ORIGINAL ARTICLE

E-learning Development Strategy through Massive Open Online Course (MOOC) In Clinical Rotation Nursing Education

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ABSTRACT

Background: E-learning as a new learning method influences process of transforming conventional education into a digital basis. Massive Open Online Course (MOOC) is used as an e-learning management system that disseminates nursing institution partners' knowledge. An E-learning system provides highly configurable and integrated features in electronic books, journals, and web services. This system quickly, effectively, and economically distributes educational content toward students without any time or learning space limitation. E-learning has been implemented in various learning subjects, including nursing, but remains limited in clinical rotation nursing education. It has not been implemented widely, even though it is proven to support the learning process.

Aim: The study aims to describe the process of developing an E-learning system in clinical rotation nursing education.

Methods: The course subject was nursing management by involving two education institution partners. School of Nursing, Faculty of Medicine, Public Health, and Nursing (FKKMK) UniversitasGadjahMada (UGM) designed clinical learning innovation for clinical rotation nursing students in blended learning. It involved the institution's partner students as the learning participants.

Results: The process of developing E-learning in the clinical rotation nursing was by building partnership with education institutions passed through several phases: curriculum development, instructional design, and teaching media development, program evaluation methods, utilization of Learning Management System (LMS) as well as student learning outcomes evaluation. System design and development followed student needs resulting in the high score of participants' learning outcomes in clinical rotation nursing education.

Conclusion: Appropriate E-learning system development strategy benefits student learning processes during nursing management practice in clinical rotation nursing education program.

Keywords: Clinical Rotation Nursing Education, Education Institutions Partners, E-learning, Management Nursing Practice MOOC

INTRODUCTION

The clinical rotation nursing education program, also called the professional phase, is fully implemented in clinical settings such as hospitals, health centers, families, and communities. At this stage, students are expected to carry out various clinical skills. Skills from communication, interpersonal relationships, problem-solving, and other skills as a part of the competencies must be retained by students who have conceded learning in the hospital [1]. Clinical learning aims to produce capable professional nurses to provide nursing services constructed on nursing science and technology. Learning in the clinical rotation nursing program consist of many subjects. A particular subject arranged in the program is nursing management. In this learning, students are obligated to achieve primary competence and perform nurse managers' roles by implementing management functions in the ward. Competency achievement is obtained in groups to make changes through assessment and data analysis activities. E-learning system provides facilities that can be configured and integrated with clinical rotation nursing programs. E-learning enables allocating teaching materials, online features such as discussions, and managed assignments in an incorporated manner. This system is fast, effective, and

cost-effective to distribute educational content to students without time or distance boundaries. This program's development is supported by the online lecture from the Ministry of Research, Technology, and the Higher Education Republic Indonesia. The program arranged a blended learning course and institution partners: STIKes Suaka Insan Banjarmasin and Universitas Aisyiyah Yogyakarta.

Case Description: School of Nursing, Faculty of Medicine, Public Health and Nursing (SoN FK-KMK UGM) develops e-learning innovations in the clinical rotation nursing program by involving two institutional partners. Online course development is conveyed through several stages: ADDIE Model: Analysis, Design learning, developing materials, Instructional material (online), and Evaluate.

Analysis: The utilization of e-learning and blended learning was done by accomplishing discussion and coordination together with institutional partners. The discussion followed guidance to achieve nursing students practice competencies in nursing management courses. Indonesian Nurse Education Core Curriculum (AIPNI, 2015) has set up a national education curriculum in 2016 as the core curriculum's learning achievements were discussed in depth.

The discussion also aimed to perform problem identification experienced by students and clinical supervisors during the learning process. An alternative solution in the e-learning implementation also being a focused topic during the discussion. These activities aimed to measure students, institutions, and clinical facilities' readiness to utilize e-learning and determine appropriate e-learning design to answer the needs and solve the problem.

Design: The second phase of the ADDIE model was targeted to design the learning objectives and learning outcomes.

Learning Objectives: The clinical rotation nursing program's objective achievement in nursing management was that students could systematically and accurately design solutions to nursing by applying the concepts of leadership and management function. At this point, the course administrator organized a discussion with the stage coordinator manager. The achievement of e-learning competencies focused on applying leadership and management concepts in the nursing service unit. Favorably from the competencies achievement, other learning outcomes would be facilitated by blended learning. The strategies to achieve nursing management competencies was by discussing e-learning content. Results of discussions with institution partners resolution the content structure consisting of 3 phases: preclinical, clinical, and post clinical.

Table 1. Nursing Management Clinical Rotation Nursing Program Learning Content Structure

Phase	Learning achievements	Learning materials
Preclinical	Understanding the concept of leadership and nursing management	Leadership concept Nursing Management Concept Concept of change
Clinical	Implement leadership style Applying management functions: Planning, Organizing, Actuating, Controlling Establish teamwork with the team	Assessment of care units (input-process-output) and data analysis planning (POA) Organizing in nursing Program implementation: delegation and supervision program; Implementation the concept of care delivery system; Effective communication in nursing Team Building
Post clinical	Evaluation in nursing	Overall evaluation in program implementation, group dynamics, collaboration practices

Learning Activities: Designing the learning activities was done by taking into account the achievements and development of e-learning content in the nursing management practice. Students applied the concept of leadership in management functions during the implementation of learning, including assessment, analysis, planning, implementation, and evaluation activities. Developing e-learning activities was presented in a system by delivering material in recorded learning resources and providing instructions to students. Course instruction is intended to achieve students' understanding by organizing quizzes, discussions, and assignments. The clinical supervisor at these activities arranged feedback to the students. Blended learning activities were developed to ensure learning outcomes achievement through pre-conference and post-conference, discussion, problem-based learning, case reports, and presentations.

Development: Right after the learning objectives and outcomes have been designed, the development of teaching media was required. Teaching media development was divided into three forms: learning recordings, learning videos, and learning modules. Learning recordings development was carried out by the course facilitator through compiling lecture materials presentation and audio recording. Recordings were uploaded on an e-learning system to assist students in the clinical practice. Learning videos at this 3rd phase of ADDIE consisted of six learning videos about effective nursing management communication processes. The videos illustrated interaction between nurses and interaction between nurses to patients. The learning module was structured to facilitate students in problem-based learning and team-building simulations. The module presented a scenario to initiate discussion and references that were used in solving the nursing problems.

Implementation: The e-learning implementation was carried out using the Massive Open Online Course eLOK Learning Management System: e-learning for Open Knowledge Sharing released by Universitas Gadjah Mada. The implementation was conducted in several activities:

Communication and Coordination with Institution Partners: The learning implementation was conceded following the clinical practice schedule. The differences in institutional clinical practice schedule became a challenge to be commenced. In this stage, communication with students was also conducted to deliver instructions in accessing the e-learning system. Face-to-face meetings and online discussions using social media were also performed to facilitate effective communication between the course manager and students.

Implementation of Online Lecture Activities: The learning was done according to the guidelines of the practice of the nursing management profession. The designated skills included speaking. The implementation of nursing management clinical practice consisted of 3 phases: Pre-clinical, clinical, and post-clinical. Online lecture courses implementation in nursing management clinical practice established at the odd semester academic year 2017/2018. Blended learning was attended by three institutions with different student schedules and compositions. Table 1 is the online lecture implementation schedule:

Table 2. Online Lecture Implementation Schedule

Institution	Period	Clinical Setting	Students
UniversitasGadjahMada	18 September – 7 October 2017	UniversitasGadjahMada Hospital	22 students
UniversitasAisyiyah Yogyakarta	16 October – 9 December 2017	PKU MuhammadiyahBantul and Ponorogo Hospital	18 students
STIKesSuakaInsan Banjarmasin	2 January – 20 January 2018	SambangLihum Hospital Banjarmasin	14 students

Pre-Clinical

The pre-clinical phase was organized the day before the first day of clinical practice. The activities in the pre-clinical phase aimed to prepare students' readiness to undergo nursing management practice. Classical class overview, case discussions, and teamwork materials distribution were done through a game to ensure students' readiness to follow the practice.

Clinical Phase

The clinical phase's learning activities were carried out for three weeks to achieve three focused competencies: identification of ward problems and plan of action (POA) presentation, student leadership enhancement, and student activities report in the presence of nurses, hospital managers, and supervisors. Throughout the course organization, several challenges were upcoming. The limitation of supervisors to assist students in performing management functions was the major challenge. It was necessary to design a 24 hours e-learning feature in assisting and facilitating student learning activities. The course manager was actively providing discussion and communication through social media as it was expected to contribute to solving challenges experienced by students in carrying out management functions.

Post Clinical Phase

Learning in this phase was passed by conducting students' assessments through simulation. The simulation was scheduled to assess the students' competencies in oral examinations. Congruent with simulation, to prepare students' in following the Indonesian National Nurse Competency Examination (UKNI) course manager delivered a presentation on a topic of introduction to competency examination question items.

Evaluation

Evaluation based on the ADDIE model was performed on students, learning outcomes achievements, and program evaluation. Students were evaluated during the learning process by compiling a blueprint assessment. Online activities such as quizzes, assignments, discussions were the assessment components. Nevertheless, institutional policy regarding the e-learning implementation on online survey evaluations was included in the component. Program evaluation was done by giving a questionnaire to measure students' satisfaction with e-learning and learning.

DISCUSSION

The advance of information, communication, and technology allows its utilization for various purposes and provides learning instructions. Education institutions, especially teachers, are more interested in gaining other benefits such as tracking learning, improving administrative efficiency, and extending the program goals [2]. Recently, medical professions education has been shifted into technological-based learning through detailed records of students' actual activities in a system framework. This study indicated that the participants were aware of the benefits of using e-learning in education, particularly in Rwanda's context. The merged themes were (1) E-learning promotes student-centered approach; (2) E-learning is blended learning; and (3) E-learning as a tool for track production of the nursing workforce, taking into consideration the history of Rwanda [3]. Electronic learning enables students to chronologically record their activities in posting opinions on a discussion forum, activity logs of patient encounters, and explicitly their frequency and period of accessing the learning management system. Those records are valuable for the institution to assess and understand the journey of their learners' educational quality experiences. E-learning has driven and shaped the contemporary education paradigm. The implementation of electronic learning in clinical rotation nursing education stage nursing management follows the ADDIE model. ADDIE model is widely applied to design and execute an appropriate system and platform for the students globally. ADDIE model consists of analysis, design, development, implementation, and evaluation.

Program Implementation: The analysis phase is intended to identify and explore the students, lecturers, and educational problems and needs. This phase also assessed the requirements to apply digital learning in nursing management at the clinical rotation nursing program. Digital learning in medical education was also following the challenges of Industry Revolution 4.0 [4]. The designated system allowed the information transfer at any time and without any distance constraints along the internet connection established. Students and lecturers were also regularly online and accessible outside the regular working/ learning hours [5]. The challenge in the rapid invention and development of medical, educational contents, the opportunity to provide more eco-friendly learning materials, cost-effective program administration and delivery, feasibility, and inter-connectivity offered by digital learning were another consideration implementation. The measurement of equipment availability, time and money, culture, situation setting, analysis of the target group (prior knowledge, general education, age, learning styles, handicaps, etc.), and the analysis of tasks and subject matter (tools and objects required, conditions for performance, risks, etc.) was performed.

The second phase of the program implementation was design. At this point, learning outcomes and the objective were enlisted and determined. Outcome and objective were identified based on the national competencies framework qualification (KKNI) and the

Indonesian Nurse Education Center (AIPNI). Reasonable goals were identified and precisely different from the academic nursing education since the program was conveyed at clinical settings (primary health care, hospital, and community) to achieve cognitive and behavioral outcomes. The ADDIE model's remaining phases provided guidelines for developing, implementing, and evaluating selected strategies. Development referred to the actual construction of instructional materials, such as learning tasks and assignments, instructional texts, multimedia materials, slides for lectures, guides for teachers, and so forth. Learning activities were developed in blended learning, including clinical tutorials on the first day of practice, online discussions and chatting with counselors, quizzes, and online assignments. LMS presented teaching materials consisting of a presentation, learning recordings, learning videos, and learning modules. The online learning process focused on students, empowers student autonomy and independence, and was based on the four primary schools' principles: behaviorism, cognitivist, constructionist, and connectivity. The online learning process can be categorized into two types, namely independent learning and guided learning [6]. In online learning or Internet-based learning, learning objects can be in text, graphics, images, sound, video, and multimedia. The advantage of digital learning is that it is easily edited, produced, and delivered through telecommunication media. Presentation of learning material is done by displaying various types of learning objects text, audio, video, and a combination of various elements of the media [4].

In LMS, learning materials were presented according to the topics and flow of competencies that have been identified to facilitate students in understanding the flow of learning competencies. Learning materials were presented in small pieces that could be displayed in full screen or video/audio with a duration of 20 minutes or less. There were technical, psychological, and ergonomic reasons for determining the size of the material learning pieces. Small pieces of text (with impressions about one full screen without scrolling the screen) allowed fast file transmission. Likewise, audio/video pieces with a duration of less than one minute allowed the learner not to wait too long for the download process (downloading) or broadcast the program by streaming. In terms of ergonomics, displaying full text without rolling the screen made the eyes more comfortable. Students or learners tended to print learning material for too long material (more than three display pages) before reading it. Implementation referred to introducing the newly developed instruction in the setting that would be used and the instructional materials' actual use. The use of digital media for instructional purposes might be limited by the more excellent value associated with face-to-face rather than virtual encounters, particularly by learners. Indeed, educational multimedia used in an educational setting often accommodated logistical rather than educational ends. For instance, the number of lectures in a course might be reduced and their content reallocated to multimedia applications, or a distributed student population (mainly in community teaching sites) might be provided with asynchronous access to the same teaching resources to allow for local variations in scheduling

The evaluation investigated whether the desired outcomes were reached and answers questions such as: Did the students achieve the expected outcomes? What did they learn? How could the instruction be improved? Each of these phases represented a whole field of research and development in itself. The chapter focused on ID models rather than ISD models, thus on the former two phases.

In medical education, we see an increased interest in integrative objectives and the development of competence-based curricula to facilitate the transition from the school to the clinic. Besides, there is a diversification of delivery strategies with increased media use such as medical simulation, animation, and other e-learning applications. As a result, instructional design models are becoming more and more critical to medical education.

Evaluation: Lecturers assessed online learning to assess student learning processes and results through online learning. Assessment activities that could be carried out with 1) self-assessment measured the ability of yourself by working on all formative exercises and assessments available in teaching materials such as quizzes, exercises, formative assessments intended to enable students to identify learning difficulties experienced and can improve their learning difficulties based on the results of the formative assessment done; 2). The assessment was carried out to measure student learning processes and results. To measure the achievement of student learning outcomes was done by summative assessment. This type of assessment can be carried out during the learning process or after the learning process is complete [7]. Van Tassel (2013) argues that whether higher education is delivered face to face or through online multimedia instruction, core educational processes remain intensely communicative [8]. Thus, the present research examined adult learners' communication and interaction expectations, contrasted these learners' expectations with their actual online classroom experiences, and analyzed the effects of the meeting (or not meeting) their expectations on students' satisfaction with interaction in online courses, perceptions of locus of instructional control, and self-reports of their online course learning.

CONCLUSION

Strategy to develop appropriate e-learning systems involving institutions partner provides experience in improving student learning motivation and competencies achievement. E-learning provides a valuable alternative to overcome challenges during the implementation of e-learning in suitability with each institution's academic atmosphere.

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