The Impact Of Course Length On Online Numeric-Based Course Grades

Scott Mensch, Indiana University of Pennsylvania, USA

ABSTRACT

When offering online classes, it is necessary to ensure that all course material and objectives will be covered and learners will be successful in the course. This becomes especially important when the same class material and objectives are offered in a three-, five-, and fourteen-week format. This paper outlines the difficulty of delivering online classes such as algebra, accounting, and other courses that involve mathematical calculations over varying time frames.

The author of this paper has served on the Indiana University of Pennsylvania (IUP) University Wide Distance Education Committee that has investigated and studied their online course offerings in detail. While the author does not teach numeric-based classes, he teaches within the Eberly College of Business where many of these numeric-based courses are offered. The intent of this paper is to identify if there is a difference between letter grades based on the course length within numeric-based classes.

Keywords: Online Education; Course Length; Distance Education; Math in an Online Environment; Numeric-Based Classes

INTRODUCTION

There are many different variables that must be considered when designing an online class. This is only compounded when the same material is offered in a shorter accelerated based time frame. First, students who choose to take an online class may encounter issues with the various learning styles found in distance education courses. Previous studies by this author have found that students have a more difficult time in online numerical classes such as math, accounting, and statistics. "It is established that students taking such courses face a different set of challenges as compared to other online courses; thus, special consideration must be given when designing these online class rooms" (Mensch, 2009).

This paper serves to expand on previous findings to determine if course length also plays a factor on overall grades in an online numeric-based class. Specifically, this study will concentrate on numerical courses (such as math, accounting, and statistics) in an online setting offered in different course lengths. When working on the University Wide Distance Education Committee at IUP, the author noticed a difference in numeric grades when offered online as compared to a face-to-face format. This committee has been looking into the various courses that are taken online and possible methods to increase student success and grades. However, there was very little attention to the impact, if any, the course length had on student success. In researching the classes offered online, it was found that the majority of accounting, math, and numeric-based courses were offered in the 100-200 level range, with only one class residing in the 300 course range. This paper intends to examine what, if any, impact course length has on overall course grades and to draw a conclusion based on the data collected for the purpose of this study.

METHODOLOGY

All data used for this study was retrieved from the Institutional Research Planning and Assessment Department at IUP. A request was made to gather only the classes that were offered online and to separate the findings by course length between the years 2009 and 20012. IUP offers a traditional Fall and Spring fourteen-week

semester class. In addition, IUP also offers summer classes in two distinct formats. The first is a three-week class, while two additional summer session are conducted in a five-week format. IUP also offers a three-week class between the Fall and Spring semesters; however, these offerings are relatively new and they just began to add more course during this period. Due to this new offering and little data on this new format, these three-week classes were not included within this study.

The numeric-based courses that were identified and included in this study are as College Algebra 105, Applied Math for Business 115, Accounting Principles I 201, Accounting Principles II 202, Business Statistics 215, Probability and Statistics 217, and Fundamentals of Finance 310.

Planning for Online Courses that are Offered in Different Time Lengths

There are many variables that must be addressed when offering the exact same online courses with different time frames. In math based courses, these issues have some specific characteristics that make the resulting scores unique to this category. As Anderson noted, "the time-compressed courses have had varying results usually contributed to the prior preparation, work ethic, and desired outcome of the adult student" (Anderson & Anderson, 2012). A student's comfort level with mathematic and numeric-based courses will also play a key role here as advisors need to question students on their success and strengths in previous numeric-based courses when conducting academic advising sessions.

Kops found that "best practices include deconstructing single longer assignments into frequent shorter assignments, scheduling the first assignment early in the course in order to have students start immediately, and requiring an assignment outline early in the course that is counted as part of the grade." He also noted that faculty should "develop a longer planning horizon for courses taught in compressed formats." A teaching plan should be developed for the entire course, including scheduling opportunities for instructor-student interaction. Best practice instructors purposefully made themselves more available. Students do not have as much opportunity to connect with instructors during the summer session as they do in a full-length term. It is important for instructors to schedule longer and more frequent office hours. While all schedules are tentative, a clear path on day one outlining how the course will be divided and followed in a shortened state will provide the student with an opportunity to plan their study time accordingly and to identify important assignments and due dates.

Course Grades by Class Length

Below are the numeric-based courses identified at IUP between 2009 and 2012. The data are divided by the grades achieved as well as the withdraw rate that is identified by a "W" under the Grade column. While the university does offer a three-week class between the Fall and Spring semesters, this data were not included as these offering are relatively new and the majority were not offered over the same time frame.

As displayed in Table 1, there were no pre-summer three-week courses offered. However, the target rate of students who received an "A" or "B" final letter grade was higher in the five-week course offering as compared to the fourteen-week course. The percentage of students who fell into the target range in the five-week classes was 54.5% as compared to 45.7% in the full-term fourteen-week courses. Full-term fourteen-week course students were also more than twice as likely to withdrawal from the class, and the failure rate was also higher as compared to the summer five-week offerings.

Table 1: Online Numeric-Based Courses at IUP

Grade	2009-2012		
	Full-Term Fourteen-Weeks	Summer Five-Weeks	Pre-Summer Three-Weeks
A	22.14%	25.06%	0.00%
B	23.60%	29.44%	0.00%
C	22.94%	23.15%	0.00%
D	13.34%	10.88%	0.00%
F	12.11%	8.95%	0.00%
W	5.87%	2.44%	0.00%
Total	1336	792	0

It can be argued that the full-term fourteen-week students have a better grasp on their class standing and can make a better decision on whether they should drop the course before the deadline to drop occurs, which would also reduce the amount of failures. However, the target range of "A" or "B" final letter grades in the accelerated five-week offerings would not be impacted by withdrawals and would solely be based on the term length.

Table 2 provides the overall course grades during the same timeframe without the courses from Table 1 included. As shown, numeric-based course grades are drastically lower in the target range while the retention rates of non-numeric-based classes are much lower than numeric-based classes. The target range "A" or "B" final letter grade students was higher in the full-term fourteen-week course offering as compared to the five-week term. However, the highest target rate grades were achieved in the three-week course offerings for non-numeric-based classes.

Table 2: Online Non Numeric-Based Courses at IUP

Grade	2009-2012		
	Full-Term Fourteen-Weeks	**Summer Five-Weeks**	**Pre-Summer Three-Weeks**
A	44.24%	34.34%	57.01%
B	28.30%	29.79%	21.75%
C	14.34%	18.48%	9.55%
D	5.38%	6.83%	3.44%
F	7.05%	8.41%	7.35%
W	0.69%	2.16%	0.85%
Total	5026	1347	418

Based on these findings, additional care and time must be taken when offering numeric-based courses as the grades, overall, were drastically lower compared to non-numeric-based classes.

Methods to Help Improve Online Math Offerings

Online course rooms can be designed using distance education tools such as e-mail, discussions, live chat rooms, Pod casts, and videos. While each learning platform will have a different look and feel, the pedagogy, concepts, content, and communication methods implemented to deliver the material will remain the same.

There are countless resources and programs available when designing and sharing material in an online course. "Customized tools, such as Flash interactive programs, screencasts, Web casts, simulators, and virtual labs, enhance distance education classrooms. These tools provide unlimited possibilities when moving traditional classes into an online environment. Study cards, training material, and class concepts can be designed using Flash interactive programs to help students learn the course material. These tools are designed to increase a student's knowledge of material that the course designer has shared for further review" (Mensch, 2009). Live chat sessions and lectures, as well as screen/applications sharing programs offered in collaborative software, such as Breeze and Eluminate, provide the faculty member a live opportunity to interact with their students (Manczuk & Scordato, 2004). To accommodate all learning styles, it is important that faculty members use multiple approaches when designing and sharing their course material. This is only compounded in more difficult numeric-based courses where online students traditionally have a more difficult time meeting the course objectives.

Screencasting applications, such as Camtasia, are extremely helpful when covering numeric concepts such as formulas and mathematical algorithms. A key advantage in using Camtasia for course design purposes is that "it can engage students across the state or anywhere in the world. It helps to differentiate levels of learning by further challenging advanced students, as well as providing additional videos of examples to students that have a difficult time understanding a concept. Sometimes watching the same presentation again can help a student clarify what is being taught. The videos can be viewed at any time and as many times as needed" (Steer & Mensch, 2012).

Podcasting provides the instructor the opportunity to lecture so that students can review the material whenever they choose. This method of sharing difficult concepts and class information into video files is another tool that can be implemented in a distance education course.

Regardless of the tools chosen to enhance the virtual classroom, it should be presented in small manageable modules and segments that will keep the students' attention while delivering the desired material. The faculty member takes time and properly plans which tools and programs will be used when delivering the course. As Stow notes:

One problem seen in distance education is the incorporation of only one type of interaction. Educators need to find a way to incorporate multiple methods of interaction in order to keep dialogue and structure at a suitable level for both the students and the instructor.

Many faculty are integrating their face-to-face lectures through video sharing sites such as YouTube (Young, 2008). Faculty choosing to use this method can record their lectures and later format them into short manageable sections. As Talab noted:

Professors are developing courses on YouTube, creating wiki-based syllabi that teach the uses of participatory media, such as podcasting animated videos and developing online tools for scientific collaboration.

These digital learning opportunities create more positive attitudes toward the subject matter and increased opportunities for interaction and different learning styles.

SUMMARY

This paper investigated how course length impacted the grade received in online classes, and methods that can be used to enhance numeric-based distance education courses. While it was found that students received a higher grade during the shorter five-week summer courses, several underlying factors may affect these grade scores. The first is that the same faculty may not be teaching the summer classes as compared to the full-term sessions. This can be the result of multiple variables, such as temporary faculty, who only teach in the full-term and not in the summer sessions. Also, full-time faculty who may not normally teach the class during the full-term can teach the course in the summer months. A follow-up study is recommended that investigates the faculty teaching the courses, the tools and delivery methods of the classes, as well as additional factors that may change the way the course is offered depending on the course length.

AUTHOR INFORMATION

Dr. Scott Mensch has resided in Pittsburgh Pennsylvania for most of his life, and after spending six years with an engineering firm and working as an adjunct instructor for a community college, he went into teaching full-time at Indiana University of Pennsylvania. He currently instructs and designs courses in both business and information technology in a traditional and online setting. He completed his M.B.A. in 1998 and obtained two additional Associate Degrees in Computer Applications and Networking. Between 1999 and 2003, he also obtained a (CCNA) Cisco Certified Network Associate, (MCSA) Microsoft Certified 2000 Systems Administrator, (MCSE+I) Microsoft Certified Systems Engineer + Internet NT 4.0, A+ Computer Technician, and Server + Certifications. He also obtained a PhD in Organizational Management with a Specialization in IT. E-mail: s.e.mensch@iup.edu

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