MUST-Care: a proposal for teaching nursing skills

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ABSTRACT: This article aims to utilise new information and telecommunication technology to improve nursing students' practical nursing skills. With teachers' professional competencies and telecommunication facilities, the article hopes, by focusing on both technology and a humanitarian attitude, that nursing students' general care ability will be improved, and will graduate, with more self-confidence and less anxiety when they become clinical practicum interns or enter the job market. The proposed project focuses on research, the development of clinical simulation teaching, as well as ubiquitous care on the part of the nursing department. The name of the project, *MUST-Care*, combines the titles of the three subprojects, which are: Multimedia-on-Demand (MOD) Assistant Teaching Project, Ubiquitous care (U-care) Project and Clinical Simulation Teaching Project. This proposal hopes to improve students' clinical care ability through actual practice in a simulated clinical environment and with the help of information and telecommunication technology.

INTRODUCTION

This project focuses on the cultivation and teaching of healthcare professionals to meet potential demands of Taiwan society. In September 2006, the Executive Yuan passed a proposal to make *the Ten-Year Plan to Establish Long-term Care Management System* a flagship project. In October of the same year, healthcare was listed as one of the emerging industries by the Executive Yuan. To facilitate the development of the healthcare industry, the Department of Industrial Technology (DoIT), Ministry of Economic Affairs, started to promote the flagship project *Ubiquitous-Care (U-Care) for senior citizens* in 2006. In 2007, as DoIT promoted the project for innovative healthcare service, new items were added, including: innovative life and leisure service, as well as operation planning; these are service and operation planning for the management of chronic diseases. In 2008, DoIT added more items, including: security system, distance care service, transportation, housing, recreation, finance management and education in the innovative healthcare service project.

In addition, in recent years, with the rapid development of various networks, such as: cable TV network, fast Internet (FDDI, Giga Switch), wide area network (ATM), it is now common for teachers to provide various teaching materials and files, including research papers, literature, presentation, high-definition Mpeg videos, audio and images for their students to download through various networks and learn from their own computers [1]. Under those situations, therefore, this project regarding teaching improvement was proposed.

PURPOSES

In the past, to help nursing students acquire problem-solving ability, technical training often employed the traditional plastic dummy. Apparently, under the demand of educational reform, this teaching approach is no longer appropriate. Technology is needed to enhance the education and training of nurses [2]. Indeed, in order to improve clinical simulation teaching, consideration should be given to purchasing a high-fidelity simulation dummy, a simulator for the training of peripheral intravenous injection and clinical simulation facilities with physical parameters such as *nursing Anne*. Therefore, this article proposes a subproject (Clinical Simulation Teaching Project) to improve clinical teaching of nursing students. This project is to *demonstrate the nursing skills under the simulative environment*, and the demonstration will be photographed and uploaded to the system of MOD Assistant Teaching Project. This MOD system *offers students the chance to repeat practices* without the limitation of time and space [3].

The *U-care* Project is to *help nursing students to operate digital devices while collecting data on patients' lives* in order to save time and reduce error. Since the medical environment is now moving towards the goal of ubiquitous medical care [4][5], this project aims to teach nursing students to apply the Web platform and mobile devices. In other words, students will learn to use a digital pen and paper (questionnaire) and Personal Digital Assistance (PDA) to reduce the labour cost, save time and avoid potential errors during data

entry. As a result, measurement of physical parameters and data entry will become more efficient. All the functions of three subprojects are presented in Figure 1.
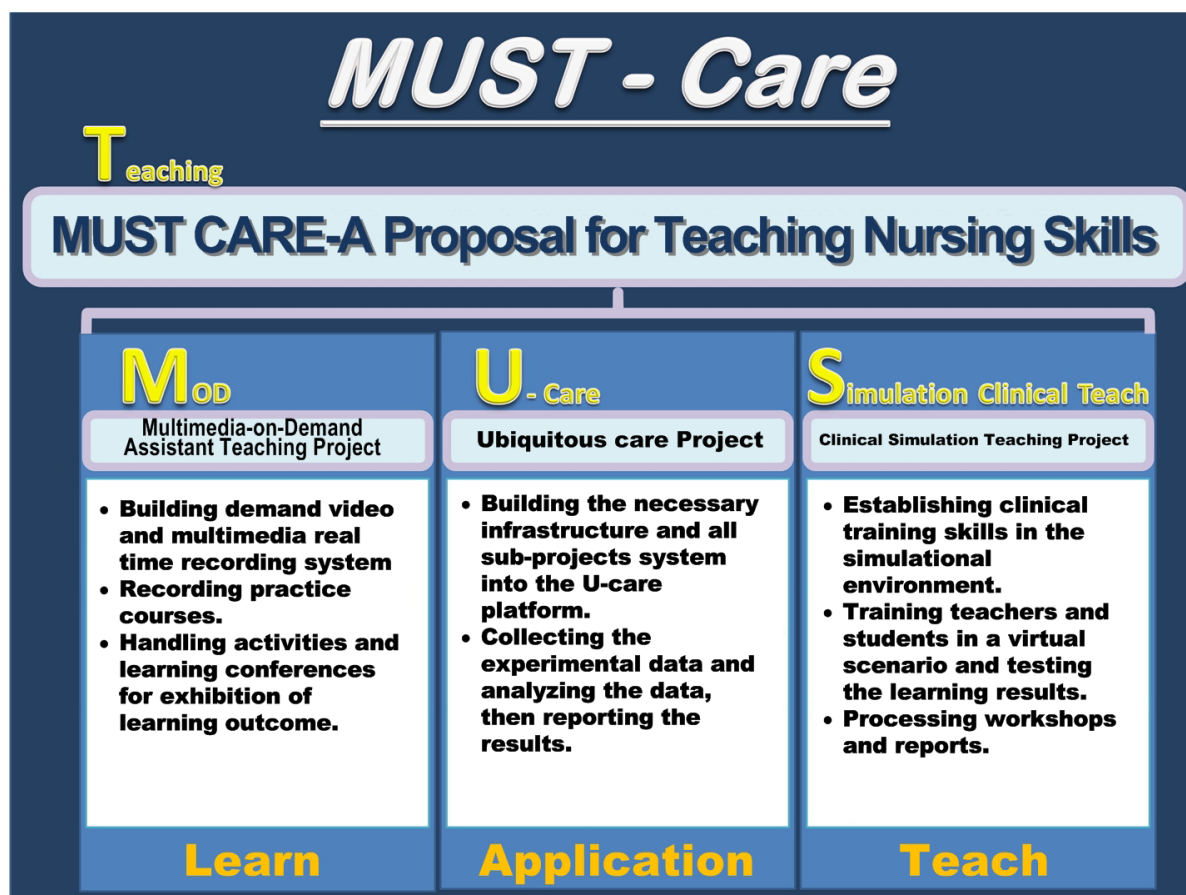

Figure 1: An overview of the MUST-Care proposal.

OPERATION PROCESSES

The three subprojects in this proposal will play different roles at different stages to guide nursing students during their training process and teach them how to apply clinical technology. The detailed steps are described as follows:

Phase I: Establishing models for clinical simulation teaching and distance learning in clinical ward:

1. Constructing digital practicum wards: A multimedia broadcasting and teaching system will be installed on each practice bed. A management system for the reservation of practical exams will also be digitalised. The facilities can help improve students' familiarity with clinical skills and improve their speed of execution.
2. Establishing a clinical simulation teaching centre: This centre has been established with high definition, omnidirectional network video recording equipment so that teachers' demonstrations will be simultaneously displayed on the screen and students' learning will no longer be hindered by limitations of space or number of students. The equipment can also record the teacher's demonstration.

Phase II: Uploading these teaching materials to the MOD system so students' clinical skills can be enhanced through distance learning:

1. Constructing the MOD system: This system will be constructed and managed jointly by the Information Technology and Network Centre and the library of the university.
2. Constructing a real-time multimedia recording system: This system can simultaneously record and upload lectures, speeches and workshops. It can also be combined with the MOD system for better learning results.
3. Improving the effect of digital videos related to nursing: Digitalised videos procured by the university will be uploaded to the Web platform so that students can access the videos at their convenience.

Phase III: Student interns of the nursing department can apply what they have learned by visiting local health centres to collect basic health information of the residents and to understand better the local public health education. Students will also be guided to use digital questionnaires via PDA and to understand the management concept behind the Web platform:

1. Student interns will visit various local health centres and use digital questionnaires (digital pen and PDA cell phone) to collect health evaluation information on the local residents, including their diet habits and physical information (height, weight, blood sugar and body fat).
2. Data collected will be placed in the U-care Web platform and student interns can apply what they have learned to provide the local residents with health information, answer questions and give advice.
3. New data will be collected continuously over three to four months.

Phase IV: The abovementioned data will be analysed with U-Care Web platform to review the usability of the platform and make adjustments, in order to ensure that the platform will meet the needs of various communities. The ultimate goal is to introduce the platform to all health centres in Taiwan and to raise public awareness regarding the importance of self-care so as to reduce the ever increasing cost of national healthcare:

1. U-care Web platform can be used to analyse the correlations between health, diet and region for local residents.
2. By analysing the data, the results can be used as a reference for public health education for residents.
3. The effect of the U-care platform will be evaluated continuously to spread the concept of predictive medicine.

ANTICIPATED CONTRIBUTIONS

Today, information is becoming more and more diverse and popular and the interaction between teaching and learning is increasing. Traditional teaching and administration will encounter major changes because of network technology Students' learning will also become more individualised and diverse because of the advances in information technology. The proposed project can help to remove the disadvantages of the traditional learning model [2][6].

In addition, the platform can be used to encourage e-learning and distance learning systematically. Through the use of the platform, a brand new archive of learning outcomes is established. The front-end webpage allows teachers and students to initiate a search for images, and the back-end content management interface removes the traditional limits of time and space for nursing students. Hence, by making full use of the Internet and applications such as e-learning and mobile learning, this project is expected to improve students' competitiveness [7].

Finally, it is hoped that through the implementation of this project, the traditional teaching of clinical skills can be changed and a new teaching model for nursing skills will be created. Both teachers and students of the nursing department can have a platform that allows simultaneous teaching, knowledge and skills to improve with the latest technology [8][9]. There are at least two expected results of this proposal described below.

Research Results

1. Not only will data collected and analysed with U-care Web platform meet the research needs of this project, but the same data can also be provided to graduate institutes or academic institutions in the future for research purposes.
2. The questionnaire is conducted using digital pen, so when responders fill out the questionnaire, their answers will be sent back to the database automatically via telecommunication or Internet. The amount of work for back-end data entry will be reduced. This approach can increase the efficiency of data collection using the questionnaire and reduce errors during data entry.

Teaching and Learning Outcome

1. Nursing students are asked to use a digital pen and PDA to collect data using the questionnaire, so that they will become more familiar in using the latest technology devices.
2. With changing learning tools, learning theories related to learning methods, thinking patterns and learning outcomes should also be adjusted so that students can learn how to solve problems, learn different skills and manage their learning in a digital environment.

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