The Benefits of Online Teaching for Traditional Classroom Pedagogy: A Case Study for Improving Face-to-Face Instruction

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Abstract

Much of the literature concerned with online education has focused on the development and implementation of strategies and techniques for improving learner outcomes. Other studies have examined the varying levels of expertise both students and instructors possess in using online technology, or how courses delivered in traditional classrooms can be modified for online delivery. Missing from the literature has been a discussion of how teaching online can inform traditional classroom pedagogy. This paper details the authors' experience with the development and delivery of an online statistics course. The pedagogical and practical benefits of teaching online are identified, and specific suggestions are made for how instructors can use these benefits to improve their traditional classroom pedagogy.

Keywords: *online education; Internet education; traditional pedagogy, criminal justice education; online statistics; online student learning*

Introduction

At a criminology conference two years ago, it was observed that "If instructors gave as much thought to the construction of their on-campus courses as they do their online courses, all education would be better" (Stone, 2007). This comment was meant to suggest that instructors who resist being involved in the development and implementation of online courses because of a perception that they are "too much work", in effect, argue that courses taught on campus require less time and effort to prepare and deliver. There is little doubt that the development and delivery of online education does, in fact, require a significant investment of time. It has been estimated, for example, that the time it takes to deliver an online course is two to three times that of a traditional course (Wiesenberg & Hutton, 1996), and much of this time is related to having to read and respond to all communication rather than just listen to it and verbalize a response. In *Building Online Learning Communities*, Palloff and Pratt (2007, p. 74) suggest that the total instruction time required for a face-to-face class for one week is six to seven hours per week, compared to eighteen to nineteen for a class that uses computer-mediated communication (CMC). And, as Bates and Poole (2003, p. 132) point out, "The failure to take into account the workload associated with technology-based teaching is probably the biggest barrier to its use."

While it may very well be that the development and delivery of online instruction does take more time than it does for traditional courses, this may be a function of the lack of familiarity instructors and students have with the online learning environment. For example, nearly all instructors have a lengthy history of having been exposed to classroom teaching techniques, given that they are products of the system (face-to-face) in which they are now teaching. In addition, teachers who have taught for several years in a traditional environment have already prepared the core of a course many times, and this leads to a familiarity with both the course material and its delivery. Thus, an instructor may only need to spend a couple of hours "tweaking" content before each new delivery. As Bates and Poole (2003, p. 25) note, "...the reality is that many instructors start teaching before they have even finished their Ph.D…." This reality may result in a perception that it was "easier" to prepare their first course as they began their

careers following graduation. Though they may not consciously adopt the teaching strategies or techniques of the teachers they had exposure to, it is often the case that first-year teachers simply attempt to re-create the course they are teaching from notes they took in a similar course they had as a student themselves. From a more practical perspective, the relatively little time often devoted to traditional course preparation and delivery may be a function of the comparative lack of priority teaching has for instructors, especially at academic institutions where research has priority in tenure considerations. Further, this may also be the case in those institutions where only a small proportion of new instructors participate in mentoring relationships with experienced teachers, or take advantage of the training available to teachers to help them improve their teaching abilities.

In addition to concerns about the time it takes for course preparation and delivery, distance education has presented a number of other challenges to how we view instruction and learning. Several of these issues relate to the varying levels of expertise that instructors and students possess in using different types of technology (Palloff & Pratt, 2007). Other challenges relate to instructor fear of losing control over instructional design and delivery (Keengwe & Kidd, 2010), and using technology in a way that allows instructors and students to maintain a "social presence"—an issue that instructors do not generally concern themselves with in a traditional classroom (Palloff & Pratt, 2007 pp. 6-7). This lack of social presence is particularly problematic in statistics courses, where the synchronous "show and tell" of statistical operations constitutes the lion's share of instruction, and where the course materials require "extensive preparation" (Sloboda, 2005).

Lessons from the Literature

With the ability of the Internet to cut across demographic boundaries (Cahoon, 1998), online education has rapidly become not just an acceptable pedagogy, but one that is in strong demand. Recent statistics reveal that enrollment in online programs increased an estimated 832 percent between 2001 and 2009 (Burnsed, 2010). Further, while the overall growth rate in higher education approached 2% in 2008-2009, the growth rate for online education was nearly 21% (Allen & Seaman, 2010).

Online education not only provides educational opportunities for those who could not or would not otherwise obtain them, it has recently become a preferred modality for many "traditional" students who often schedule a blend of traditional courses with online courses. According to the marketing research firm Ambient Insight, while approximately 12 million post-secondary students currently take some or all of their classes online, it is expected that this number will jump to more than 22 million students in the next five years (as cited in Nagel, 2009).

Online learning is popular for all types of students in part because of its asynchronous nature. To a large degree, asynchronicity gives students the ability to participate in the course when it is convenient for them to do so (Horvath & Stone, 2004). Another notable advantage of online education is that instructional content can be delivered more cost-efficiently (Eastmond, 1998; Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K., 2009). Computer-mediated communication also has the advantage of fostering integration and the development of social networks (Ahern & Repman, 1994; Wellman, Salaff, Dimitrova, Gulia, & Haythornthwaite, 1996). Further, in a recent evaluation of evidence-based practices in online learning, Means, et al. (2009 p. ix) found that "...on average, students in online learning conditions performed better than those receiving face-to-face instruction."

Though many people have argued that the development and delivery of good online education is a result of learning how to transfer traditional pedagogy to an online environment (Sloboda, 2005), there is little in the literature about how the knowledge and skills associated with good online teaching can be transferred to the traditional classroom setting. Research over the past two decades reveals that students in online classes report that they (1) have greater control over their learning (Sloboda, 2005), (2) experience high levels of interactivity with other students, and (3) are able to construct new knowledge (Eastmond, 1998). Despite this praise for online learning, there are considerable structural, psychological, and pedagogical challenges in shifting instruction that occurs spontaneously in the traditional classroom to cyber-rooms on the Internet Nowhere in criminal justice education is this challenge greater than in statistics courses. This is due, in part, to the wide range of abilities that online students demonstrate in logical and mathematical reasoning (Sloboda, 2005).

Successful online learning outcomes appear in large part to be due to the care with which the course is designed and delivered. It could be argued that this is also the case in courses dominated by face-to-face

interaction; however, unlike traditional classroom pedagogy, which stems from a "Lone Ranger" approach to course development (Bates & Poole, 2003), online pedagogy frequently involves consultation and collaboration with a host of support personnel. Among collaborators are instructional designers (project managers), e-producers (web programmers, graphic designers, etc.), and librarians, many of whom provide design and implementation assistance to instructors or subject-specific research assistance to online students. In effect, they help create an instructional system. Though these collaborative arrangements vary from institution to institution, they are essential to providing cost-efficient, quality instruction and support services to online students.

Criticized for being an industrial model of higher education at a time when post-industrial technologies dominate the online landscape, (Campion, 1995), a systems model of higher education is not generally used for traditional classroom instruction, where the roles of instructional designer, organizer, and teacher fall almost solely to the instructor. Thus, the relevant question for the authors was: how could a statistics class traditionally offered face-to-face be structured to capitalize on the strengths inherent in good online course development and delivery that is rooted in a systems model?

The Setting for the Current Observations

For two semesters, the second author taught an online undergraduate introductory statistics course in criminal justice to criminal justice majors at a southern university. Prior to teaching the course online, she had taught a graduate-level introductory statistics course in public health for four semesters and an undergraduate introductory statistics course in criminal justice—both in a traditional face-to-face classroom setting. Her philosophy for teaching undergraduate statistics has focused on understanding statistics from a consumer perspective. Using this approach, student calculations are limited to the measures of central tendency, measures of variability (e.g., range, variance, and standard deviation), Z-scores, confidence intervals, and chi-square. The other statistics covered in the course (e.g., t-statistic, independent t-test, paired t-test, analysis of variance, correlation, and regression) are presented to familiarize the students with common statistical tests they will encounter in the social science literature or in everyday life. The primary focus of the course with respect to the statistical tests was for the student to identify when each statistical test should be used, what its assumptions were, how it was interpreted, and how the statistical test was interpreted in its graphical or tabular form. Because of this consumer approach to teaching statistics, the amount of work in converting the class to an online delivery was probably less than a traditional introductory statistics class would have involved. The most intense, time-consuming, and creative aspect of converting to an online course was in working through the calculations and directing the students' attention appropriately during the lecture.

Prior to teaching the online version, the course breadth, organization, and delivery was re-examined. Even though the focus of the class was on understanding statistics from a consumer perspective, the breadth of material remained the same as it was in a traditional setting; however, changes were required in both the organization and delivery of the course.

Considerations for Organizing and Delivering the Course

Overall, the students taking the statistics course online had little, if any, experience with completing online courses. For many of the students, this course was the first online course they took. As stated previously, it was also the first time the instructor taught the course online. Other than the collegial assistance provided by the first author, the course instructor received no specific training on how to teach online, and had a limited understanding of what technological tools were available for the development and implementation of the course.

This course was designed to be delivered in weekly modules. Each weekly module began with an overview. This overview was a one page summary that contained the module's description, objectives, lecture topic, the assigned homework, and the assigned discussion topic. The module also contained voice-over PowerPoint lectures. In organizing the course, it was important that, as Larson (2002) has argued, the course be student-centered. Voice-over PowerPoint lectures were created to simulate the lecture environment, and were designed to provide students with the material in both auditory and visual modes. They were also used for demonstrating to students how to work through problems. Though PowerPoint was a comfortable and easy-to-use program, it was chosen primarily because of the limited number of other options the university held licenses for. Despite the ease of use, voice-over PowerPoint slides were time consuming to create, and their use as a demonstration tool required great clarity about

anticipated problems the students might have in their understanding. In a traditional classroom, the instructor has the luxury of repeatedly explaining the problem using different explanations each time which often results in greater clarity for the students. Though students have the benefit of being able to view and listen to a voice-over lecture as often as they wish, if the explanation consists of the same content and is presented in the same manner each time, it may not facilitate a greater understanding of the material. In our course, practice problems were presented within the module to assist the students in performing calculations. The solutions to the problems were presented both verbally and visually within the PowerPoint presentation. Each lecture then concluded with a summary of the important concepts.

Weekly homework assignments and discussion assignments were assigned to facilitate student engagement with both the material and the instructor. All homework assignments were delivered to the students within each module. Students submitted their individual homework assignments by uploading them in an attachment via Blackboard. Discussion assignments were created using the Discussion Tool. Students submitted their Discussion assignments in an area of Blackboard for "public" threaded discussions that were viewable by all students. The instructor then provided feedback on issues of common misunderstanding in the public Discussion forum so all students could view it.

In submitting their assignments, students had the option of scanning their worksheets to show their calculations. Following the submission of their homework assignments by the assigned due date, the instructor provided the students with detailed, written solutions to the problems. While the homework assignments did require students to compute some statistics, the online discussion questions were designed to assess whether students understood how to apply statistical concepts. As the course advanced, so did the expectation that students would become more sophisticated in their ability to apply statistical concepts. Since this course was oriented more toward an understanding of the appropriate use of statistics and not how to *do* statistics, students were not required to purchase or use a data analysis program such as SPSS.

In addition to homework problems that required some statistical calculations and discussion assignments that required application of statistical concepts, the students were required to complete four exams. The four exams were multiple-choice and were completed solely online using Respondus. The exams required students to do a modest number of calculations to obtain correct answers, but focused primarily on their ability to apply statistical concepts.

Students who had questions e-mailed them to the instructor. The instructor responded to all individual questions and common issues and questions were addressed by the instructor through class announcements on Blackboard. Because all students enrolled in the course were able to view this area of the course, a single inquiry by a specific student could be answered by the instructor in a public forum so that all students could benefit. Further, it virtually eliminated the need for the instructor to respond to the same question submitted in a series of e-mails by several different students.

Pedagogical Considerations

Although the scope of the course wasn't condensed from the traditional classroom version for online presentation, the material within each weekly module was reassessed for the most important concepts and applications the students needed to know. This reassessment was driven not just by pedagogical considerations, but by the time it took to create, write, and record the lectures. Unlike a traditional classroom setting, the online environment allows students to obtain only that information deliberately presented to them, either by the instructor or by their peers. Unless the "Discussion" or "Live Chat" features of Blackboard are used to open up discussions to all members of the class, each student must make a deliberate attempt to contact the instructor or peers for clarification on the material or to have questions answered. The requested information or clarification is then relayed back to the student by the instructor, usually in written form. Thinking through how to best communicate clarification of the material is time consuming, and requires that the instructor be deliberate in her attempts to avoid actually adding to the student's confusion. This requires that the student also be very clear about what information they are soliciting—a particular challenge for undergraduate statistics students who are likely experiencing their own confusion. The frequently spontaneous question-and-answer dialogue that takes place between student and instructor in traditional classrooms is not generally available online, and can be tedious and time-consuming when done in writing over the course of several e-mail contacts. Thus, online pedagogy requires that the student assume a higher level of responsibility for their own learning because it necessitates that they seek out clarification and not wait for the instructor to solicit it directly. There is no

instructor standing in front of students asking follow-up questions to assess understanding or summarizing what they believe students have said. Perhaps more importantly, there is no instructor immediately available to "right the course" of their thinking for them in real time.

The module overviews created by the instructor for the students provided an organizational mechanism for assessing whether the homework and discussion assignments added to the goals of a specific lecture or whether they constituted extraneous "busy work". What resulted were specific goal-directed activities and more concise and poignant lectures that had streamlined, relevant application. Students had the advantage of knowing exactly what each module would cover, and could check off whether they could demonstrate an understanding of each of the goals as they moved through the model. Organizing the modules this way also had the important benefit of allowing the students to listen to the lecture as many times as they desired.

When this format was brought back into the traditional classroom, the more concise lectures allowed for more in-class practice and enhanced the instructor's ability to stay on schedule. This approach, when combined with restructuring the course material into weekly modules, allowed the class to stay focused on the topic for each week. Using weekly modules for the presentation of material and the assignment of homework created natural divisions for new material to be presented at the beginning of each week.

There were two unexpected results when this format was translated into the traditional classroom setting. First, because the lecture material was more clear and concise, there was more time available in class. This additional time was used to provide additional practice examples or to have students engage in peer learning activities to reinforce the lecture material. Typically, when teaching in the traditional classroom in the past, the class would run behind schedule because of student inquiries generated by a lack of understanding; however, the more concise format allowed the instructor to be more flexible in addressing student concerns while still maintaining the schedule of the class.

The second unexpected result was a realization on the instructor's part that, in the past, she felt she had to entertain the students to keep them interested in statistics and obtain good teaching evaluations. Recognizing the benefit of creating clear and concise lectures, content was reduced. Upon reflection, the instructor realized that the majority of the content she cut was related to "interesting" stories. These stories didn't add to the goals of the lectures and were primarily used for entertainment. While still using occasional purposeful humor in the classroom, the "stories" have effectively been eliminated without negative repercussions in student evaluations of either the instructor's performance or their own.

Considerations Regarding Student Learning

Student learning ought to be at the heart of any pedagogical strategy or technique, regardless of whether the class is delivered online or in a more traditional classroom setting. Assessing student learning in online courses, however, presents some unique challenges. One area where there are opportunities for improved assessment techniques is in the assumptions that underlie student-instructor interactions. Many of these interactions occur in traditional classes during help sessions held outside of class time, usually during the office hours of the instructor. Prior to teaching online, the instructor made an assumption that a student's presence in class equaled at least some understanding. That is, the student was in class and had therefore, heard the lecture, worked the practice problem, and/or participated in other classroom activities. When that student came to a help session outside of class, the instructor approached these sessions as a diagnostic session to evaluate what parts of the lecture the student didn't understand and then adjusted her attempts to clarify understanding or present information the student appeared to be lacking.

When the course was taught online, help sessions were provided via email, phone, and the traditional in-person sessions. Because of the different methods of communication, the instructor had to become more versed in how to answer questions without being ambiguous or more confusing. More importantly, she found that she did not make any assumptions about what the students knew. Unlike with a traditional course, she had no validation that the students actually watched or understood the lectures. She found that because she approached the interaction with no assumptions about what learning had already occurred, she was able to listen more and be more creative in her ability to address the underlying issue of their confusion or misunderstanding.

Professional Development

In developing the online course, the instructor had to learn how to use different technologies. For example, she had to learn how to record lectures with a microphone, create her own "animation" in PowerPoint, and find websites that contained applets or other projects that might enhance the lectures and discussion assignments. That experience has made her more comfortable in using the technologies in the "smart" classrooms on campus, and in creating the next incarnation of the online statistics course. For example, she will be using a computer tablet in conjunction with the software, Camtasia, to create more real-time, advanced lectures for the online course. The exposure to the online course has made her both more aware of and receptive to using other technology in the traditional classroom in order to enhance content delivery.

Another advantage of having the modules from the online class prepared and on Blackboard is the ability to use these modules for instructor absences in a traditional course. With the outbreak of the H1N1 virus, the campus was required to identify back-up plans for handling unexpected, long-term illnesses. The typical response was to identify other faculty members who could cover the class. This was also the typical response for those instructors who had absences due to attendance at conferences or participation in training sessions. In her previous experience in teaching introductory statistics, the instructor found that the substitute instructors who covered her statistic courses in her absence were not well-received by the students. Given that the substitutes had different teaching styles and approaches to statistics, it was often the case that she usually had to repeat the material or do damage control when returning from an absence. This resulted in losing time and created a need for the course schedule to be adjusted. With the lectures already on Blackboard, she has the additional resource of using lectures that follow along with the on-site course and, therefore, does not lose any time or cohesiveness with the course material. This strategy also allows students who miss class because of illness to have a way to retrieve course material without falling behind.

Summary and Conclusions

As noted previously, there is little doubt that online teaching and learning requires more time in both preparation and delivery; however, the point was previously made that this should not necessarily be the case. Good teaching in traditional classrooms, when done well, also requires a significant amount of time to prepare and deliver. We argue here that both teaching and learning would improve if many of the considerations inherent in the preparation and delivery of online learning were given priority in courses delivered in traditional classrooms.

It is hoped that the key issues addressed here will assist faculty in the preparation and delivery of their traditional courses. In summary, the benefits for traditional instruction in statistics through the use of online pedagogy are:

1) *Improved ability to know what material is "essential" to the students' understanding and learning.* A focused delivery of traditional pedagogy minimizes student confusion and misunderstandings and leaves time for additional activities that can be used to enhance student learning.

2) *Improved ability to logically and consistently organize and deliver course material.* The use of weekly modules containing an overview that summarizes the lecture topic and objectives is helpful to both the instructor and the student in organizing course material

3) *Improved willingness to seek out and complete training on how to teach in the traditional classroom.* While some colleges and universities require training to teach online, few, if any, require training to teach in the classroom. Many colleges and universities provide both individual and group training to instructors who are new to teaching, and the experience of teaching online can enhance an instructor's desire and ability to be a better teacher in the traditional classroom.

4) *Improved ability to create multiple strategies for the submission of student work and clarification of misunderstandings.* The experience of teaching online enables instructors to devise varied strategies for the submission of course work, and provides additional arenas for the instructor to clarify misunderstandings in a forum in which all students can participate.

5) *Improved ability to use new technologies for the development and delivery of instruction.* Knowing what tools are available for course development and delivery can broaden an instructor's ability to prepare course materials and deliver them in creative, stimulating ways.

6) *Improved ability to maintain the course schedule.*

7) *Improved ability to maintain contact with all students in the course.* In traditional classrooms, students can sit quietly for weeks, engaging little, if at all, with the instructor, the material, or their peers. Teaching online exposes instructors to a wide variety of strategies for enhancing student engagement because they must participate.

8) *Improved pedagogical versatility.* Being proficient teaching in multiple venues increases one's own instructional flexibility, and also increases the flexibility of a department to deliver instruction to students.

9) *Improved student access to the course material during instructor absences.* Having the course material created by the instructor available during the instructor's absence facilitates student learning and helps maintain the course schedule.

10) *Improved student learning due to the repetitive availability of course material, including practice problems and solutions.* Once voice-over lectures have been created, they can be uploaded to Blackboard for use in any course.

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