

PREPARING FOR COMMUNITY HEALTH NURSING THROUGH
ONLINE PROBLEM-BASED LEARNING

DRAFT

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Purpose of the Study

The students in this descriptive study were registered nurses (RNs) enrolled in the community health nursing theory and practicum courses as part of the requirements in a Bachelor of Science in Nursing (BSN) completion program. They had previously earned an Associate Degree in Nursing from a community college. Most worked in hospitals and had little prior exposure to community health. Their years in practice ranged from new graduates with six months on the job to those with 25 years of service. Unlike the skills required of them in this study, their basic nursing training had focused more on memorization and nursing skill practice than on critical thinking and the use of higher-order cognitive skills. Many of the students lived at a distance from the university. Many worked full-time and were also raising families, making web-enhancement a key tool in expanding learning beyond the classroom and connecting it to practice.

In the web-enhanced theory course, they were engaged in a quarter-long collaborative small group online project using problem-based learning to analyze, evaluate and synthesize community health nursing theory and knowledge in order to apply it to real-world problems of their choice. Topics included teen pregnancy, homeless teens, TB in immigrant populations, STDs, global immunizations and methamphetamine use. This project was not connected directly to their practicum experiences, although some did find connections between this project and their practicum. This assignment was taught 1-2 times each year for 3 years and has been adapted based on feedback, observations and my understanding of PBL and online learning.

The purpose of this study was threefold: (1) to explore the fit between problem-based learning (PBL) and the higher order cognitive skills essential to the practice of community health nursing; (2) to explore methods for increasing and supporting students' use of these cognitive skills in PBL; (3) to identify the key factors that supported or challenged students' abilities to use PBL in an online environment.

Theoretical Framework

Problem-based learning has been used extensively in medical education and is now being used in a number of undergraduate and graduate

nursing programs (Cannon & Schell, 2001; Bentley, 2001; Choi, 2003; Alexander, McDaniel, Baldwin & Money, 2002; McGrath, 2002; Carey & Whittaker, 2002), in community health nursing courses (King, Sebastian, Stanhope & Hickman, 1997), and in undergraduate multiprofessional education (Hughes & Lucas, 1997). PBL, with its emphasis on providing guided experience to students to enable them to solve complex real-world problems (Hmelo-Silver, 2004), is a realistic pedagogy for nursing courses in general, and community health nursing, in particular.

The problems encountered in this specialty area have become increasingly complex and require intervention by nurses with highly developed cognitive abilities and the ability to collaborate with colleagues and community members. Community health nurses work with families, communities and populations that may be dealing with poverty—often despite fulltime work—, problematic access to health care, language issues, racism, chronic and infectious diseases, and unhealthy environments and living conditions.

Unlike traditional undergraduate instructional methods, PBL confronts nursing students with ill-structured problems comprised of few initial facts, facts which are embedded in the complexities of the everyday realities of communities and the agencies that seek to serve them. Through

guided reflection, collaboration, and discovery and integration of knowledge, students create and evaluate solutions to situations they will be faced with in practice (King, Sebastian, Stanhope & Hickman, 1997; Carey & Whittaker, 2002). Students generate and explore problems that have meaning to their professional growth (Savery & Duffy, 2001).

PBL challenges students to develop a number of skills that are frequently absent from the basic nursing training students receive in an Associate Degree nursing program, where the banking and apprentice models are more in evidence (McGrath, 2002). These PBL skills include developing flexible knowledge and problem-solving skills, becoming self-directed learners with internal motivation, and learning to collaborate (Hmelo-Silver, 2004). PBL is ideal for BSN completion students because it builds on the solid clinical foundation of their Associate Degree while demonstrating to them how to expand their focus from an individual with an illness to a community struggling with complex health issues.

The skills students develop through PBL appear to reflect growth in the higher-order skills on the taxonomy of cognitive skills originally created by Bloom et al. in 1956, and revised in 2001 by Anderson, Krathwohl et al. (Krathwohl, 2002). In the original taxonomy, the steps in the cognitive domain were Knowledge, Comprehension, Application, Analysis, Synthesis

and Evaluation. In the revised taxonomy, the steps of the cognitive process dimension are Remember, Understand, Apply, Analyze, Evaluate and Create. The four knowledge dimensions are Factual, Conceptual, Procedural and Metacognitive (Krathwohl, 2002). It is precisely the skills at the higher end of the cognitive process dimension and those of the knowledge dimension that are needed by community health nurses charged with providing sophisticated care to clients and communities in an era of diminishing resources and increasing demand.

Using a hybrid or web-enhanced learning environment to expand learning beyond the classroom is helpful for students who are place-bound, have jobs and families and who have limited time at the university (Martyn, 2003). The asynchronous but ongoing nature of online communication can encourage students to become active, reflective and responsive learners and critical thinkers (McGrath, 2002) because they have more time to think and form responses. However, asynchronicity may also present challenges to students, especially those attempting to balance school, work, home and community responsibilities with waiting for others' contributions and responses (Bender, 2003).

Methods and Modes of Inquiry

Students were placed in groups of 5-7 based on common interests generated the first day of class. The work for the project was done primarily online using the Blackboard Learning System software and university library databases, with some class time allotted for group meetings and discussion of the project. Some students also interviewed community health nurses, visited community health agencies, and wrote about personal or family experiences with their topic. I encouraged students to focus on the process of their learning and growth rather than on the product of the final presentation. Using problem-based learning, students defined and explored their topics and prepared presentations on:

- (1) The problem
- (2) Why it is a problem/the severity of the problem/who is affected by the problem
- (3) Possible solutions/potential outcomes of the possible solutions/which solution seems to be the most realistic
- (4) Roles for community health nurses in the possible solutions
- (5) How those community health nurse roles relate to the Minnesota Wheel of Public Health Interventions
- (6) Sources used

Modes of inquiry and evaluation were both formative and summative. I (the investigator and instructor) and several TAs engaged in formative evaluation and in scaffolding, which included clarifying project structure and requirements, and providing guidance for proceeding with PBL steps.

We did this through frequent reading and responding to student posts as well as class discussions and some individual appointments. Feedback from the TAs about their observations and interactions with students provided additional information. I reflected on and modified the scaffolding provided to students throughout the quarter.

Summative evaluation was done through end of quarter presentations based on the items described above, and through a survey administered the last day of class. The responses to the survey gave input on how much time students spent on the project; the technology skills they had needed to learn to do the project; the most enjoyable and most problematic parts of the project; their perspective on the support provided by my scaffolding, including the clarity of directions and quality and usefulness of my online responses; and their suggestions for alterations to the assignment or additional support that would be helpful.

Evidence

The fit between problem-based learning and higher order cognitive skills

The formative evaluation of the small groups demonstrated their growing ability to collaborate as well as use self-directed learning. This was seen in a variety of ways, not only in how they went about learning, but how they functioned as a group. Students were very experienced in literature

searches and quickly divided up the work so it would be manageable and so each group member could focus on something of most interest to him/her. Students began asking themselves and each other what it might be like for a lay person or someone with limited English skills to try to learn about their subject. Some reported that they had shown web sites and other information to family and friends to understand how such material might appear to a person seeking health care in a community context.

Formative and summative evaluation found that students increasingly were able to use many of the components of the updated Bloom's taxonomy (Krathwohl, 2002). Students *applied* the Minnesota Wheel of Public Health Interventions to their new knowledge and conceptual understandings, *evaluated* the credibility of sources and information, *analyzed* the information to ascertain its usefulness and the need for further information or other perspectives, and *synthesized* their understanding of the topic with their knowledge of community health nursing. From this, they *created* and delivered a presentation to inform their classmates of the significant aspects of their topic and the roles and responses of community health nurses.

For example, the group studying methamphetamine use explored the demographics of this issue, and taught themselves and each other about methamphetamine addiction and its relation to financial, social, cognitive

and physical problems. They critically evaluated and analyzed a variety of sources, including scholarly literature and newspaper articles about a local methamphetamine epidemic, interviewed the school nurse in that community, and attended a community coalition formed to address the issue.

They incorporated new knowledge and challenged prior learning and attitudes about addiction. They explored problems in access to care and problems methamphetamine addicts may experience in continuing with health care. They examined and analyzed the limited resources available to confront this issue and suggested roles from the Minnesota Wheel of Public Health Interventions that the community health nurse could play in addressing this growing health problem. Finally, they created a presentation that built on their classmates' nursing knowledge to illustrate what methamphetamine can do to individuals, families and communities and how nurses can respond. Moving beyond purely cognitive learning, they used disturbing before and after photographs to augment the power of their words. None of them had ever worked in community health or addictions, but PBL helped them achieve this learning experience and augment their cognitive skills.

Methods for increasing and supporting students' use of these cognitive skills in PBL

The support and scaffolding necessary to help students achieve this growth required a larger amount of time than I expected, the majority occurring in the first half of the quarter, especially during the first several quarters when I taught the assignment. Examples include reminding students how to do the assignment, and clarifying the syllabus instructions. To better utilize my time, I attempted to respond to groups rather than to individual posters, particularly if I saw common problems. I also sent group emails, added announcements students would see when they opened the Blackboard site and would clarify problems in class. Class time was allotted for groups as well to improve communication on issues that didn't seem amenable to online communication. Although I did post comments intended to deepen their work and use of the PBL steps, the fairly constant need to give directions became frustrating.

To decrease frustration and to better support their learning, this year I altered the assignment so that weekly postings—and my weekly reading and commenting—were no longer required. Students worked on modules, each lasting 2-3 weeks, followed by a module for preparation of the presentation. In each module, a student plays the role of moderator and another is the summarizer. Clearer instructions and more in-depth guiding questions were

provided in the syllabus. My scaffolding changed from primarily giving directions to being a participant in groups which seem to be more self-directed than groups tended to be before the modules were introduced. In addition, this year's presentations were the best and most-informed ever.

Identify the key factors that supported or challenged students' abilities to use PBL in an online environment

The evidence collected through formative and summative evaluation was mixed in terms of the factors key to supporting or challenging students' learning in an online environment. Some of the challenges may not be amenable to instructor intervention. One quarter, the Blackboard server crashed and remained down for more than a day, causing a great deal of frustration and panic, including for me. Access issues between Blackboard and certain ISPs distracted some students from their learning while others had unproblematic access. Other issues included working 12 hours shifts for days in a row, making it difficult to concentrate, family health issues requiring their attention, and workloads from other courses.

Other challenges and needs for support can be addressed in future studies and revisions to the assignment. Student responses to the last-day survey varied widely in terms of how much effort the project required. Interestingly, the best posts tended to be made by students who reported spending a moderate amount of time each week on the project, and not by

those who reported spending many hours. It appears that they spent so much time searching for information they had little time left for thinking and posting. Students also reported varying levels of comfort with asynchronicity, and often found their own solutions. Many groups established a schedule for when guiding posts should be made, and those posting late were (usually) gently reminded of the schedule. Others, confronted with an unreliable member, would work around that person, while letting me know this was their solution. Reminders that 2/3 of their points came from their individual postings and 1/3 from the group presentation gave them confidence to proceed.

Some students enjoyed learning online and having the time to think before having to communicate, while others felt that in-class learning better fit their learning styles and needs. The first few quarters when I taught the assignment, students were assigned to groups based on common interests. Feedback regarding the difficulties of developing a sense of group membership and trust led to the current way, in which students choose their groups and then negotiate a topic. In general, students felt that the depth and amount of my online feedback was sufficient, although they were sometimes unclear if my comments were meant to be directive or meant as those of a participant in their discussion. Finally, feedback on the assignment as a

whole ranged from flatly stating that it was the worst thing they'd ever had to do, to expressing how much they learned and how eagerly they looked forward to becoming a community health nurse.

Conclusions

Problem-based learning has been used successfully in undergraduate and graduate nursing programs, in community health nursing courses and in undergraduate multiprofessional education. The results of this study suggest that problem-based learning can be a useful and real-world pedagogy to help associate-degree trained registered nurses enrolled in a BSN completion program learn to work collaboratively and learn to use some higher-order cognitive skills to explore a nursing specialty to which they have had little prior theoretical or practical exposure. Significant scaffolding appears to be necessary to assist in this transition from one learning style to another and to help students with the initial discomfort of using PBL (Alessio, 2004). Improvements to the assignment and its instructions appear to have provided more up-front scaffolding and to have decreased the need for ongoing online support.

However, the frustrations the students experienced related to occasional Blackboard failures or problems and to the challenges of asynchronous group work detracted from the learning experience of some of

the students, despite the scaffolding provided by the instructor and students' interest in their topics. Many of the group work and asynchronicity issues reported by students have been observed in other studies of online learning environments (Bender, 2003; Collison, Elbaum, Haavind & Tinker, 2000; Exley & Dennick, 2004; Wilhelm, Rodehorst, Young, Jensen, & Stepans, 2003), but also in studies about face-to-face group work (Benson, Noesgaard & Drummond-Young, 2001). These recurring difficulties suggest that online learning environments, even when they are not the major instructional technique, present significant challenges already present in traditional learning environments that students and teachers must overcome so that pedagogical efforts can be focused on learning and growth rather than on technological roadblocks.

Educational or Scientific Importance of the Study

This study can contribute to both educational practice and scientific study. It can contribute to the body of practice-based literature on the use of problem-based learning in nursing education, particularly for community health nursing, and to the literature on hybrid or web-enhanced learning environments. It can contribute to the literature on the processes by which Associate Degree RNs develop the cognitive skills characteristic of the BSN RN. Further research could explore more in depth the pedagogical strengths

and weaknesses of problem-based learning used in community health nursing or other nursing specialties and courses. Because many curricula and objectives in BSN nursing education are based on Bloom's work, studies could be undertaken to explore the relationships between problem-based learning and Bloom's Revised Taxonomy, as well as resulting pedagogical implications and innovations. Research could explore best practices for diminishing the barriers created by asynchronicity and group work in online environments.

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