Extended Abstract with Poster

Case Study: Course Access Habits of Online Graduate Students that are Working Professionals

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Abstract

The objective of this extended abstract is to present a case-study providing insight into the course access habits of online students, specifically those that are working professionals pursuing a graduate degree. The case study involved a small class of nine working professionals pursuing an online graduate degree in mechanical engineering. While these results will vary with student population, this work provides a fascinating insight into how online engineering students approach their coursework. Data such as this can aid faculty into selecting appropriate deadlines for assignments and setting aside virtual office hours that best meet the needs of the working professional online student.

Introduction

More and more working professionals are turning to online learning to further their careers and remain competitive in the modern workforce, often with both the approval and support of their employers [1]. How their educational needs may differ from those of the classical on-campus graduate students is worthy of attention. As a first step, this extended abstract looks at the use patterns of student professionals taking an online graduate course through a learning management system. This has been done in the past for investigating student learning styles and web use patterns for undergraduate students [2].

Fully online courses present their own set of challenges. Modern online courses are more than merely recording a faculty member lecturing to an on-campus class, but rather include a variety of media and formats to present information to the students. When such a course is taught for the first time online, it is important to be able to look back at the course and determine what material the students accessed the most and what material could be replaced or eliminated.

Another issue is online presence: when is the best time to be available to answer questions for online students? One of the frustrations faced by online students is the time it takes for a faculty member to answer their questions. Being able to setup times for "virtual" office hours that match

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the times students are working on their assignments would not only increase student learning but improve their level of satisfaction with the course.

Course Setup for Case Study

The University of Texas at Tyler has recently begun offering a fully online master's degree program in mechanical engineering or civil engineering. What makes this program unusual is its compressed format: all courses are offered over seven weeks, rather than sixteen weeks, to make it possible for students to complete their degree more quickly.

This case study focuses on a seven-week fully online finite element analysis course with nine students enrolled. All nine students were full-time working professionals holding either an engineering or technical position. The students included an officer in the Civil Engineer Corps, a mechanical engineer working in research and development for a major biomedical company, a civil engineer at a local firm, an independent design and engineering graphics consultant, a structural engineer with 30+ years' experience, a petroleum engineer, and a mechanical engineer working in heat transfer. All students lived and worked in North America. The students included both civil and mechanical engineering graduate students, all with undergraduate degrees in engineering.

The course was presented to the students using the learning management system *Blackboard Learn*, which allows faculty to monitor student activity even without enabling statistics tracking on particular items [3].

All course materials were made available through *Blackboard* in form of video lectures, video demonstrations, handouts, and discussion forums. The midterm was a "take-home" exam and the final consisted of several finite element analysis problems to be solved using software tools. The students primarily accessed content, tools, announcements, discussion boards (which were assigned), and grades. By contrast, they made little to no use of email through the learning management system, calendars (only two students out of nine), or task lists available through Blackboard.

Course Material Access Statistics

Using Course Reports in *Blackboard*, it is possible to determine what content areas have been used the most, how many hours a student has spent actually logged into the course, and what days of the week and times of day the course is being accessed. Blackboard also records hits, where a hit is defined as every time a request is sent to the Blackboard learning system (basically, every mouse click) [3].

Homework assignments were due on Mondays or Wednesdays, and new material posted each Monday. Figure 1 illustrates that students accessed the course material primarily on Mondays and Thursdays. Weekends, it would seem, were not the primary time that the working students were accessing course material. The day of the week students most often accessed the course

corresponded with assignment due dates, and surprisingly most students did not access the course material very much on Sunday.

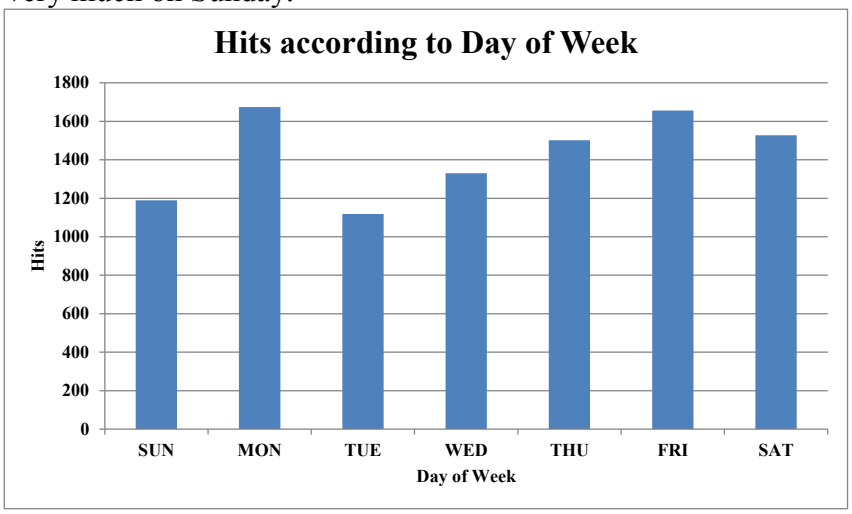

Figure 1. Chart illustrating online course activity during the week

The amount of information obtained about the time of day students accessed the course is extremely revealing, demonstrating that the professional students enrolled in this course had regular study habits and were not as likely to need help in the early hours of the morning (midnight to 6 am). This is illustrated by Figure 2, showing the total hits over the length of the course. The data indicates that the students accessed course materials the most at 10 AM, 4 PM, and 9 PM. This is similar to findings regarding the use of online tools for teaching electricity principles from 1996, where students were also found to access tools at consistent times [3].

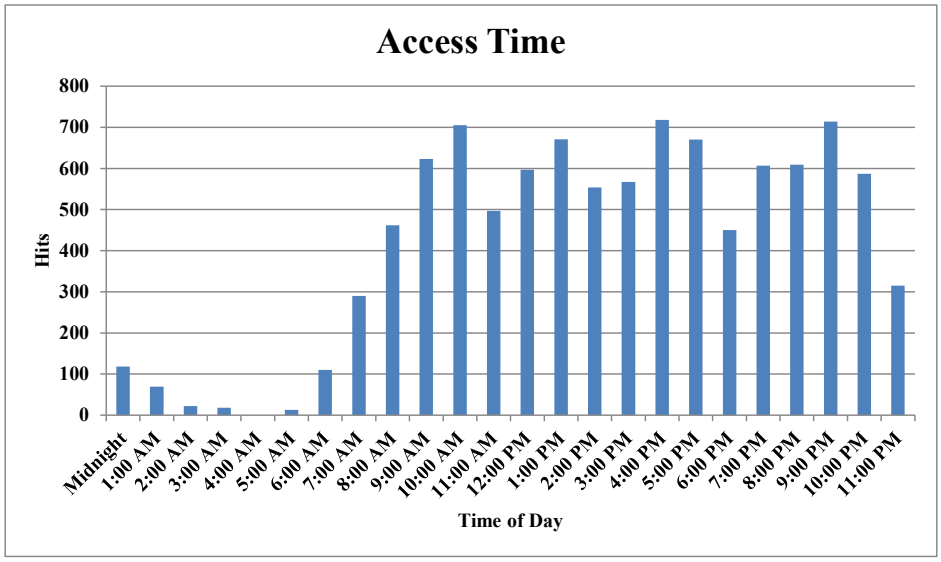

Figure 2. Chart illustrating online course activity versus time of day.

The data in Figure 2, however, is based on US Central Time, but not all students lived in the same time zone. However, the data remains important for a faculty member working to ensure that students have access to course materials when they need them.

The final fascinating statistic focuses on the hours spent logged into the learning management system. On average, the students spent 217 hours logged into the course, with the minimum number of hours being 44 and the maximum being 515.

Conclusions

The number of hours students were actively logged into the learning management system varied greatly, but could be explained in part by students downloading course materials to access offline at a later time. Variation in study time, however, is to be expected for any population of students whether online or traditional.

In spite of time zone differences for students located across the United States and Canada, this data indicates that there are common blocks of time where students actively engage in the coursework through the online learning management system. Very little time was spent working with online course materials during the early morning hours, with primary times of access being 10 am, 4 pm, and 9 pm CST. This could indicate that a morning office hour when the professor could be accessed via phone or Skype might be appropriate for this demographic of student, and could be convenient for both student and faculty.

Because these results were limited to only one course, there is not enough information to determine if there was truly an increase in activity immediately prior to the due date for an assignment. However, it seems logical that Monday, the beginning of the work week and of the academic week, was the most active day for the students.

Future Work

This case study is currently being followed up by a second online course, with a similar format, for which both overall course access statistics and individual course material statistics are being gathered. A comparison will be made between results of this research and the new results, as well as a look into what course materials the students actually use and which they may be ignoring.

References

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