(1) Awareness in communication

The nursing students reported that working to make the patients interested in the rehabilitation activities and communicating actively on their own to the patients were important. They also reported learning the importance of efforts to draw out the abilities of the patients and of working not just alone, but in a group to discuss and carry out activities.

(2) Recognizing the importance of responses suited to the situation

The nursing students reported that rehabilitation tools should be designed so that there is not just one type of parts, but that the parts should be changeable to meet the needs of the user, because the severity of the disabilities differ depending on the patient. They also recognized the importance of changing how actual rehabilitation is carried out based on the circumstances.

Fig. 2. Rehabilitation tools for the joints of the hand

Furthermore, the students learned the importance of understanding whether they understood the explanations of the patients and observing whether the patients are feeling any pain when undergoing rehabilitation.

(3) Motivation toward becoming nurses

The nursing students made comments such as the following in their reports: "Because the patients themselves study hard about their own illnesses, I realize that we must also study hard so we don't lose to them"; and "My own techniques of helping are not yet mature, and I want to gain more experience to become skillful."

These comments suggest that carrying out rehabilitation for actual patients in this project increased the motivation of the students to become nurses.

5 Effect of Rehabilitation Tool Project on Practical Nurse Training in Hospitals

We would like to introduce an episode that suggests that nursing students are working as "creative nurses" during nurse training in hospitals six months after the rehabilitation tool project was implemented.

During practical training in a hospital, a nursing student was in charge of a stroke patient. During that time, the student's group planned to create a rehabilitation tool that could be used in the patient's home after his discharge from the hospital, and to give the tool to the patient. Remembering the experience of this project, the group members created a tool for rehabilitating the joints of the hand (Fig 2). The students created multiple prototypes, and completed the tool after asking the patient to test the prototypes. The tool they created was highly praised by nurses in the hospital, and it also made the patient happy.

These nursing students' activities showed three outstanding points. First, their activity was not the result of a request from teachers, but of their own initiative. A proactive attitude to act autonomously for the sake of the patient is critical for carrying out creative nursing. Second, the group cooperated to create the rehabilitation tool. Teamwork is critical for nursing, and working to help one another leads to beneficial results. Third, during the process of creating the rehabilitation tool, the group created multiple prototypes and asked the patient for evaluation. During hospital training, the time spent with one patient is about a few weeks, so the time to make rehabilitation tools is limited. Under such a condition, creating multiple tools is efficient and meets the demands of the situation.

Although such activities were carried out by just one group, their results suggest that the project implemented by our research was effective.

6 Summaries

In this research, we conducted a project to design tools for rehabilitation. As a result, we confirmed that the students understood and acquired creative attitudes through the experience of design activity.

We plan to continually implement this project. In the future, we seek to analyze the evaluations of the rehabilitation tools created by students objectively. We also seek to analyze the students' creative nursing skills using psychological scales, and to improve the classes.

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