

Quality Enhancement Grant Scheme

Final Evaluation Report

Project No. : 08/QEGS/2011

Part A

Project Title : Simulation Nursing Laboratory

Name of Grantee: Tung Wah College

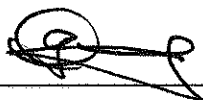
Project Period : From September 2011 (month/year) to November 2012 (month/year)

Part B

Please use separate A4-size sheets to provide an evaluation of the Project with regard to the following aspects:

1. Project activities contributing to the attainment of Project objectives, extent of attainment of the objectives, evidence or indicators attesting to the attainment of the objectives, and if applicable, reasons for not able to achieve the objectives.
2. Impact or benefits of the Project to the participants, the target institution(s) or the sector.
3. Cost-effectiveness of the Project against clear indicators, e.g. utilization of available resources, unit cost per beneficiaries, sustainability of Project activities/impacts, applicability of Project outcomes/deliverables to other institutions, or alternative approaches for equivalent benefits at less cost, etc.
4. Outcomes and deliverables of the Project.

Signature: _____



Organization Chop: _____



Name of Authorized Person: WONG KWOK SHING
THOMAS

Name of Grantee: Tung Wah College
Organization: _____

Position of Authorized
Person: _____

President

Date: _____

5 July 2013

1. Project Summary

The aim of this project was to employ an innovative teaching and learning methodology by using simulator as teaching aids to enhance our students' capability in problem solving. We expected after experiencing the simulation training sessions, our students could be more able to apply the nursing theories into their daily practice and to become competent professionals in the future to ensure that they could provide quality of care and safe practice.

Through the preprogrammed simulation scenarios, the elements of patient safety could be emphasized in the absence of risk to patients. Moreover, students could be exposed to a greater variety of standardized scenarios to facilitate their learning of psychomotor skills started from basic to advance and from general to critical. In addition, it could stimulate students' critical thinking in decision making and problem solving. On the other hand, the hands-on skill practice and instant feedback could provide an invaluable opportunity for the students to learn from error without doing any harm on patients. Because the students were allowed to learn from error so that a teaching-learning process in the integration of knowledge and behavior could be fostered and developed.

In this project, a total of 359 nursing students came from three different nursing training programs, Higher Diploma in Nursing (HD), Associate Degree in Health Care¹ (AD) and Bachelor of Health Science (BHS) program, were invited to attend a training session which was comprised with preprogrammed simulation scenarios. The effectiveness of each patient simulation training session was evaluated by all participants through student feedback questionnaire. Students were requested to rate 20 questions on a scale of 1 to 5 with 1= strongly disagree and 5= strongly agree. The overall scores were significantly high. The mode of the distribution was in between score of 4 and 5, indicating participants found the training session beneficial and enjoyable.

Remark¹ In 2012 the CUTW College ceased to provide training in Associate Degree in Health Care Studies, thus the AD students are excluded from this project.

2. Project schedule, milestones, deliverables and outcomes

Timeframe	Project activities and key milestones	Status	Deliverables / outcomes
Sept. 2011	<p>Stage I Project commenced</p> <p>Key milestones and deliverables:</p> <ol style="list-style-type: none"> 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 	100%	<p>♦A purchase order was issued and quotations with prices for the simulators and services were received.</p> <p style="text-align: right;">(Appendix I)</p>
Sept.2011- Dec. 2011	<p>Stage II Simulators purchasing and Nursing Laboratory Reconstruction</p> <p>Key milestones and deliverables:</p> <ol style="list-style-type: none"> 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 	100%	<p>♦A scientific officer was appointed. (Appendix II)</p> <p>♦An existing nursing laboratory and a hotel room were converted to become one ward-like setting and one home-like setting simulation laboratory.</p> <p>♦Installation of two adult simulators and one infant simulator were completed.</p> <p style="text-align: right;">(Appendix III)</p>

Timeframe	Project activities and key milestones	Status	Deliverables / outcomes
Jan.2012- Jan.2013	<p>Stage III</p> <p>Implementation: introduce the simulator to Nursing students</p> <ol style="list-style-type: none"> 1. Pilot-test the workstations 2. A on-site simulators' training for teaching staff 3. A pilot test using the simulation training laboratories is conducted into a small group of students from the Higher Diploma in Nursing Program (10 students) 4. Three different batches of nursing students are being introduced to these simulator nursing laboratories and used of these workstations for teaching and learning. The programs are as following: <ol style="list-style-type: none"> a. The first year students in Higher Diploma in Nursing (176 students). b. The second year students in Higher Diploma in Nursing (250 students). c. The senior year students in Bachelor Health Science Nursing Program (92 students). <p>Remark: Evaluation questionnaires are collected at the end of the training session</p>	100%	<ul style="list-style-type: none"> •Results of all functional tests of the workstations were satisfied. •A pilot study was conducted for HD program. (Appendix IV) •An instructor training workshop was arranged. (Appendix V-VI) •The simulator nursing training sessions were adopted in 5 different courses from 2 different training programs : <ol style="list-style-type: none"> a. <i>NUR1012 Fundamental of Nursing I</i> Year 1 students from HD in Nursing program b. <i>NUR3010 Care of People with Non-Communicable Diseases I</i> Senior year students from BHS nursing program c. <i>NUR1017 Care of Adult</i> Year 2 students from HD Nursing program d. <i>NUR2011 Care of Older Persons</i> Year 2 students from HD in Nursing program e. <i>NUR2012 Care of Patients with Long Term Illness</i> Year 2 students from HD in Nursing program <p>(Appendix VII)</p>

Timeframe	Project activities and key milestones	Status	Deliverables / outcomes
			•A student feedback questionnaire template was designed. (Appendix VIII)
Feb2013	Post-implementation review and project evaluation -Submission of Final Project Evaluation Report and Audited Statements of Accounts to EDB	100%	•Completion of the Final report •Completion of the Financial audit report (Appendix IX)

3. Project Activities Contributing to the Attainment of Project Objectives

All the project objectives and projected deliverables have been achieved.

Objectives statement	Facilities & Activities related to the objective	Extent of attainment of the objective	Evidence or indicators of having achieved the objective
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.	Activity 1: Design of a creative simulation laboratory and settings of teacher and student workstations. Activity 2: Purchase and installation of equipment, software and hardware. Activity 3: Conduct of on-site training for teachers and students.	Fully achieved	Photos : The simulation nursing laboratories (Appendix III) Photos: Instructor training workshop for teachers (Appendix V-VI)
2. To encourage and allow students to take active participation and gain hands-on experiences in a high fidelity. Simulation experience may encounter as real bed-side clinical	Activity 1: Simulation laboratory training session for First year students from HD nursing program Activity 2: Simulation laboratory training session for Second year	Fully achieved	Photos: The simulation laboratory training sessions a. Year one students from HD nursing program b. Year two students from HD nursing program c. Senior year students from BHS nursing program (Appendix VII)

Objectives statement	Facilities & Activities related to the objective	Extent of attainment of the objective	Evidence or indicators of having achieved the objective
<p>experience without doing any harm to patients</p> <p>3. To promote knowledge retention and boost students' self-confidence.</p> <p>4. To facilitate a learner-centered approach to education and to build upon previous knowledge and experiences.</p> <p>5. To provide opportunities for self-study as well as group interaction.</p> <p>6. To bridge the gap between theory and clinical practice. By using patient simulator, students are more able to visualize physiological</p>	<p>students from HD nursing program</p> <p>Activity 3: Simulation laboratory training session for Senior year students from BHS program</p>		

Objectives statement	Facilities & Activities related to the objective	Extent of attainment of the objective	Evidence or indicators of having achieved the objective
<p>responses that may be difficult to be observed by didactic classes or readings.</p> <p>7. To develop and refine critical thinking and clinical decision making skills.</p> <p>8. To synthesize learning experiences through working on patient simulator.</p> <p>9. To apply the knowledge and skills attained from classroom in various patients' situations.</p> <p>10. To help students to identify the gap between knowledge and experience-based practice on the patient simulator.</p>			

4. Project impacts

1. *Motivating students to become active participants*

The simulation laboratories were proposed to encourage students to take active participation and obtain hands-on experience in a high fidelity environment. Small numbers of students were involved in each scenario, with each student having a role in the simulation training session. The patient simulator provided invaluable hands-on experience in which students were able to witness the results of their action in real time.

Students' feedback after participating the training sessions		N=359
<i>'I enjoyed working with the simulator '</i>		(59% strongly agree & 35% agree)
<i>'The time allotted for this activity was adequate '</i>		(22% strongly agree & 39% agree)
<i>'The group was the right size to facilitate my learning'</i>		(36% strongly agree & 49% agree)

2. *Boosting students' confidence in clinical judgment*

Learning experiences with the human patient simulator could boost students' self-confidence and help reduce anxiety in the actual patient care setting. Students were able to practice assessment and psychomotor skills and implement nursing interventions under supervision. In that case, they could gain more confidence and enhance their competence in particular without arouse any reality shock when they cared for assigned patients especially in their first clinical placement.

Students' feedback after participating the training sessions		N=359
<i>'The instructor's questions helped me to critically think'</i>		(50% strongly agree & 40% agree)
<i>'I feel more confident in my decision making skills'</i>		(19% strongly agree & 47% agree)
<i>'I am more confident in determining what to tell the healthcare provider'</i>		(21% strongly agree & 47% agree)
<i>'My assessment skills improved'</i>		(24% strongly agree & 48% agree)
<i>'I was challenged in my thinking and decision-making skills'</i>		(29% strongly agree & 52% agree)
<i>'I feel more confident that I will be able to recognize changes in my real patient's condition'</i>		(23% strongly agree & 51% agree)
<i>'Debriefing / Group discussions after the SCE was valuable'</i>		(41% strongly agree & 44% agree)

3. *Providing a psychological preparation and readiness before clinical placements*

All nursing skills could be practiced on the simulator just like implementing on a real patient. Immediate response was reflected by the simulator so as the learners could learn how to observe and make appropriate and instant respond according to patient's needs and condition. Students were allowed to repeat the skills and procedures until proficiency was achieved. Scenarios were selected and designed to meet specific learning objectives and according to the learning needs of the students. Simulations allowed students to expose in a situation they might encounter in their coming clinical practicum so that they could have adequate psychological preparation and readiness before starting practice in clinical.

Students' feedback after participating the training sessions	N=359
<i>'I feel better prepared to care for real patients'</i>	(37% strongly agree & 43% agree)
<i>'I am able to better predict what changes may occur with my real patients'</i>	(20% strongly agree & 55% agree)
<i>'I felt like it was ok to make mistake'</i>	(20% strongly agree & 33% agree)
<i>'I had fun while I was learning'</i>	(41% strongly agree & 43% agree)
<i>'The simulator and the environment were realistic'</i>	(26% strongly agree & 50% agree)
<i>'I felt stressed when the simulator's condition worsened'</i>	(29% strongly agree & 45% agree)

4. *Providing a bridge between theory and clinical practice.*

Students worked with the patient simulator, were able to visualize patient's physiological responses that were probably difficult for them to be observed by didactic classes or learnt from readings. Critical thinking and decision making skills were developed and refined when students repeatedly applied their knowledge and skills attained from classroom learning into different preprogrammed situations. As a result, synthesis learning experiences were obtained.

Students' feedback after participating the training sessions	N=359
<i>'I learned as much from observing my peers as I did when I was actively involved in caring for the simulated patient'</i>	(26% strongly agree & 56% agree)
<i>'I developed a better understanding of the pathophysiology of the conditions in the SCE'</i>	(25% strongly agree & 50% agree)
<i>'I developed a better understanding of the medications that were in the scenarios'</i>	(22% strongly agree & 50% agree)
<i>'Completing the SCE helped me understand classroom information better'</i>	(27% strongly agree & 55% agree)
*remarks: SCE simulated Clinical Experience	

5. Cost effectiveness

Financial Report

Approved budget

Income	Approved budget	Actual	Balance
Income from Education Bureau	1,695,000	1,695,000	
Interest Received	-	86	-
		1,695,086	

Actual Expense

Budget Items (Based on the agreement)	Approved budget	Actual Expense	Balance
Manpower	450,000	449,516	(484)
Equipment / facilities	1,112,000	1,112,000	-
Services	111,200	171,600	60,400
Others	21,800	12,960	(8,840)
Total	1,695,000	1,746,076	51,076

Income less Expenditure

Income	1,695,086
Actual Expense	1,746,076
Balance	(50,990)

A self-evaluation on the cost effectiveness of this project

A positive outcome was seen and considerable encouraging feedback were received from our nurse learners after introducing the human simulation as an innovative learning and teaching method at TWC funded by the project grant from the 'Quality Enhancement Grant Scheme'.

As a newly established College since 2011 and initially only have a total of 840 students in four different health care related training programs (Higher Diploma in Nursing (HD), Associate Degree in Health Care¹ (AD), Associate Health Studies (AHS) and Bachelor of Health Science (BHS) program; the College is always have the urge and mission to provide a high quality of learning and teaching environment to our students.

According to the existing student number and in a direct calculation of the cost, the College needs to spend around HK\$ 2,000 for each student. In the forthcoming future, it is expected to have around two thousands of students if a fully capacity of student absorption in these four health care related programs has been achieved. Thus, the projected cost in sustaining the simulation laboratories in future could be far more less than our estimated cost of HK\$ 2,000.

Moreover, it is obviously reflected that all student participants can obtain a fruitful learning experience from this project and with this precious opportunity, the College has to take a big step forward to its success in providing a meaningful and cheerful learning atmosphere and environment for the learners.

6. Activity list

A brief description of the implemented activities is showed in a table as below:

Types of activities	Brief description	No. of Participants			Feedback from participants
		Teachers	Technical staff	Students	
Provide a two and an half days onsite training workshop to orientate the teaching staff in using of simulators and case scenarios' application	May 2012 Nursing Laboratory Room 1504	13 teachers 2 clinical nurses	3 staff	-	-
Arrange simulation Training session for students by embedding the nursing skills into the case scenarios (A Pilot Study)	Jan 2012 Simulation laboratory Room 1404	1 Teacher	1 staff	10 Year One students from HD Nursing Program	Students' written feedback (A Pilot Study) (Appendix X)
Arrange simulation Training session for students by embedding the nursing skills into the case scenarios(the complexities Of the nursing assignments are tailor-made in different level just according to learners' academic level	Oct 2012 Simulation laboratory Room 1404	4 Teachers	1 staff	176 Year One students from HD Nursing Program	Evaluation Questionnaires Analysis Table (Appendix XI & XII)
	Oct 2012 Simulation laboratory Room 1404	1 Teacher	1 staff	92 Senior Year students from BHS Nursing Program	Evaluation Questionnaires Analysis Table (Appendix XI & XII)
	Oct 2012 Simulation laboratory Room 1404	4 Teachers	1 staff	250 Year One students from HD Nursing Program	Evaluation Questionnaires Analysis Table (Appendix XI & XII)

Pre-simulation student briefing for simulation training session

- Each small group consists of 5 students; 2 groups are allotted in a training section at same time.
- Based on the preprogrammed scenario, a general instruction, medical background and treatments of the patient simulator are provided to the working group.
- The number of the roles and the nursing tasks are designed with consideration so that students are to be accomplished within the conducting time-slot.
- This small group of five students is expected to work together in a simulated scenario.
- Another group of five students will act as observers or serve as relatives and doctors in the designed scenario for the working group.
- After fifteen minutes, the first working group's nursing activities will be stopped by the instructor and swapped by other 5 students to work on the simulator with same scenario.
- Following the scenarios, the instructor will provide a debriefing session for these two groups of students to evaluate their performance and correct any misinformation or improper practice techniques the students may demonstrate.

Students' evaluation on this project

- A 20-item tool questionnaire was used to survey 359 students (HD Nursing program and BHS Nursing program) who had participated in simulation training session to evaluate the effectiveness of the project.
- Students completed a brief survey instrument consisting of a likert-type scale (1=strongly disagree to 5=strongly agree) and a space for additional written comments.
- Participants were requested to complete the questionnaires at the end of the simulation training session.
- All questionnaires were collected immediately after debriefing so as to maximize the data collection.
- Responses indicated that more than 90% students rated from agree to strongly agree which were supported with description as 'they enjoyed the learning process in using simulators'.
- More than 70% students rated from agreed to strongly agree to show a better understanding in assessing clients' condition and using of medication. Over 80% of the students expressed that the debriefing sessions were very useful and to take roles as observers could enhance their learning without stress.
- Responses to the additional written comments were overwhelmingly positive.
- Limitations of the technology identified by students included not having enough time to work with the simulator, initial anxiety when first encountering the patient simulator.

Conclusion

Upon the completion of this project, the simulation laboratories will be managed by the Tung Wah College with the support from Tung Wah Group of Hospitals. Patient simulation training sessions will be incorporated into all health related training programs if applicable. In addition, more appropriate and realistic simulated scenarios will be designed by the course teacher and in conjunction with other instructional teaching and learning strategies such as case studies and problem-based learning activities to maximize students' learning.

Lastly, we would like to extend appreciation and acknowledge for the grant support from the Education Bureau, without its on-going support and allowed a huge of flexibilities, we probably could not complete this project.

End of the Report
(9th May 2013)