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# Teaching Online - A Time Comparison

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## **Abstract**

The success of distance courses has prompted universities nationwide to increase the number of courses offered online. As the number of these courses has increased, the challenges involved in developing and offering them have become more apparent. One particular difficulty when teaching in an online format is that it can be more time-consuming than teaching in a traditional in-class format. This case study investigates this issue through the use of a detailed comparison of the time required to prepare and teach a traditional course, and that required for the same course presented in an online format. The additional time required by the online format is found to result largely from increased student contact and individualized instruction and not from the use of technology per se.

## **Introduction and Significance of the Study**

There has been a rapid growth in the institutions offering distance education courses and the number of students that are taking online courses. During the 1999-2000 academic year 7.6% of all undergraduates took at least one distance education course and 60% of these courses were offered online. By the 2000-2001 academic year, 90% of public institutions offered distance-education courses. Looking specifically at the fall term 2002, 81% of all higher education institutions offered online courses and over 1.6 million students took at least one of these (Allen and Seaman 2003, NCES 2003). The developing and offering of these courses has not come without significant challenges. One difficulty faced by instructors of online courses is the large time requirement involved in teaching these courses.

This study directly compares two courses, one online and one in-class, in order to determine the factors that result in the teaching time disparity. Two courses were taught and logged simultaneously by the same instructor. This analysis compares time spent teaching online courses with

teaching in-class, and discusses why online courses require additional time to teach.

## **Background Literature**

Many studies have found that online courses require significantly larger workloads and report that instructors think teaching online was more difficult than teaching in-class courses. Hartman, Dziuban, and Moskal (2000) surveyed 32 online instructors and found that 90% of the instructors believe online courses were more difficult to teach. This was a result of workloads increasing due to increased interaction with students. Sellani, and Harrington (2002) discussed many of the unique challenges that administrators and faculty face when teaching online. They found that, "Faculty complained that the online delivery was more labor-intensive in the amount of time to grade papers and respond to questions." The increased time commitment has also been found to be a major barrier to faculty participating in distance education (Schifter 2000, Berge et al. 2002, O'Quinn and Corry 2002). Other research has compared online to in-class formats. These studies found distance courses were no less effective than traditional in-class formats when looking at the learning results of students (Lim 2002, Neuhauser 2002, Ngu 2002), students were generally satisfied with distance learning (Allen et al. 2002, Moore 2002), and the drop out rates occurring in distance courses were higher than those of traditional courses (Osborn 2001, Xenos et al. 2002). Retention rates are, however, often difficult to measure and some authors have disputed this finding (Carr 2000, Howell et al. 2004).

Similar to the study performed here, time logs have been used by other authors to measure the time spent teaching online courses. Some studies have found a significant amount of time is due to individual interaction between the instructor and student. However, they did not log the time it would have taken to teach the same course in an in-class format (Lazarus 2003, Doube 2000). In another study (Ben der et al., 2004) logs were used in both a distance and an online computer-aided design course (CAD). The results from this study indicated that distance courses take less time to teach than conventional in-class courses. Ben der noted a number of limitations in their study including a heavy reliance on time logs created by numerous student teaching assistants. Also it was the first time the course was taught online for the teaching assistants as well as the instructor.

## **Course Comparison**

To allow for a direct comparison, the study performed here logs time spent teaching Introduction to Economics, EC 201, as an online course and in an in-class format. The time logs in each section were separated into the

following categories; Course Preparation Time, Time Spent Teaching, Office Hours, and Final Tasks. These two sections were taught during the Fall Quarter of the 2002-2003 school year. The instructor has taught this course in-class for ten years and has three years experience teaching online. Over the three years four different courses and 15 different sections were taught online. The particular course logged in this study has been taught three times as an online course. Teaching assistants were not used in either section. In order to minimize the amount of preparation time, and to keep the courses similar in coverage and difficulty, the courses were made as similar as possible. Both courses used the same textbook, covered the same material, and had many of the same assignments. Although there are many similarities between the two versions of the course there are significant differences that are important to consider when making this comparison.

The online version makes use of WebCT version 3.6 as the courseware. There is one quiz for each of the ten chapters covered in the course, a midterm, and a final. The quizzes, midterm, and final are made up of essay and multiple choice questions. The students are also graded on eight one-page current event write-ups. The course materials that the students receive when taking the course include the text, a CD containing electronic presentations for each chapter, the syllabus, and a packet containing information about taking this WebCT course. The students receive extra-credit by participating in the chat rooms or contributing to the online discussion groups. There is a fifteen person class size limit for the online course and fifteen students enrolled.

The in-class version has two tests and a final with multiple choice and essay questions that are similar to the online course. The students are also graded on three homework assignments and five article write-up assignments. There is a forty person class size limit for the in-class course and forty students enrolled. The students in both the online and in-class courses are given the professor's email address, and work and home phone numbers. In both versions of the course the students are encouraged to make contact with the professor and leave messages if they have any questions about the material or the course in general.

### *Course Preparation Time*

The course preparation time includes start-up time for each section, for each term before the courses begin. The course preparation time was significantly longer for the online course due to updating the online portion of the course, contacting the students, and getting the students started. This time was not required for the in-class course.

Using WebCT allows for the development of an online course without html programming knowledge but it still requires the instructor to provide the content. The time involved in uploading the content and setting-up the course for the first time is not included in this study. However, every quarter a significant amount of this content is added to, reworded, or eliminated. For example test questions are added, changed and deleting every time the course is taught. Kaiden (2002) provides a detailed review of WebCT that specifically describes the time-consuming process of creating a multiple choice question using WebCT. In addition, many items are specific to the particular quarter the course is taught and therefore have to be changed and/or uploaded into WebCT. In this course the syllabus, discussion questions, and calendar entries were uploaded and the due dates of each of the online quizzes and tests were changed. Each term information packets are sent to each student that give them instructions about obtaining their Student Campus ID and Password. Course CDs are provided to students that contain electronic presentations for each chapter. Changes are made to the CD that necessitate cutting and labeling new CDs every quarter. Time Spent: 28 Hours.

Some students initiate contact with the professor before the quarter begins. They are then provided with information on obtaining the course materials and logging in. The majority of students wait until they are contacted before they take any action with respect to taking the course. This requires multiple telephone calls to over two thirds of the class during the first week of classes. Time Spent: 4 Hours.

Many students call and email asking about future online courses or asking permission to add the course. The online version of EC 201 has closed every time it has been offered and the waiting list is typically over ten students. During the term used for this comparison, forty six students called asking for permission to take this course or for information about an online course offered another term. Time Spent: 3 Hours.

For the in-class section the syllabus was updated and revisions were made on a CD containing the course electronic presentations. These presentations are different than the presentations that are used for the online section. The in-class presentations are significantly smaller, containing about half the number of slides and very little media or interactive assignments. The simplicity of the in-class presentations and syllabus significantly reduces the time that is required for any changes that are made from quarter to quarter. Time Spent: 3 Hours.

### *Time Spent Teaching*

The time spent teaching is made up of the time spent communicating with students online and the time spent during the scheduled meeting times for

the in-class section. Specifically the time spent teaching online is made up of one-on-one email, phone conversations, discussion groups, chatroom questions and answers, and help in my office. This communication has been found to be one of the most time consuming parts of teaching an online course (Lazarus 2003, Wickstrom 2003). This time could be reduced by limiting students' interaction but it may have a negative impact on the quality of the course (Offir et al. 2003, Savenye et al. 2001, Flowers 2001). Alternatively, online communication has been shown to improve the quality of education and does not have to be unduly burdensome on the faculty's time (Gresh and Mrozowski 2000, Sinn 2004, Friesen and Anderson 2004).

The average number of emails per class taught online has been between 300 and 600 over the past ten online courses taught. The online version of EC 201 course used for the comparison in this study had 429 emails. This number includes replies to the student but does not include any mass emails that are sent to the entire class. The time spent reading and responding to these emails varied considerably. Most emails contained a short message that said a write-up assignment was attached. But many emails asked multiple questions that required writing lengthy replies. On six occasions a telephone conversation or a meeting in the office was suggested after multiple emails made it clear the student was still having problems with a concept. The average email contained slightly over one hundred words in the body of the email. Time Spent: 36 Hours.

A significant amount of time was spent both at home and in the office on the telephone answering course questions and dealing with technology related issues. The calls taken at home were usually more urgent and took on average five minutes longer. For example quizzes and tests had to be re-set when students taking them were disconnected due to technology problems. The questions received at the office phone were more often over the course content or technology related problems early in the course. Also included in this category was the time spent answering phone calls from students who were interested in taking future online courses. Time Spent: 30 Hours.

Participation in the discussion groups and using the chatroom were not required for the course although the students did receive extra-credit for contributing. For twelve different threads, discussion questions were provided and later answered in order to stimulate discussions. The time devoted to asking and answering discussion group questions and monitoring and responding to questions in the logged chatroom was fairly small due to low student participation. There were forty six discussion group entries. Total Time Spent 7 hours.

The time spent teaching the in-class section consisted of my time in-class for lectures and exams. Total Time Spent 27 hours.

### *Office Hours*

The office hours time is the amount of time spent with the students of each section during office hours. The specified office hour times were the same for both sections. There were far more students from the online section that came to the office for help than from the in-class section. About half of the students taking the online course were also simultaneously taking other in-class courses in the same building. These students called to schedule meetings in the office or often would stop by the office without an appointment. Per student, helping students in the office was longer for the online students and often outside the scheduled office hours. Online students typically would come with many questions pertaining to material spanning numerous chapters. Total Time Spent 44 hours.

For the in-class section, four students came to the office during office hours. These four students came together asking the same question. Five other visits by students were not scheduled and not held during the office hours. Total Time Spent 32 hours.

### *Final Tasks*

The time spent in the final tasks category involved miscellaneous administrative type duties that were performed at the end of the course for the online section. The student course evaluations were downloaded and formatted into a word document. The WebCT course was backed up and then re-set. Individualized emails were sent to each student thanking them for taking this course and reminding them to register quickly if they were planning on taking the next course in the sequence. Total Time Spent 3 hours.

## **Results**

This study has three findings: 1) the number of students in online classes predicts the time spent by the instructor at a directly proportional rate, 2) online time on task is tied directly to the course quality, and 3) time demands for even small online courses exceed those for in-class courses.

Table 1 contains a summary of the total time spent teaching in the two formats separated into the three major categories. Across all activities the longer time spent teaching in the online format was mostly due to the individualized attention that the instructor provided to the students. This difference between instructor-centered teaching and student-centered teaching was a fundamental reason for why there is such a substantial

difference in the time spent. To a lesser degree the other reason for the time difference was due to the technology used in the online course. Specifically the online course required additional time to set-up, maintain, and complete final tasks. It took over twice as much time to teach the same course online compared to in-class. This was true even while there were less than half the number of students in the online compared to the in-class section.

**Table 1. Summary of Total Time Spent (Hrs.)**

<b>Summary of Total Time Spent (Hrs.)</b>		
<b>Activity</b>	<b>Online</b>	<b>In-class</b>
<b>Preparation</b>	<b>35</b>	<b>3</b>
<b>Teaching</b>	<b>73</b>	<b>27</b>
<b>Office Hours</b>	<b>44</b>	<b>32</b>
<b>Final Tasks</b>	<b>3</b>	<b>0</b>
<b>Total</b>	<b>155</b>	<b>62</b>

As a result of the individualized attention that the instructor provided to students of the online course the time demands on the instructor are closely tied to the number of students that are enrolled in the course. Table 2 contains a summary of the time spent that can be directly attributed to individual students. There were 13 students that completed the online course since one student withdrew and one student did not complete the course (including this student would reduce the online per student time to 6.29 hours). The average amount of time spent per online student was about 6.77 hours (6 hours and 46 minutes). Regarding the in-class section, 38 students remained from the original 40 as a number of students dropped and added the course in the first few weeks. The amount of time that can be attributed to individual students for the in-class section was .05 hour (3-4 minutes) per student.

**Table 2. Time Spent (Hrs.) Attributed Per Student**

<b>Time Spent (Hrs.) Attributed Per Student</b>		
<b>Activity</b>	<b>Online</b>	<b>In-Class</b>
<b>Preparation</b>	<b>4</b>	<b>0</b>
<b>Teaching</b>	<b>68</b>	<b>0</b>
<b>Office Hours</b>	<b>14</b>	<b>2</b>
<b>Final Tasks</b>	<b>2</b>	<b>0</b>
<b>Total</b>	<b>88</b>	<b>2</b>
<b>Per Student</b>	<b>6.77</b>	<b>.71</b>

To reduce the overall amount of time spent teaching online, the time spent communicating with students individually would have to be shortened. The time emailing and the time spent answering students' questions on the phone accounted for the majority of the time spent teaching (66 hours). Reducing this contact with students would provide students with less feedback which could have a detrimental effect on the quality of the instruction.

### **Concluding Comments**

The raw time amounts reported in this study are specific to two sections of one particular course. Therefore, the time amounts reported here should only be viewed as a rough guideline of the time demands faced for each specific task. However, the construct of this study provides a means to focus specifically on the teaching time differences. Since both of the course sections compared in this study covered the same content, and were taught by the same person, this study eliminated the differences in teaching times that would arise from differing instructors or different courses.

This study finds that the amount of time spent teaching an online course increased directly with the number of students enrolled. Each additional student required 6 hours and 46 minutes of additional instruction time. The amount of time spent teaching online was over twice the amount of time spent teaching in-class. Per student, the time spent online was over six times larger than the time spent teaching in-class. The major difference in the time spent teaching online was in communicating with the student. It is probable that any significant reduction in student communication would have a negative effect on the quality of the instruction. These conclusions are likely to be applicable to a wide range of online courses, but the author recognizes that this study faces severe limitations. Additional comparison studies are needed from instructors teaching a wide variety of subjects, and using a variety of different online teaching formats, before more definite conclusions can be drawn.

There are many advantages to teaching online. It provides flexibility to the instructors schedule and is a rewarding format for faculty with a keen interest in the application of technology in their teaching. Although the time demands here were large, teaching online was significantly less burdensome than these numbers suggest. The reason for this is because the work was largely performed at the convenience of the instructor. Even so, this analysis did not address the large front-end cost of developing an online course, or any additional grading time that may be required for an online course. All of these issues should be considered carefully by an instructor or an administrator thinking about developing/offering an online course.

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