



'Tech' versus 'Talk': A comparison study of two different lecture styles within a Master of Science nurse practitioner course

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SUMMARY

Background: Generation Y students have a strong preference for technology that has caused educators to re-evaluate their instructional techniques. Limited published literature exists evaluating the benefits of electronic lecture delivery to students enrolled within nursing degree programs, with no publications to date comparing traditional to blended learning modalities.

Objectives: To retrospectively compare student outcomes, including overall course grade and individual examination scores, between two cohorts of students utilizing two distinctly different methods of lecture delivery, traditional and blended.

Methods: IRB approval was granted to retrospectively compare student outcomes from fifty-two students enrolled within Northeastern University's Master of Science Nurse Practitioner degree program. A total of 23 students were enrolled in the traditional section taught in 2010 and 29 students were enrolled in the blended section taught in 2011. Student's *t*-test was used to compare studied outcomes between each section. A *p*-value of ≤ 0.05 was considered to be statistically significant.

Results: The students enrolled within blended course scored statistically significantly higher than their counterparts within the traditional course for three of the four studied outcomes, including overall course score.

Conclusions: This study demonstrates that nursing students enrolled within a more technologically advanced course may have improved performance over students enrolled in courses with traditional lecture styles given their generational preferences for learning.

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Introduction

Researchers have been actively studying, and reporting, on the generational differences that exist between various populations for a number of years. From this research a unique trait to the current generation of students, referred to as Generation Y, the millennial generation or 'millennials', has been identified in their preference for technology (Davis, 2003; Howe and Strauss, 2000; Godwin-Jones, 2005; Prensky, 2001). While researchers have shown the increased affinity for technology, and technological advancements, that this newest generation possesses, additional literature evaluating how this predilection has adversely affected their abilities to review and comprehend study materials exists. Specifically, Carlson (2005) reported on the reductions in attention span the millennial

generation has compared to previous generations. These reports are not new, and this information has been known for quite some time, as Middendorf and Kalish (1996) first reported on this phenomenon more than a decade ago.

As a result of this information educators, and academicians, are responding. Methods for delivery of lecture materials are constantly in flux. Davis (2003) reported on the divide that existed, and still exists, between educators and their favored methods for lecture delivery, and their students' preferential method of learning. Despite this knowledge, determining which educational strategy to employ within the classroom remains a challenge, as the literature contains numerous reports on varied instructional modalities. Thus, the task for educators to determine which modality is most appropriate, for which material types, and student bodies, can be daunting.

Electronic learning, often referred to as e-learning, has been used in a variety of educational settings. Educational techniques incorporating e-learning can range from hybrid, or blended courses, to wholly online courses. The major difference from traditional courses, regardless of the modality, is that a percentage of the course is delivered electronically. Courses referred to as being 'hybrid', or 'blended', have earned those designations due to the fact that a percentage

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of the course material is presented electronically, coupled with traditional in-class delivery of the remaining percentage of course material (Novak et al., 1999; Palloff and Pratt, 1999). These course types can be compared to 'online only' courses, where there is no formal in-class delivery of any percentage of course materials, and all components are presented electronically (Novak et al., 1999; Palloff and Pratt, 1999). These designations were first termed by Novak et al. (1999) and Palloff and Pratt (1999), and have largely remained unchanged since that time.

The current medical and scientific educational literature is rife with articles describing the use of electronic delivery of course materials (Alsharif and Henriksen, 2009; Brownell, 2011; Congdon et al., 2009; Crouch, 2009; Elliott et al., 2009; Jones et al., 2009; Pilarski et al., 2008; Pittenger et al., 2009; Zapantis et al., 2008). The findings from these studies provide the groundwork for this study in that they demonstrate the applicability, and utility, of electronically delivered materials to enhance student learning within the sciences.

Background/Literature

A review of Cumulative Index to Nursing and Allied Health Literature (CINAHL), Embase, Medical Literature Analysis and Retrieval System Online (MEDLINE), and SciVerse Scopus was performed to identify any published literature comparing traditional to blended learning environments in the education of advanced nurse practitioner students. Search terms included, but were not limited to, blended, hybrid, e-learning, education, nurse, online and web. Publication dates were restricted from January 1st, 1991 through May 1st, 2011, as the World Wide Web was not available to the public prior to 1991. This review identified several publications evaluating the benefits of electronic lecture delivery in nursing education (Holaday and Buckley, 2008; Kumrow, 2007; Rash, 2008; Smith et al., 2010; Teeley, 2007). However, the authors were unable to identify any literature comparing traditional versus blended learning within nursing education. Given the generational affinity for technology, coupled with the lack of evidence comparing the two learning modalities previously described, a study was undertaken. The primary purpose of this study was to retrospectively evaluate student performance within an adult pharmacotherapeutic course taught to nursing students enrolled within a Master in Science Nurse Practitioner degree program, utilizing either traditional in-class lecture versus blended lecture delivery.

Methodology

Research Design and Objectives

Between the 2010 and 2011 offerings, a decision was made by the instructor to move from a traditional in-class lecture based offering to one in which the lectures were recorded electronically and placed online for review coupled with in-class discussions over that material. This change in pedagogy for this course was supported by a university-wide push towards the implementation, and increased utilization, of technology within the classroom. This study primarily sought to evaluate whether or not any difference existed in overall course grades between two sections of students enrolled within Northeastern University's Master of Science Primary, or Acute Care Nurse Practitioner, degree program from a pharmacotherapeutics course. Secondary outcomes evaluated included any differences between the individual examination scores for students enrolled within each section. These outcomes were selected for study as they were the sole measurements of student assessment within this course. The primary outcome of overall course grades represents global student learning, and minimizes variability that may exist when studying individual examinations. However, differences between the individual examinations were also evaluated as part of this study to ascertain if any differences existed at any point during the two course

offerings. All of this was done to evaluate the impact that the change in lecture delivery may have had on student learning.

At the conclusion of the spring 2011 semester, Institutional Review Board (IRB) approval was sought, and granted, to retrospectively review the aggregate student data from each course section in 2010 and 2011 to evaluate whether or not the method of lecture delivery had any impact on student outcomes. The need for informed consent was waived, as all student data was to be presented in aggregate, and no student identifiers were collected.

Student Population

During the spring 2010 course a total of twenty-three students were enrolled within the traditional section, and twenty-nine students were enrolled within the blended section taught during the spring of 2011. No randomization existed, as only one course offering existed in each academic year. The instructor, as did the disease state topics covered, and assessment techniques, remained consistent between the 2010 and 2011 offerings. The baseline student body demographics are detailed in Table 1, and did not significantly differ between each cohort. All students enrolled in either section successfully completed the course, and no student withdrew for any reason.

Course Description

The pharmacotherapeutics course is a two semester hour course that aims to provide students with an overview of the pharmacokinetic and pharmacodynamic properties of agents used in the treatment of many common diseases and disorders. In addition, the course addresses the prescription, administration, and monitoring of medications, combined with the evidence to support their use, in adults and older adults. A total of twelve lectures, covering a variety of topics ranging from the general principles of medication therapy management and evidence based medicine to the pharmacologic uses of cardiology and anti-infective agents, were presented over each 16 week semester. The content delivered to each section of students, 2010 and 2011, remained the same, with the exception of any updates in the medical literature during this one-year time period. These updates were minimal for the presented material during this period of time. The only measurable difference between each section was the method of lecture delivery, traditional versus hybrid, which is described more fully below. Table 2 provides an overview of the lecture content, and assessments utilized, for each section, delineated by week and topic.

Students in each course were assessed using a total of three non-cumulative examinations which were reviewed for content and accuracy by disinterested faculty members. Additionally, students enrolled within each section were required to attend and actively participate during each weekly in-class session. The lecture materials, reading assignments, and assessment techniques for each examination remained consistent throughout each section, as did the weight of each assessment. Each examination represented 25% of the total grade (75% for all three), and participation represented 25% of the total grade; however, the delivery of these items differed as described below. Table 3 provides a complete overview of the scoring methodology for each section.

In each section students attended once weekly, two-hour lecture, sessions over the course of a 16 week semester. During the traditional

Table 1
Baseline student demographics.

	Traditional	Blended
Number enrolled, N	23	29
Female gender, N (%)	19 (82.6)	26 (89.6)
Average age, years	26.2	26.8

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