



Ref. No.
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**Projects on Promoting Outcome-Based Approaches in Student Learning
2007-08
Application for OBA Funding**

PART I: General Information

1. Title

Use of the human patient simulator (HPS) in developing nursing students' generic competencies.

2. Name(s) of Applicant(s)

Project Leader

Name	Dept	Post	Groupwise	Ext.
DAVE LAM WAN CHOI	SN	CLINICAL ASSOCIATE	hsdlam	3804

Team Member(s)

Name	Dept	Post	Groupwise	Ext.
E. ANGELA CHAN	SN	ASSOCIATE HEAD	hseachan	4131
FRANCES K. Y. WONG	SN	PROFESSOR	hsfwong	6419
ELLEN W. Y. KU	SN	CLINICAL ASSOCIATE	hsellen	7907

3. Total funding requested

4. Expected duration of project: 12 months

Proposed commencement date: 1 Mar 2008

Expected completion date: 28 Feb 2009

PART II: DETAILS OF PROPOSAL

1. Project objectives and significance

(What are your objectives in initiating this project? How does it align with institutional goals and targets in implementing outcome-based approaches in student learning?)

The University aims to prepare graduates with all-roundedness in characters and abilities. Problem solving and critical thinking are two major qualities the students should equip themselves with during their studies. Clinical decision making, on the other hand, is the essence of nursing --- the quality that enables a nurse to function in the ever-advancing complex clinical areas.

In order to make sound decisions, sometimes of life-saving nature, nurses must have critical thinking and problem solving abilities. And it is the mission of the School of Nursing to provide nursing graduates with these generic competencies. Fostering students with adequate clinical decision making skills is one of the major objectives of the curriculum of the baccalaureate programme. The School of Nursing had been trying to incorporate innovative pedagogic strategies in enhancing the students' clinical learning. One of such initiatives is the introduction of problem based learning into clinical teaching. With a simulated clinical scenario by a real human actor, a group of our colleagues had offered students an opportunity to learn via the problem based learning strategy. Students from this study had applauded its advantages of offering moderated learning environment with ample chances for self-evaluation and peer analysis. The study had shed light into the use of simulation in future clinical teaching¹.

Clinical learning constitutes a crucial component of converting nursing students into registered nurses. By exposing to various settings in the hospitals, students are expected to develop professional skills as well as their caring attributes. Teaching takes place with the intention that students would have learnt. In natural settings, such as hospitals, students' learning is often influenced by a lot of other external factors like the pace of the ward activities and the unexpected responses towards treatments from patients. This is particular crucial for students in their junior years. While this kind of unrehearsed learning can afford a student the opportunities in one's professional and personal development and to prepare oneself both physically and mentally for the role of a registered nurse, a more co-ordinated effort to enable a student to be better equipped in facing and managing the unexpected and knowing how to set priority in the hospitals is paramount. The need for critical thinking and problem solving skills inherent in a student's decision-making process is evident. Additionally, a student's clinical learning experiences can become sub-optimal and opportunistic at times given an increase in the student number and a shortage of clinical learning venues. To these ends, it would be essential to provide a more controlled environment that facilitates students to learn at their own pace without the undue stress from the workload demand of the wards and the fear of making any life-threatening errors.

The introduction of Human Patient Simulator (HPS) in health care education has given the creation of a moderated/controlled learning environment a possibility. Recently the use of the HPS in tertiary education has been a trend, among which the nursing faculty is one of the fastest growing ones^{2,3,4}. With the use of the HPS, a controlled and realistic patient care situation can be created for students to learn without the stress of hampering patient health and constraint of working condition in the real ward^{5,6}. And most of the users had been responded positively to the use of the HPS in teaching and learning activities^{7,8}.

The School of Nursing has been equipped with 3 Human Patient Simulators, all of which can offer real time patient data and interactive physiological responses. One of the newly bought HPS is located in a single-mirrored room for observation of practice and debriefing of learning. However, the use of HPS requires training and hands on experience before it can be adopted for teaching purpose. Currently a few of the individual colleagues are using these HPS for teaching laboratory sessions but

a more systematic plan in the integration of the use of HPS in the clinical curriculum will advance our understanding of this teaching strategy with the clinical learning outcomes and assessments.

In view of this, this project has the following objectives:

1. To develop authentic clinical scenarios using Human Patient Simulator.
2. To equip the frontline colleagues with the skill of using the HPS for teaching purpose by offering them hands on experiences.
3. To use the HPS as a tool for augmenting the teaching for Clinical Studies subjects, with special focus in developing students' problem solving and critical thinking abilities.
4. To explore the frontline colleagues and students' attitudes towards the use of the HPS in the curriculum.

2. Target users

(Who are the intended users of the 'deliverables' of the project – faculties / departments management or programme/subject teams or students?)

There will be 2 groups of intended users in this project:

1. The frontline colleagues for clinical teaching in the School of Nursing.
2. The full time undergraduate nursing students.

If the target users are students, complete the table below:

Programme/ subject code	Programme/subject title	Credit units	Mode of study	Student intake quota per year
53055	Bachelor of Sciences (Hons) in Nursing		Full time	180

Please insert rows in the table if more space is required for additional information.

3. Outcomes and deliverables

(a) Major outcomes and deliverables

(What will be the major outcomes and deliverables of the project?)

	Major outcomes and deliverables with descriptions
(a)	Development of clinical scenarios with HPS.
(b)	Training for the frontline clinical colleagues on the use of the HPS for teaching students clinical skills by creating simulated clinical scenarios.
(c)	Students' development of generic competencies (problem solving and critical thinking skills) through moderated practices in the simulated scenarios with the HPS.
(d)	Understanding of the staff and students' views on the use of HPS in the formal curriculum.

Please insert rows in the table if more space is required for additional information.

(b) Plan for developing and piloting / implementing the deliverables

(Detail the plan and procedures that you will adopt to develop and pilot/ implement the outcomes and deliverables. Also specify the dates of the pilot / implementation period)

Phase	Deliverables	Planned implementation period
I	Reviewing of available scenarios for its clinical PBL qualities & familiarizing the use of HPS by the PI	1 st – 2 nd month
II	Development of scenarios for teaching & trial run	3 rd – 4 th month
III	Training on the use of HPS for the frontline colleague	5 th month
IV	Use of the HPS for teaching & data collection	6 th – 9 th month
V	Evaluation of students' learning & reporting writing	9 th -12 th month

4. Dissemination and sharing plan

(How are you going to disseminate and share the outcomes and deliverables of your project?)

Workshops of clinical training using the HPS for undergraduates teaching will be held for colleagues.

The use of the HPS for clinical teaching will also be introduced during the orientation sessions for new colleagues.

The results and findings of this project will be shared among the colleagues of the School via the teaching and learning forum and seminars.

5. Evaluation plan

(How do you plan to evaluate the effectiveness of the project, particularly its impact on the implementation of outcome-based approaches in student learning in the PolyU?)

This project will be evaluated from two perspectives:

a) Designing effective methods for guiding students to achieve learning outcomes

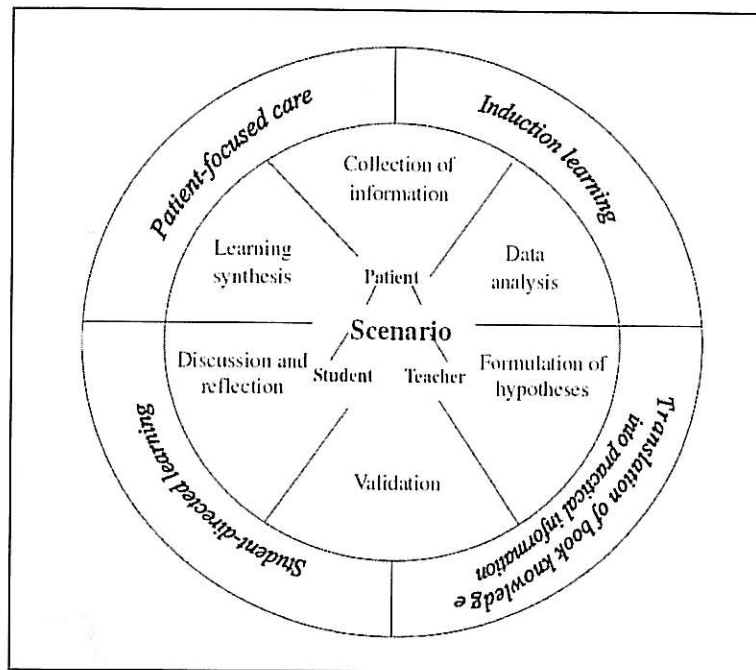
It's the University's strategic mission to develop graduates with generic competences. By creating scenarios of different complexity, students will be allowed to work in a variety of clinical situations. Instantaneous post-scenario discussions will be held with the students to understand their problem-solving strategies and critical thinking ability. Their performance will also be video-taped for subsequent debriefing and teaching purposes. The feedback collected on the use of the HPS in the curriculum will be adopted in refining these teaching strategies.

b) Developing student's professional learning outcomes

Clinical decision making marks the most important quality of a nurse. Besides the generic competences, students will be guided to reflect on their own performance during the simulation activities, focusing on their decision making as well as individual nursing skills.

The scenarios can be re-run in order to let the students to recap their learning at their own pace.

Conversion analysis will be used to guide the data analysis, as in a previous study of the School¹. It aids the staff to understand the inner world of the students, particularly on how they interpret the clinical situations and how decisions are made. The model for Clinical PBL from this previous study as shown below captures the essence of the areas for evaluation:



(Wong et al, in press)

The simulated scenario is the centre of this model, around which student's learning happens. The student's collection of information can be evaluated real time by recording the student's actions. The data analysis, formulation of hypotheses and validation of hypotheses can be studied with the assistance of the conversion analysis strategy. With the performance of the student's performance video-taped, it can be revisited subsequently for discussion and reflection. The learning synthesis will then be evaluated when the student performs in another scenario of higher complexity.

6. Impact

(How will the project contribute to the success of the implementation of outcome-based approaches in student learning in the PolyU/ department/ programme/ subject?)

Students having clinical placement in the various real clinical settings are expected to equip themselves with psychomotor as well as problem solving and critical thinking skills. Their learning, however, is often being discounted by the fast paced, uncontrolled environment and complex interpersonal dynamics of the wards. Learning chances are also of opportunistic as control of the patient mix is impractical. The HPS will therefore provide the students a stable environment in which learning can happen according to student's own pace and needs. The creation of different scenarios will complement the students with clinical exposure of unmet common patient conditions, rendering them a more comprehensive clinical experience. With the use of the HPS, clinical teachers can better align their teaching activities with the intended learning outcomes by focusing on the various aspects of generic competencies to be equipped to the students. Students will be benefited from the crafted and tailor-made learning episodes and their decision-making skills will therefore be expected to be sharpened.

7. Target date(s) for submission of progress and completion reports


	Planned submission date (mm/yyyy)
1. Progress report <i>(for projects whose duration lasts more than 1 year; to be submitted mid-way through the proposed project period)</i>	NA
2. Completion report <i>(to be submitted within 3 months after the project completion date)</i>	<u>May 2009</u>

PART III: BUDGET OF PROPOSAL

*Important Notes

1. Funding requests for equipment and/ or software will be considered only if:
 - a. the equipment / software is essential to the successful implementation of the project, AND
 - b. it is not available in the department concerned. The Project Leader has the responsibility to check this out.
2. The purchasing policies and procedures of FO must be followed for the procurement of approved items.
3. Funding request for conference attendance will not be considered.

Project Leader

Name: LAM WAN CHOI DAVE Signature: 
(in block letters)

Dept: SCHOOL OF NURSING Date: 30 JAN 2008

PART IV: DEPARTMENTAL ENDORSEMENT

Endorsement by Chair of FLTC/DLTC:

Comments on the proposal:

A worthwhile study to develop staff skills in utilizing patient simulators as a teaching strategy to improve students' clinical judgement competencies during simulation

Name: ESTHER MOK Signature: *Esther Mok* Date: 31 Jan 08
(in block letters)

Endorsement by Dean/ HoD:

Comments on the proposal:

I concurred with DLTC chair's comment!

By endorsing this proposal, I agree that:

1. The proposal suitably addresses the School/Department's needs in promoting and implementing outcome-based approaches in student learning and will be considered as part of the School's/Department's Business Plan.
2. The School/Department will receive a funding as calculated for item (e) in the Budget section which I will use for providing the time release recommended by the project proposers, based on the Total Workload Model, to support them to work effectively on the project.

Name: SAMMATHA PANG Signature: *Sammatha Pang* Date: 31 Jan 2008
(in block letters)

Please return this form to Miss Miranda Fung, Secretary of Working Group on Outcome-based Education,
c/o Educational Development Centre
by 31 January 2008

References

1. Wong, F. K. Y., Cheung, S., Chung, L., Chan, K., Chan, A., To, T. & Wong M. (in press) A framework for adopting problem-based learning in a simulated clinical setting. *Journal of Nurse Education*.
2. McGaghie, W.C., Issenberg, S. B., Petrusa, E. R. & Scalese, R. J. (2006). Effect of practice on standardized learning outcomes in simulation-based medical education. *Medical Education*, 40: 792-797.
3. Ham, K. & O'Rourke, E. (2004). Clinical preparation for beginning nursing students: an experiential learning activity. *Nurse Educator*, 29(4): 139-141.
4. Nehring W. M. & Lashley, F. R. (2004). Human Patient Simulators in nursing education: an international survey. *Nursing Education Perspectives*, 25(5): 244-248.
5. Robertson, B. (2006). An obstetric simulation experience in an undergraduate nursing curriculum. *Nurse Educator*, 31(2): 74-78.
6. Schoening, A. M., Sittner, B. J. & Todd, M. J. (2006). Simulated clinical experience: nursing students' perceptions and the nurse educators' role. *Nurse Educator*, 31(6): 253-258.
7. Childs, J. C. & Sepples, S. (2006). Clinical teaching by simulation: lessons learned from a complex patient care scenario. *Nursing Education Perspectives*, 27(3): 154-158.
8. Rhodes, M. L & Curran, C. (2005). Use of the Human Patient Simulator to teach clinical judgment skills in a baccalaureate nursing program. *Computers, Informatics, Nursing*, 23(5): 256-262.

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