



The choice of reduced seat time in a blended course



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ABSTRACT

Two instructional features are available to students in blended courses that are not present in traditional courses. First, online content is available with the intent that it substitutes for a portion of face-to-face lectures or other in-class types of material delivery. Second, in-class seat time in a blended course is reduced as compared to a traditional version of a course. In this study, we explore student choices of reduced seat time in a blended course that does not have a punitive attendance policy, uses online lectures rather than in-class lectures, and conducts alternative, but optional, in-class activities. After taking into account the skip rate that occurs in the traditional version of the course, we find an interval estimate of 49% to 63% for the mean reduction in seat time chosen by students in the blended version of the course. Also, using empirical models of attendance, we find that student use of online materials contributes in a positive way to class attendance.

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1. Introduction

The blended format has become a popular mode of course delivery in higher education. Parsad, Lewis, and Tice (2008), in a report from the National Center for Education Statistics, define blended courses as combining online and in-class instruction with reduced in-class seat time. The concept of blending instructional materials with online delivery modes to replace a portion of in-class seat time has proven to be an attractive alternative to traditional courses that are characterized by face-to-face lectures and full use of the classroom time allotted to the course. A substantial number of studies have promoted the blended trend and have evaluated its progress and evolution. For example, Garrison and Kanuka (2004) and Klein, Noe, and Wang (2006) consider blended learning to possess transformative potential by promoting new and higher levels of student responsibility, control, and independence, and by raising levels of critical thinking. However, there are challenges and tensions in blended learning. Garrison and Kanuka (2004) note that it can be difficult to combine face-to-face and online delivery in an effective way. Integration of the delivery methods must result in a new “blend” rather than being an addition of one to the other. There are also resource issues that accompany transitions to blended formats such as the need for classroom and course management technologies, technical support, and course development assistance. Reasonable support with these resources is critical to producing a high-quality and effective blended learning environment. Many benefits and challenges associated with blended learning have been investigated. Arbaugh et al. (2009), Arbaugh (2014), Halverson, Graham, Spring, Drysdale,

and Henrie (2014), and O’Flaherty and Phillips (2015) provide extensive surveys of a wide variety of blended studies.

As instructors consider moving in the direction of blended learning, or revise existing blended courses, a natural question arises: “What degree of blending should be used, that is, ‘how blended’ should the course be?” Instructors, curriculum committees, or other educational officials will usually have the last word, but students can also provide evidence to take into consideration when establishing the degree of blending. At one end of the blended spectrum is the traditional course with a full class schedule of face-to-face lectures and incorporating little or no online content, while at the other end is the purely online course. We propose that students, when given the opportunity, will determine “how blended” a blended course will be by selecting their own levels of reduced seat time.

The blended course in this study is a collegiate introductory course in business and economic statistics where lectures are only available online while the class period is used for complementary learning activities. No formal lectures are given in class and the course does not have an attendance policy. Students are free to create an approximation to a traditional course by regularly attending class periods. At the other extreme, if students choose not to attend class periods they effectively create an online course and do so without fear of incurring an attendance penalty. Observing student preferences for reduced seat time in such a flexible framework can provide input into the design process for blended courses in general. Further details about the structure and characteristics of the blended course examined in this study are given in Section 3.

Attendance decisions and the availability of online materials have been studied in the context of traditional face-to-face courses (they would be classified accordingly as “web-enhanced”) and blended courses that provide face-to-face lectures as a component of the course

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portfolio. Representative studies include Kinlaw, Dunlap, and D'Angelo (2012), Traphagan, Kucsera, and Kishi (2010), and Grabe, Christopherson, and Douglas (2005). Examples of online materials involved in those studies include webcasts of face-to-face lecture captures, lecture outlines, lecture transcripts, lecture slides, and course readings. A recurrent finding is that the availability of online materials of the types in the preceding list creates negative incentives to attend face-to-face lectures. However, there are exceptions. For example, survey results reported in Yudko, Hirokawa, and Chi (2008) do not point to a negative effect upon attendance from the availability of online materials. Because our blended course does not have a face-to-face lecture component, the results from the above studies are only suggestive as to how online materials affect student choices of reduced seat time.

1.1. Research questions of the study

We present evidence on several aspects of the reduced seat time feature in a blended course. The research questions are as follows:

1. What reduction of in-class seat time do students prefer when given the choice? Attendance records are used to establish the preferred reduction in seat time.
2. How does the reduction of in-class seat time compare with the frequency of class skips in a traditional course? We use a traditional section of the same course, delivered with classic face-to-face lecture methods, as a comparison group to measure the traditional frequency of class skips. Interval estimates of the percent of reduced seat time, after taking into account the traditional frequency of class skips, are prepared.
3. What factors affect class attendance in a blended course? An empirical model of attendance is constructed and estimated in two formats to address the question.
4. Is attendance in a blended course reduced by the use of online materials? Two measures of online materials usage are considered, the volume of accesses to online materials and the consistency with which the materials are accessed during the course. Estimates of the net effect upon attendance from the two measures are developed.

By addressing the above research questions within the unique environment of our blended course, we will extend the research strand represented by the previously noted studies that have dealt with attendance in blended courses. Kinlaw et al. (2012, p. 171) offer direction when they state “future studies could vary the types and combinations of materials available to different sections of a course”. In the traditional section, lectures are exclusively face-to-face and no online versions of lectures are available. In the blended section, we offer students full replacement of face-to-face lectures with online versions and the opportunity to receive complementing instruction and assistance during class meetings.

2. Literature review

In this section, we review a variety of studies that have offered specifics about the structures of blended courses and have carefully described the reductions in seat time versus traditional versions of the course. Our purpose is to convey a general sense of the frameworks, protocols, and activities used by instructors of blended courses once the decision has been made to reduce the seat time versus that in the traditional version of a course. We also want to illustrate the wide variety of reduced seat times that are present in blended courses. Since our blended course is in introductory statistics, we over-represent that subject area by reviewing four studies followed by four studies from other subject areas.

Utts, Sommer, Acredolo, Maher, and Matthews (2003) describe a blended course in introductory statistics that featured a 60% reduction in seat time versus the traditional version of the course. The blended course offered one mandatory class meeting per week where students

completed a quiz covering materials that had been previously assigned for the week. After the quiz, the instructor presented an overview of the materials the students would be required to learn for the following week. As part of the blended course, students also had to complete weekly homework, a midterm exam, and a comprehensive final exam.

Introductory statistics was also the subject in Ward's (2004) blended course. The reduction in seat time was 50% with one class session of 75 minutes being held per week. During the session, the instructor did not present new material, using the time instead to answer questions related to problems and practice worksheets, and to administer quizzes and tests. Emphasis was placed on the importance of learning the materials outside of class. The attendance policy for the weekly class session was not discernible from the course description so it is not clear whether students could choose to attend or not. This was also true in an introductory statistics study conducted by Lovett, Meyer, and Thille (2008). In this case, the overall number of class meetings in the traditional and blended courses was 60 and 16, respectively, creating an effective reduction in seat time of 73%. Class meetings for the blended course were used to work on challenging problems, conduct discussions, and complete three midterms and a final exam.

Cybinski and Selvanathan (2005) is the final course from the introductory statistics area that we summarize. After attending a two-hour plenary session in the first week of class, students had the option of attending three hours of class time every week consisting of a two-hour workshop and a one-hour laboratory session. The traditional version of the course held four hours of class time every week. Based on a student that chose to attend all available class meetings in the blended course, the reduction in seat time was 25%, a relatively minor reduction. However, because attendance was optional, a student could effectively create a purely online course with a reduction in seat time of 100%. Students were expected to use an online learning tool containing modules of content keyed to the major topics in the course. Within that tool, students participated in online practice sessions and quizzes on a weekly basis.

There are a number of studies that have carefully described the reductions in seat time versus traditional versions of a course in subject areas other than introductory statistics. Riffell and Sibley (2005) describe a blended version of their environmental biology course that enforced a substantial reduction of 67% in seat time versus the traditional version. The single weekly lecture class in the blended version was termed an “active” lecture environment. A short lecture of 5 to 15 minutes led off the class meeting followed by giving students a problem to complete that would be graded. Students could collaborate with others and ask questions of the instructor while completing the task. After the work session was completed, the instructor gave a short wrap-up lecture about the completed problem. Attendance was taken in the blended class.

Keller, Jassell, Webber, and Johnson (2009) created a blended version of a managerial accounting course by eliminating one of the two weekly class meetings in their traditional offering, for a reduction in seat time of 50%. Students in the blended version were assigned to teams and worked together on problem sets that were submitted online to the instructor. Online practice quizzes were also featured in the blended course but no other customized materials, such as online lectures, are mentioned by the authors.

Ashby, Sadera, and McNary (2011) examined a blended course in intermediate algebra. The course was listed in the course schedule as meeting twice a week but students were informed on the first day of class that only one class meeting per week would be held and that the second meeting would be replaced by an optional lab. Thus, students had a choice to reduce seat time up to 50%. Lectures and other class activities common to a traditional version of the course were conducted during the single class meeting of the week. At the optional labs, the instructor was present to answer questions and provide assistance with the online content. The authors noted that the attendance rate at the optional labs was low. Relatively low attendance was also experienced by McKenzie et al. (2013) in their blended version of an introductory

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