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# Nurse Education in Practice

Original research

# Evaluating interactive technology for an evolving case study on learning and satisfaction of graduate nursing students

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Marjorie A. Vogt[*], Barbara H. Schaffner

Otterbein University, Department of Nursing, One South Grove St., Westerville, OH 43081, USA

A B S T R A C T

Nursing education is challenged to prepare students for complex healthcare needs through the integration of teamwork and informatics. Technology has become an important teaching tool in the blended classroom to enhance group based learning experiences. Faculty evaluation of classroom technologies is imperative prior to adoption. Few studies have directly compared various technologies and their impact on student satisfaction and learning.

The purpose of this study was to evaluate technology enhanced teaching methods on the learning and satisfaction of graduate students in an advanced pharmacology class using an unfolding case study. After IRB approval, students were randomly assigned to one of three groups: blogging group, wiki group or webinar group. Students completed the evolving case study using the assigned interactive technology. Student names were removed from the case studies. Faculty evaluated the case study using a rubric, while blinded to the assigned technology method used. No significant difference was found on case study grades, the range of grades on the assignment demonstrated little differences between the methods used. Students indicated an overall positive impact related to networking and collaboration on a satisfaction survey. Impact of technology methods needs to be explored in other areas of graduate nursing education.

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## 1. Introduction

Nursing education is undergoing rapid transitions in order to meet the changing healthcare needs in society today. Faculty are challenged to meet the needs of an increasingly technologically savvy student who is interested in developing individualized educational experiences. These students who have been called "digital natives" are often more comfortable with technology enhanced teaching methods than faculty, who have been called "digital immigrants".

Using a social constructivism theoretical background, faculty are modifying the traditional lecture teaching method to include more active learning methods such as group based learning, interactive learning, and case studies. Faculty are also incorporating more technology enhanced teaching methods, such as wikis and blogs in order to promote student engagement through collaborative problem solving, group projects and community discussions (Buchanan et al., 2014). The widespread use of course management systems, such as Blackboard or Moodle, allow for traditional instructional content delivery while promoting active learning through the use of technology enhanced tools within a blended or online learning environment. Although literature is available to describe how to utilize various technology enhanced teaching methods in blended or online learning, the focus of the literature has been primarily on student satisfaction, student self-efficacy and faculty attitudes (Seckman, 2014). Less is known about the impact of these various teaching methods on the knowledge acquisition of the student and student learning outcomes (Cook, 2005; Seckman, 2014). There is limited research that compares the learning outcomes of the more commonly adopted technology enhanced teaching methods, yet faculty want to know which methods are most effective prior to the adoption and use of new teaching methods.

## 2. Background/literature review

A variety of teaching methods have emerged over the past decade that have caused a dramatic shift from the traditional lecture in a bricks and mortar classroom to a more interactive, group

based learning using online or blended formats. These shifts have been based on the social constructivism theory that encourages new learning to build on the foundation of previous knowledge through a reflective process (Garrity et al., 2014). The constructivist view is more likely to be built on the learner's previous experiences and current knowledge versus the traditional instructivist view which is more rigidly controlled by the faculty member (Bristol and Zerwekh, 2011). Using the framework of constructivism theory, learning is influenced by learning styles, social, environment and cultural backgrounds of previous learning, cognitive thought processes and emotional influences such as motivation (Bristol and Zerwekh, 2011). The learner is influenced by their own previous experiences, as well as the experiences of other learners. Learning can be enhanced through discussions with others while one simultaneously re-evaluates their previous perspective. Such learning produces a dynamic, ever-changing experience. Thus the constructivist scaffolding often provides a broader, more holistic lens that is self-constructed and directed by the learner, with guidance from the faculty (Rudestam and Schoenholtz-Read, 2010). This self-directed learning may be a challenge for a student who has only experienced a more reductionist approach, yet self-directed learning is a critical component of an interactive learning environment.

The pedagogical framework can be applied to either the traditional face to face classroom or the blended and online classroom. Although there are similarities in the framework for both the face to face classroom and the online and blended classroom, such as learning outcomes, content and evaluation; the main difference is the lack of the physical presence of the faculty and student and the synergistic interaction both verbally and non-verbally to the content presented (Ko and Rossen, 2010). Faculty move from the "sage on the stage" to a "guide on the side" and the lack of immediate social interaction with the student can be challenging, particularly to the faculty who may be new to this methodology (Rudestam and Schoenholtz-Read, 2010). However, more and more institutions are adopting online and blended learning, in part due to student demand for access to higher education. Faculty are challenged to develop strategies that promote interactive learning as well as allow for reflection on the achievement of one's learning goals.

One strategy that has been used more recently is the concept of group-based learning. Group-based learning encourages individual students to work on group projects with the idea of valuing each members' contribution and perspective (Bristol and Zerwekh, 2011). Group-based learning, or team-based learning promotes accountability to the other students on the team to complete assigned tasks in a timely, accurate manner, promotes frequent student-student interactions and critique of each other's work and requires active involvement in the team assignment (Billings and Halstead, 2012). Group-based learning includes the input of faculty but maximizes the exchange of content and ideas among the students within the group.

An evolving case study is one example of a team based course assignment that allows small groups to work together to determine the most appropriate course of action and management using a standardized patient scenario (West et al., 2012; Billings and Halstead, 2012; Banning, 2008; Cotton and Gresty, 2007). A case study is presented with limited information related to the patient, through judicious questions to the faculty member, more information is provided to each student team related to the patient. Students interact as a group to determine the type of information and questions that will be queried of the faculty helping to form the direction of the case study. The case study is a time honored method of learning used to promote and develop the connection between didactic content and the clinical learning experience while promoting group process, critical thinking, and decision making

(West et al., 2012; Pupil, 2011; Brooks et al., 2010). The evolving case study is just now emerging into blended and online classes through the use of various technology enhanced communication methods.

Technology enhanced communication methods that lend themselves well to an evolving case study include asynchronous methods such as the blog and the wiki and a synchronous method, the webinar (audio-video conferencing). The blog is typically a sequential positing of ideas and responses by individual students with a limited number of words in each posting (Adelman and Nogueras, 2013; Garrity et al., 2014; Billings and Halstead, 2012). The wiki, is a shared document, which allows students to modify each other's posting in order to come to a coherent final answer (Biasutti and El-Deghaidy, 2012; Mirk et al., 2010). A third technology method is the webinar format, where students interact remotely through personal computers/devices at a pre-determined time and discuss the case in a group, asking questions as needed from the available instructor. Both the group case study assignment, and the use of technology enhanced group assignments have been positively received by students and increase collaboration, student engagement, and learning through a "social process" (Garrity et al., 2014; Biasutti and El-Deghaidy, 2012; Lyons and Evans, 2013; Zhu, 2012; Mirk et al., 2010). Although some students have noted some difficulty in learning how to use the technology, overall, students in a variety of disciplines have noted satisfaction with a blended learning environment using technology enhanced methods (Banerjee, 2011; Beebe et al., 2014; Epstein and Ray, 2014: Mirk et al., 2010).

However, less is known about the impact of these technology enhanced teaching methods on student learning outcomes. Despite an extensive literature search using multiple professional sites, no research was found that made a direct comparison between asynchronous use of technology such as wikis and blogs with the synchronous webinar or face-to-face method of teaching with the exception of teaching writing skills using these formats to EFL students (Miyazoe and Anderson, 2012). Little information was found in the literature related to the use of these technology enhanced teaching methods specifically targeted to graduate nursing education. Information was found related to the process of creating, adopting or using the technology, with little focus on the learning outcomes (Saichaie et al., 2014; Bristol and Zerwekh, 2011; Ko and Rossen, 2010; Rudestam and Schoenholtz-Read, 2010).

The purpose of this study was to evaluate various technology enhanced methods on the learning acquisition and satisfaction of graduate nursing students in an advanced pharmacology class using an unfolding case study. Specific research questions included:

- Which technology method best enhances graduate nursing student learning?
- How does technology affect graduate nursing student satisfaction with the learning experience?

## 3. Research design

A mixed methods approach was used including both quantitative and qualitative data. After University Institutional Review Board (IRB) approval was obtained, graduate nursing students enrolled in an advanced pharmacology course were recruited. Students received information about the study, and completed an informed consent if they were willing to participate. No inducements were offered, and students were assured of no adverse impact on their course grades if they chose not to participate. All forty-six students enrolled in the online course chose to participate in the study.