

## ORIGINAL

# The usefulness of case studies in a Virtual Clinical Environment (VCE)multimedia courseware in nursing

Sheila R. Bonito, RN, MAN, DrPH

*University of the Philippines Open University, Los Baños, Laguna, Philippines*

**Abstract :** Clinical practicum is a major component in nursing education. Students are able to apply their classroom learning to the actual care setting. The clinical practicum setting must provide an authentic environment where students can maximize learning opportunities and demonstrate knowledge, skills, and attitude in caring for patients. Herein lies the challenge. The real world setting and timing may not be enough for students to learn the many complex tasks demanded as course outcomes and expected competencies. The purpose of this study was to describe the usefulness of using multimedia case study courseware in facilitating learning among students. The Virtual Clinical Environment multimedia courseware was structured around five case studies featuring major health concerns among adults, namely : chronic heart failure, stroke, breast cancer, chronic obstructive pulmonary disease, and dementia. Students were asked to use case studies in developing nursing care plans which facilitated authentic learning and encouraged active and reflective learning. Students were also encouraged to critically think and effectively solve problems. The case studies in the courseware helped in demonstrating the scope and processes of the clinical practicum, illustrating the setting, and stimulating critical thinking and decision-making in doing patient assessment and care. *J. Med. Invest.* 66 :38-41, February, 2019

**Keywords :** case studies, virtual clinical environment, nursing education

## INTRODUCTION

Clinical practicum is the main part of nursing education where students' exposure to the clinical learning environment is one of the most important factors affecting the teaching-learning process (1). The clinical practicum provides students with unique learning opportunities in which classroom theory and skills are put to the test with real-life situations (2). Therefore, clinical practicum setting should be able to provide an authentic context where students can maximize their learning opportunities and demonstrate their knowledge, skills, and attitude in caring for patients. Herein lies the challenge. The real-world setting may not be enough for students to learn all the complex tasks demanded by the course outcomes and the expected competencies. Learning-by-doing may not always be possible when learning difficult tasks when required patients are not available or accessible, or when there is no adequate time.

Multimedia courseware allows students to experience authentic learning without the usual limitations and constraints of real-life scenarios. Authentic learning is defined as learning that uses real-world problems and projects that allow students to explore and discuss these problems in ways that are relevant to them (3). Authentic learning typically focuses on real-world, complex problems and their solutions, using role-playing exercises, problem-based activities, case studies, and participation in virtual communities of practice (4).

Case studies are descriptions of specific activities, events, or problems that are drawn from the real world of professional

practice and include contingencies, complexities, and dilemmas to evoke integrative analysis and critical thinking (5). Case studies provide a process of participatory learning that facilitates active and reflective learning and result in the development of critical thinking and effective problem-solving skills (6-8).

Case-based learning is a student-centered instructional method that uses case studies to facilitate students' learning and decisions regarding their perspective field (9). Studies have shown that case-based learning facilitates a higher level of analysis and more sophisticated applications of the nursing process (10) ; promote authentic learning (11), and fosters the development of communication and enhances motivation for learning (7).

The purpose of this study was to describe the usefulness of a multimedia case study courseware in facilitating learning among students in the clinical practicum.

## METHODS

### *Study design*

This study utilized a descriptive design where participants were asked to answer survey questions about the use of multimedia courseware.

### *Survey Methods*

The self-administered questionnaire was sent through an online survey facility and returned during the months of May to June 2013.

### *Study participants*

Students (n=106) who were enrolled in a graduate course in nursing with a clinical practicum were invited to participate in the study. A purposive non-probability sampling method was used to select a sample based on the following inclusion criteria : (1) first-year graduate students in nursing, (2) with no previous experience

Received for publication November 4, 2018 ; accepted November 15, 2018.

Address correspondence and reprint requests to Sheila R. Bonito, RN, MAN, DrPH, Professor, University of the Philippines Open University, Los Baños, Laguna, Philippines, and Fax : +63-49-536-6010.

of actual clinical practicum in the graduate course, (3) willingness to participate in the study. A total of 53 graduate students participated in the study.

Fifty-three students (50%) enrolled in the course submitted a complete evaluation of the experience using the courseware. Students who participated were mostly female (65%), work in hospitals (65%), and based in the Philippines (61%). A number (27%) of participants work in the academe and 39% work abroad.

#### *Development of virtual case studies*

The development process included : selection of cases, video production, and module development. These are chronic heart failure, stroke, breast cancer, chronic obstructive pulmonary disease, and dementia. Five case studies were developed featuring the most common patient conditions encountered in adult healthcare settings. Summary of virtual cases are shown below :

##### *Case study 1 : Patient with Chronic Heart Failure*

This is the case of a 63-year-old male patient with multiple heart disorder (dilated cardiomyopathy, mitral and aortic stenosis, congestive heart failure, and ischemic heart disease). His chief medical complaints are paroxysmal nocturnal dyspnea, difficulty in breathing upon exertion, pitting peripheral edema, feeling of not being able to empty bladder, back pains, and abdominal distention after eating.

##### *Case Study 2 : Patient with Stroke*

This is the case of a 66-year-old female patient who was hospitalized due to a sudden onset of right-sided weakness which started from the lower extremities. The difficulty of breathing was also present as well as complaints of a headache and nape pain. This was the second instance that this happened to the patient in a span of two months.

##### *Case Study 3 : Patient with Breast Cancer*

This is the case of a 45-year-old female patient post-surgery patient who undergone Modified Radical Mastectomy, Left Breast with Axillary Lymph Node Dissection for breast cancer. A year after the surgery, on a follow-up visit to the Surgical Clinic, she complained of easy fatigability, frequent episodes of dyspnea, loss of weight and some tolerable body ache and bone pain which necessitated a battery of tests to confirm recurrence of breast cancer.

##### *Case Study 4 : Patient with Chronic Obstructive Pulmonary Disease*

This is the case of a 55-year-old patient with a persistent cough with yellowish sputum production during the last 2 weeks before he was brought to the hospital. He has been experiencing painful coughing and difficulty in breathing even when at rest.

##### *Case Study 5 : Patient with Dementia*

This is the case of a 65-year-old female who recently retired from her clerical work in a University two months ago. She was found wandering in her former place of work the previous night. According to the security guard who found her, she was resisting being escorted out of the premises and was violent and angry. She had to be given a sedative to calm her down.

*Case review :* Two faculty members with adult health nursing specializations developed the cases which included the following components : (1) client profile (age, sex, civil status, occupation, religion, health care financing) ; (2) assessment (nursing history, physical examination, diagnostics/ laboratory exams) ; (3) nursing care plan, (4) nursing theoretical frameworks, and (5) nursing interventions (self-care management, critical care nursing, medication, lifestyle modification, pain management, patient education, rehabilitation, and psychosocial care). An instructional designer looked into the course objectives, learning objectives, case construction, and flow. A senior clinical nurse reviewed the cases for accuracy, realism, and relevance.

*Video production :* A scenario was created based on the developed

cases, and it was made into a film with role-playing from nursing faculty and staff of a nursing school. The case studies were presented as video materials with nurse and patient interacting during history taking, physical assessment, nursing diagnosis, and nursing care interventions. The videos were short features of the following : (1) selecting a patient, (2) getting health history, (3) conducting a physical examination, (4) doing diagnostic tests, (5) identifying nursing diagnoses, (6) planning nursing interventions, and (7) documenting care. Video filming and editing were done by professional video specialists.

*Module development :* The module was composed of learning objectives, the summary of cases, case presentations, study guides, and references. The module emphasizes that students should be able to utilize the nursing process in simulating care to their selected patients. This process includes : (1) obtaining a complete, accurate and appropriate health history, (2) performing systematic physical examination, (3) analyzing assessment findings to derive nursing diagnoses, (4) formulating a therapeutic nursing care plan, (5) implementing the nursing care plan, and (6) evaluating the nursing care plan.

#### *Development of the Multimedia Courseware*

The case studies were put together and organized in a multimedia courseware. This courseware entitled, "Virtual Clinical Experience" was developed by the University of the Philippines Open University with the aid of a grant from the International Development Research Centre (IDRC) in 2012. The purpose of the courseware was to introduce students to the actual clinical practicum by simulating actual scenarios through cases that they are likely to encounter and structuring their learning activities around real tasks.

This Virtual Clinical Environment multimedia courseware was structured around the case studies. It contains audio-video materials on skills development needed in the clinical practicum such as conducting history taking, physical assessment, nursing diagnosis and planning nursing care for the specific cases. There also lessons and resources on specific nursing interventions for the above patient conditions. Teaching and learning activities involve the formulation of nursing diagnoses and implementation of nursing care plans. Learning support materials include additional content resources, auto feedback mechanisms to formative evaluation and templates for case studies, performance checklists, and personal journals.

#### *Learning outcomes evaluation*

Evaluation of learning outcomes was done through e-portfolio ; providing evidence about the clinical practicum experience. Students were asked to submit : (1) performance checklist (self-evaluation and preceptor evaluation) to keep track of competencies that have been achieved ; (2) nursing care plans (including assessment, intervention and evaluation) (3) review of journal articles to guide in making reviews of published journal articles relevant to practicum cases ; and (4) personal journal showing reflection on practicum experience.

#### *Implementation of Case-based Learning : Multimedia Courseware*

The multimedia courseware was presented to the selected graduate students as the resource to be used in preparation for their actual clinical practicum in the hospital. An orientation program was given to demonstrate the features of the multimedia courseware. The module was also given to them emphasizing the objectives of the courseware, presenting the case studies included, and showing the videos and resources that can be used in the course. They were also given a questionnaire to answer after two weeks.

The questionnaire contains open-ended questions exploring their insights and reflections on the usefulness of the case studies in

the courseware in helping them achieve the learning outcomes of the course.

#### *Ethical Considerations*

This research was approved by the University of the Philippines Open University Ethics Review Board. Participants were notified that privacy would be protected as only aggregate data would be utilized in reporting of findings. Return of the survey implied consent by the participants.

## RESULTS

The table shows the summary of their comments on the usefulness of the case studies in the courseware. Its usefulness were the following points : Realistic and relevant scenarios ; Links theory and practice ; Supports active learning ; Promotes critical thinking and problem-solving skills ; and Builds confidence.

## DISCUSSION

Authentic learning was provided by the case studies in the multimedia courseware as shown by the realistic and relevant scenarios and the reflected roles and tasks of the nurses. As described by Herrington (12), authentic context provides the setting for learning tasks in solving complex problems. Authentic learning made the learning experience of the students more meaningful and relevant.

Case-based learning facilitates the development of authentic cases to simulate the complexities of situations of most patients in hospital settings (13). Activities shown in the videos mirror the actual patient assessment in the hospital, which includes history taking and physical examination. Each case presents a complex task, i.e. from assessment to planning, implementing and evaluating the nursing care of patients with each condition.

Integration of theory and practice is also made possible by using case studies. This is similar to the study of Forsgren *et al.* (14) who reported that nursing students find case study educational and that

the methodology combines theory with practice. According to them, some students describe that they had the opportunity to test their knowledge using cases, hence learning how to think when in their everyday nursing practice and how to interact with patients in order to provide good nursing. Working with real cases increases the understanding of care complexity.

The use of case studies in multimedia courseware also provides wonderful support for learning. The completeness and richness of information in the virtual courseware allowed students to plan their patient care better. This also made students reflect on what they would do in actual situations when faced with different types of clients. Case-based learning is a powerful educational strategy which improves graduate nurses' problem-solving skills (7).

Case studies promote active learning. Case studies incorporate ideas of experiential learning by providing student-centered education and providing opportunities that will motivate students through active involvement (8). As described by Thomas (15), experiential learning engages students to participate actively in learning and to reflect on these active processes. They also provide a venue for using problem-solving skills and promote decision making in a non-threatening environment.

Virtual Clinical Experience is a viable alternative for enhancing clinical experiences among nursing students. Supported by various studies and enriched by the subjective responses of the participants, Virtual Clinical Experience is clearly a relevant and practical engagement strategy fostering technological competency as caring in nursing (16). Not only skillfulness was heightened, but also the distinct focus of utilizing competencies with technologies as ways of knowing persons as caring, who are participating in their care, rather than remaining as simply objects of nursing care.

Promoting critical thinking is also very important for nurses to provide safe and comprehensive care. Using the case study method helps students find meaning in the tasks, links theory to practice and encourages the development of critical thinking skills (8). Critically analyzing and reflecting on patient care are essential skills which nurses must develop in order to maintain effective care (17).

Building confidence is part of developing competence. Students build confidence when they gain adequate knowledge about patient

**Table.** Summary of comments on the usefulness of the case studies in the courseware.

<i>Realistic and relevant scenarios</i>	Students describe the case studies in the courseware as similar to the actual cases seen in hospitals and provide realistic scenarios. The completeness and richness of information in the virtual courseware allowed them to plan their patient care better. This also made them reflect on what they would do in actual situations when faced with different types of clients as presented in the courseware.
<i>Links theory and practice</i>	The courseware also presented the nursing process as a systematic, continuous, and interrelated problem-solving process and showed the integration of theory and practice. One participant commented that the "virtual clinical environment highlights the integration of concepts in advanced adult health nursing." The additional resources on theories and models in the case studies provided further explanations and source of the rationale for nursing interventions.
<i>Supports active learning</i>	Students commented that the courseware was useful in guiding students on the performance of tasks in the actual clinical practicum by outlining tasks and demonstrating how these should be done through the videos. Some also commented on the usefulness of the resources such as the templates provided for the case study, drug studies, and nursing care plans. The simplified questionnaires helped them learn how to arrive at correct nursing diagnoses. The videos in the case studies were informative and provided important details to help in the performance of the learning tasks.
<i>Promotes critical thinking and problem-solving skills</i>	The courseware also helped stimulate critical thinking as reflected in the following statement from one participant "It also provides an opportunity to develop and practice my critical thinking abilities in a way that it does not jeopardize patient safety." The tasks allowed students to test their problem-solving skills, especially when utilizing the nursing process.
<i>Builds confidence</i>	One student claimed that the courseware helped a lot in preparing her for the clinical practicum by providing a comprehensive example on how she should approach the actual clinical practicum. Another student stated that it helped him gain confidence in dealing and communicating with patients because the videos showed what to expect in the actual setting.

care in reality. Pastirik's study (18) believed that this method of learning was useful to translate knowledge from the classroom to the clinical setting and increased students confidence in the clinical setting by preparing them for common practice situations.

## CONCLUSION

The use of case studies in the multimedia courseware facilitated authentic learning and encouraged active and reflective learning. These case studies also encouraged critical thinking and effective problem-solving skills. The case studies provided realistic and relevant scenarios, linked theory and practice, supported active learning, promoted critical thinking, and built confidence among the students. The case studies in the courseware helped in showing the scope and processes of the clinical practicum, illustrating the setting, and stimulating critical thinking and decision-making in doing patient assessment and care.

## CONFLICT OF INTEREST

There is no actual or potential conflict of interest that exist in this manuscript.

## REFERENCES

- Jamshidi N, Molazem Z, Sharif F, Torabizadeh C, and Kalyani M N : The challenges of nursing students in the clinical learning environment : A qualitative study. *The Scientific World Journal*, Hindawi Publishing Corporation, 2016, <https://doi.org/10.1155/2016/1846178>
- Tiwaken SU, Caranto LC, David JJT : The real world : Lived experiences of student nurses during clinical practice. *International Journal of Nursing Science*, 5 (2), 66-75, 2015, doi : 10.5923/j.nursing.20150502.05.
- Carlson A : *Authentic learning : What does it really mean?* Washington, USA : Center for Instructional Innovation and Assessment, Western Washington University, 2002
- Lombardi M : *Authentic learning for the 21st century : An overview*. Educause Learning Initiative Paper 1, 2007
- Yoo M-S, Park J-H : Effect of case-based learning on the development of graduate nurses' problem-solving ability. *Nurse Education Today* 34 : 47-51, 2014
- Tome AM : Learning with cases. *Journal of Continuing Education in Nursing* 34 (1) : 34-38, 2003
- Morrow CB, Epling JW, Terán S, Sutphen SM, Novick LF : Future applications of case-based teaching in population-based prevention. *American Journal of Preventive Medicine* 24 (Suppl. 4), 166-169, 2003
- Popil I : Promotion of critical thinking by using case studies as a teaching method. *Nurse Education Today* 31, 204-207, 2011
- Kaddoura MA : Critical thinking skills of nursing students in lecture-based teaching and case-based learning. *International Journal for the Scholarship of Teaching and Learning* 5 (2), 1-18, 2011
- Neill K, Lachat M, Taylor-Panek S : Enhancing critical thinking with case studies and nursing process. *Nurse Educator* 22 (2) : 30-32, March-April 1997
- Huang YC, Chen HH, Yeh ML, Chung YC : Case studies combined with or without concept maps improve critical thinking in hospital-based nurses : A randomized controlled trial. *International Journal of Nursing Studies*, 49, 747-754, 2012
- Herrington J : *Authentic E-Learning in higher education : Design principles for authentic learning environments and tasks*. ELEARN 2006 : World Conference on E-learning in Corporate, Government, Healthcare, and Higher Education Proceeding. Honolulu, Hawaii, USA, 2006
- Gilboy N, Kane D : Unfolding case-based scenarios : a method of teaching and testing. *Journal of Emergency Nursing* 30 (1), 83-85, 2004.
- Forsgren S, Christensen T, Hedemalm A : Evaluation of the case method in nursing education. *Nurse Education in Practice* 14, 164e169, 2014.
- Thomas L : From experience to meaning : The critical skills program. *Phi Delta Kappan* 91 (2), 93-96, 2009
- Locsin R : Advancing the theory of Technological Competency as Caring in Nursing : The Universal Technological Domain. *International Journal for Human Caring* 19 : 2, 50-54
- Stockhausen L : The clinical learning spiral : a model to develop reflective practitioners. *Nurse Education Today* 14, 363e371, 1994
- Pastirik PJ : Using problem-based learning in a large classroom. *Nurse Education Practice* 6, 261e267 2006