

II Project Information	
Project Title (in English) Simulation Nursing Laboratory	Project Title (in Chinese) 模擬護理實驗室
<b>A. Project Summary</b>	
<p><i>(please provide an executive summary of the project proposal in no more than 500 words).</i></p> <p>The installation of a simulation nursing laboratory is proposed as it is deemed that through the provision of appropriate facilities and adoption of effective teaching technology and approach, the learning and teaching quality for Tung Wah College (TWC) health care students will be enhanced.</p> <p>The use of patient simulators is very popular in nursing programmes at the degree level. The rationale for using simulation as an educational strategy is that it involves no risk to live patients; gives an advantage of standardizing clinical scenarios; provides a means of promoting critical-thinking, clinical-decision making and psychomotor skills; and allows for immediate feedback for the integration of knowledge and behavior.</p> <p>Through simulation scenarios, teaching staff can emphasise the essential elements of patient safety such as prevention of injury or harm to live patients, minimization of reality shock, promotion of effective communication within the practice team. Students can be exposed to varieties of scenarios from the basic to advanced ones, from general to critical care, and also to opportunities in making immediate clinical decisions.</p> <p>By exposing students to a variety of clinical situations through patient simulations, they can be better equipped to provide safe, effective nursing care and to work as contributing members of a health care team before they undergo their clinical placement at hospitals and health care institutions.</p> <p>Apart from the benefits to the students, the construction of this simulation laboratory can also promote interactive teaching methods and enhance job satisfaction for academic staff.</p>	

**B. Project Objectives**

*(please identify the needs of the target recipients and explain how the project aims to address the needs).*

In 2005, the National Council of State Boards of Nursing (NCSBN) stated “...the inclusion of innovation teaching strategies that complement clinical experiences for entry into practice competency. ” It defined the ‘simulation’ “...as a strategy not a technology – to mirror, anticipate, or amplify real situations with guided experiences in a fully interactive way.” The simulator “replicates a task environment with sufficient realism to serve a desired purpose”. According to Confucius, experiential learning is essential as he believed that “Tell me, and I will forget. Show me, and I may remember. Involve me, and I will understand.”

As a result of fewer and fewer clinical placements, nursing experiences gained from a patient simulator have become more and more important in order to meet the ever rising expectation of safety and error-free practice by the public. Nurses and other health care professionals are under increased scrutiny in their provision of safe, effective care and practice. Likewise, all nursing education programmes or health related programmes are facing increased pressure to produce graduates who are capable of providing safe and effective care for patients.

In nursing education, as always, active student participation, discussion, observation, and reflection are paramount for successful learning. Also, as both the didactic and clinical components of a nursing course are essential to cultivate critical thinking, clinical decision making as well as psychomotor skills, the nursing programme development team sees the need to provide training with the help of a simulation nursing laboratory, since simulation experiences reinforce the development of skills in assessment, psychomotor activities, critical thinking, problem solving, decision making and collaboration with others. Simulation is one of the up-and-coming tools that can be used across the curriculum to replicate experiences in nursing practice. The interactive experiences expose students to various health care scenarios in a safe environment, and they will gain these valuable experiences by actively engaging in participation, observation and debriefing.

Furthermore, the trends in Nursing Education nowadays are to provide more experiential learning opportunities, to increase the use of learning technologies, and to emphasize more on evidence-based strategies and curriculums.

Therefore, to enhance the quality of our HD, AD and Degree students in Health Care and to make them capable of applying sound knowledge and skills to clinical practice, the project has the following objectives:

1. To use the patient simulator as an instructional strategy in the courses so as to provide opportunities for active and interactive learning without risk to an actual patient.
2. To encourage and allow students to take active participation and gain hands-on experiences in a high fidelity environment.
3. To promote knowledge retention and boost students' self-confidence.
4. To facilitate a learner-centered approach to education and to build upon previous knowledge and experiences.
5. To provide opportunities for self-study as well as group interaction.
6. To bridge between theory and clinical practice. By using the patient simulator, students are able to visualize physiological responses that may be difficult to understand simply through didactic classes or readings.
7. To develop and refine critical thinking and clinical decision making skills.
8. To synthesize learning experiences through working on the patient simulator.
9. To apply the knowledge and skills attained from the classroom in various clinical settings and patients' situations.
10. To help students identify gaps between their knowledge and experience-based practice on the patient simulator.

### **C. Outcomes and Deliverables of Project**

*(please include the expected number of target beneficiaries and explain how they will benefit from the project).*

After installing the Simulation Nursing Laboratory, it will be able:

1. To benefit around 200 nursing students in the HD programme in Nursing at Tung Wah College and 160 students in the AD programme in Health Care at CUTW Community College;
2. To greatly improve the learning environment by providing comparable knowledge, skills, and practice for all students;
3. To provide a safe environment for students' practice and to promote patient safety;
4. To provide students with cognitive, psychomotor and affective learning experiences, which can enhance development of their skills in assessment, critical thinking, problem solving, decision making and data analysis through programmed simulation scenarios; and
5. To identify each student's learning performance at the post-simulation stage, and to evaluate the learning objectives further.

## **D. Implementation Details**

In this proposal, the implementation involves three stages as follows:

### Preparatory Stage I

1. Design how to refurnish the existing general Health Care Laboratory as a creative simulation laboratory
2. Design the settings of the teacher workstation (control panel) and also student workstations ( hospital beds for simulators)
3. Proceed with the tendering process

### Preparatory Stage II

1. Purchase and order the simulators, computers, vision system learning modules and on-site training
2. Recruit a full-time staff as the lab technician
3. Re-furnish the laboratory
4. Install simulators, computers, vision system

### Operation Stage III

1. Pilot-test the workstations
2. Use these workstations for the teaching to the first year HD in Nursing students and the AD Health Care students
3. Review the settings and technical issues of these workstations with final evaluation report of the project

### Details on Operation

The Simulation Laboratory is designed to incorporate five features:

1. A specific learning objective: Patient simulation is a learner-centered teaching strategy and the subject teachers are needed to identify specific learning objectives for each simulation practice sessions. The objectives are to reflect the intended outcomes of the related course, the expected behavior and participation of the students.
2. Level of fidelity: Fidelity is created by closely imitating reality in the simulation room to make it look like a hospital ward. The manikin, which simulates a patient, can be programmed to speak and to ask questions, and a voice overlay can be used to respond to students' questions. The manikin should be dressed like a real person, with wounds, incisions, or drains incorporated to depict the chosen scenario.
3. Problem solving: The choice for a particular kind of problem solving should be set within the students' level of knowledge. Students' capabilities in problem solving can demonstrate their

prioritization of care. On the basis of the assessment obtained, students will then decide what kind of care to be completed next.

4. Student support: Students will be prompted by cues throughout the experience. The cues, which can be very subtle to start with, can increase in intensity if they do not respond. However, they should be encouraged to make decisions independently.
5. Debriefing and reflective thinking: It is used to examine what happened during the experience and to provide immediate feedback to students. Additionally, in the debriefing, students are asked to reflect on their own skills and knowledge.

With the above-mentioned five features, the teachers can transfer knowledge from the classroom to clinical settings in the Simulation Nursing Laboratory, which include:

1. Various clinical scenarios can be set to represent the breadth of clinical situations and disease processes seen in real situations, which can help students develop their capabilities through the active involvement, and gain experiences ranging from basic to complex;
2. At the pre-simulation stage, all students are expected to come to the simulation laboratory with some background knowledge and experiences. They may have reading or written assignments to complete prior to the simulation. All simulation scenarios should begin with a pre-simulation briefing in which students are given a concise report on the patient they will meet in the scenario;
3. During the simulation stage, students will start initial assessment of the patient and determine how to prioritize the subsequent nursing tasks or assignments. They are also requested to document all related nursing problems and assessment findings on the whiteboard. Moreover, the simulation could be ended or periodically interrupted by the teacher during the session; and
4. Finally, students will be debriefed. The post-simulation debriefing, which involves an in-depth discussion, is used to correct any misinformation or improper practical (practice or nursing) techniques the students may demonstrate. Through the simulation, gaps between knowledge and practice are identified in individual students. The debriefing can be used to review key points about the simulation and to share learning experiences among the whole group. As part of the debriefing, an evaluation can be done using the data collected to measure the effectiveness of introducing the simulation patient as a teaching strategy.

<b>E. Implementation Schedule</b> <i>(Please extend this table if necessary.)</i>		
Estimated start date of project:		Sept 2011
<b>Action</b> <i>(please indicate key milestones)</i>	<b>Timeframe</b>	<b>Cashflow Requirement</b>
Stage I 1. Design how to refurbish the existing general Health Care Laboratory as a creative simulation laboratory 2. Design the settings of the teacher workstation (control panel) and also student workstations ( hospital beds for simulators) 3. Proceed with the tendering process	Sept 2011 – Oct 2011	Provided by College
Stage II 1. Purchase and order the simulators, computers, vision system learning modules and on-site training 2. Recruit a full-time staff as the lab technician 3. Re-furnish the laboratory 4. Install simulators, computers, vision system	Sept 2011 – Nov 2011	1. \$90,000 for Lab Technician (3 months salary) 2. \$632,000 for purchasing the simulation package, including 2 sets of Adult mannequins, Instructor's Laptop computers, Muse user interface and Physiologic modeling engine 3. \$480,000 for purchasing 2 sets of video camera and recording system

<p>Stage III</p> <ol style="list-style-type: none"> <li>1. Pilot-test the workstations</li> <li>2. Use these workstations for the teaching to the first year HD in Nursing students and the AD Health Care students</li> <li>3. Review the settings and technical issues of these workstations with final evaluation report of the project</li> </ol>	<p>Dec 2011 – Nov 2012</p>	<ol style="list-style-type: none"> <li>1. \$360,000 for Lab Technician (12 months salary)</li> <li>2. \$111,200 for maintenance the whole system</li> </ol>
<p>Others : Auditor's fees</p>		<p>\$21,800</p>
<p>...</p>		<p><b>Total:</b> <b>HK\$</b> <b>1,695,000</b></p>

Estimated completion date of project: Nov 2012

<b>F. Project Budget</b>						
<b>Projected Expenditure</b> <i>(Please provide detailed breakdown under each item)</i>	<b>Amount in HK\$</b>					
	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Total</b>
a. Manpower	270,000	180,000				450,000
b. Equipment / Facilities	1,112,000*					1,112,000
c. Services		111,200*				111,200
d. General Expenses						
e. Others (e.g. auditor's fee)		21,800				21,800
<b>Total Expenditure :</b>	<b>1,382,000</b>	<b>313,000</b>				<b>1,695,000</b>
* Please see the attached purchase list						
<b>Projected Income</b>	<b>Amount in HK\$</b>					
	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Total</b>
a. (e.g. fees received)						
b.						
c.						
<b>Total Income :</b>						
<b>Sources of Funding</b>						
a.	Amount of grant sought under this application: <u>1,695,000</u>					
b.	Other sources of funding ( <i>this may include donations, contributions from the applicant/its parent organization, etc. Please give the name(s) of the sponsor(s), the amount of funding, and indicate whether the funding has been secured.</i> ):					
	(i) _____					
	(ii) _____					
	(iii) _____					
	...					

**G. Monitoring and Self-evaluation Mechanism**

This project will be monitored by the following measures:

- a) Progress reports every six months
- b) Final Evaluation report
- c) Final Financial report supported by Auditor's report

**H. Management Support and Key Personnel Involved**

The Simulation Nursing Laboratory will be supported by the management team as follows:

Ms. Po Yin Chun (Principal Lecturer and Program Co-ordinator of Associate of Science Programme in Health Care, SCM, CUTW Community College), Team Leader

Ms. Gloria Ip Man Sheung\* (Senior Lecturer and course co-ordinator, SCM, CUTW Community College)

Ms. Aves Tsang Yim Ha (Lecturer and course co-ordinator, SCM, CUTW Community College)

Lab technician (to be recruited)

\* person-in-charge-of the project and project contact person

**I. Special Justifications if the Grant Sought Exceeds \$2 million**

Nil

### III Other information

**1 Project Sustainability** (*If applicable, please describe how the recurrent expenditure involved will be met after completion of the proposed project*)

The Simulation Laboratory is highly sustainable after the first year of set up and operation. The furniture, electronic devices, computers, hardware and software will be purchased in the most appropriate way. This Laboratory is expected to function for at least three years.

**2 Preparatory work done** (*If any*)

The relevant programme curricula of HD in Nursing (Appendix 2), AD in Health Care (Appendix 3) and a photo of the existing general Health Care Lab (Appendix 4) are attached to reflect how the Simulation Nursing Lab support the objectives and content of HD in Nursing in 2011 and of AD in Health Care as well. (please refer specifically to subjects titled as Fundamental Nursing, Care of Children and Adolescents, Care of Adults for HD in Nursing, and Fundamentals of Health and Nursing, Part I &II, Health Assessment and Clinical Skills, Part I & II for AD in Health Care)

**3 Past experience in organizing projects of similar or relevant nature and achievements** (*If any*)

The Associate of Science Programme in Health Care was implemented in 2008 at CUTW Community College. Last year, CUTW had 24 out of the first cohort of 27 Health Care graduates admitted into CUHK as the senior year entry. At present, CUTW is supporting the Programme with 3 general Health Care Labs, including 1 big lab with 4 beds. CUTW is transforming itself into a tertiary education institute registered under Cap 320 as Tung Wah College (TWC). It is expected the registration status will be granted in April 2011, and TWC will be admitting 200 HD and 100 Bachelor degree students in Nursing in January 2012 and September 2012 respectively.