

The Online Discussion and Student Success in Web-Based Education

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INTRODUCTION

This article examines the performance of students in a Web-based corporate finance course and how the technologies associated with communication on the Internet can enhance student learning. The article provides statistical evidence that documents that the online discussion board in a Web-based course can significantly enhance the learning process even in a quantitative course such as corporate finance. The results show that ex ante predictors of student performance that had been found useful in predicting student success in face-to-face classes also had significant predictive power for exam performance in the online course. However, these predictors did not have predictive power for participation in the online discussion. Yet, online participation and exam performance were highly correlated. This suggests that the use of the online discussion board technology by the students enhanced the performance of students who otherwise would not have performed as well without the discussion.

The online discussion in a Web-based course promotes active learning, and active learning improves student performance. Educators have long recognized the importance of an active learning environment; see Dewey (1938) and Lewin (1951). It is no surprise, therefore, that later research such as Dumant (1996) recognized the online discussion as one of the strengths of Web-based learning. Some researchers, such as Moore and Kearsley (1995) and Cecez-Kecmanovic and Webb (2000) have gone on to propose that the online discussion may even challenge the limits of the face-to-face (F2F) environment.

To explore the effect of the discussion on students' grades, we must first measure the amount of variation in the grades explained by ex ante measures that previous studies have used. The Graduate Management Aptitude Test¹ (GMAT) score, gender, and age

were used. A variable that indicated whether the student considered himself or herself someone who took most courses on the Web, that is, a "Web student," was also included, and these four ex ante predictors of student performance explained over 35 percent of the variation of the final course grades in a sample of 53 students. This level of explanatory power using these predictors was similar to that of previous studies concerning F2F finance classes; see Simpson and Sumrall (1979) and Borde, Byrd, and Modani (1998). In this study, with the exception of the condition "Web student," these determinants were poor predictors of online discussion participation; however, there was a significant relationship between online discussion participation and performance on the exams. These results provide evidence that multimedia technologies that promote student interaction can aid the learning process in a course that is largely quantitative in nature.

THE ROLE OF THE ONLINE DISCUSSION

The Internet is ideally suited for a learning tool such as a discussion board where the students can interact and discover answers for themselves. The overall effect of this combination of computer and teaching technology appeared to stimulate student interest and enhanced the learning process. The data gathered in this study indicates that the students appreciated the use of the technology and that each student tended to benefit to a degree that was commensurate with his or her level of participation.

The online discussion consisted of a Socratic dialogue that was led by the instructor. This is an ancient technique that recognizes that student activity aids the learning process. As applied here, it is a learning technique that begins with a single question and then requires participants to continually answer a

series of questions that are generated from answers to previous questions with the goal of learning about a topic. The Socratic dialogue is widely used in F2F classes around the world, see Ross, (1993). Using the interactive technology of the discussion board over the Internet seemed especially beneficial. Having the discussion over a week's time on the Internet allowed students time to think and reflect both before and after their contribution. The students were motivated to participate because the discussion made up 25 percent of their final grade, which was equal to the weight of each of the two exams. The remaining 25 percent was earned from small assignments and one project.

The students earned a portion of the discussion grade each week. At the beginning of each week, a question would be posed such as: "Corporations must pay institutions like Moody's and S&P to have their debt rated. What is the advantage to the corporation of having its debt rated?" The students would post answers and, with the guidance of the instructor, would explore a number of related issues. The students earned credit by "adding value" to the dialogue each week. Students were invited to contribute reasoned guesses, personal anecdotes, and examples from the Internet. One well-thought-out and thorough contribution would earn a student a perfect score for the week. Several small contributions would earn a perfect score as well. The grades earned from discussion participation were generally good. The average discussion grade earned, as a percentage of total points, was 92.81 with a standard deviation of 8.75. The results were highly skewed in that nine of the 53 students earned 100 percent of the online discussion grade. The corresponding percent of total points earned for the course without the discussion had an average equal to 86.21 and a standard deviation equal to 7.26 for all students.

The students generally reacted favorably to the online discussion. All 53 students took a confidential survey that asked them questions about their perceptions of the online discussion. The results reveal that 60 percent felt that this course used the online discussion *more* than the average Web-course they had taken; 76 percent rated the quality of the discussion *higher* than the average they had experienced in other Web-classes; and 55 percent said that the online discussion *significantly aided* their understanding of corporate finance.

STATISTICAL ANALYSIS

To begin the analysis, this study used the variables gender, age, GMAT score, and whether a student was a Web-MBA student to explain performance in the course. Table 1 lists the correlations of various components of these ex ante characteristics with the grades and discussion-participation data. The variables are defined in the list below. The letter "N" appears at the end of a definition if the data for that variable has a bell-shaped or normal distribution, which means the test results for those variables are more reliable.²

- **AGE:** The age of the student at the beginning of the class; the range was 21 to 55 with a mean of 31.47, N.
- **DE:** Number of discussion entries, a simple count of the number of times a student made an entry of any kind in the discussion, N.
- **DISC:** Grade for student participation in the online discussion.
- **FAVG:** Final average grade for the course, N.
- **FINEX:** Final exam grade, N.
- **GEN:** Gender, this is a dummy variable where GEN=1 represents male and GEN=0 represents female, the mean was 0.540.
- **GMAT:** Graduate Management Aptitude Test score.
- **GWD:** Grade for the course without discussion, to get this the discussion grade was removed from the final average and that result was inflated to represent a score out of 100 percent, N.
- **MT:** Midterm exam grade, N.
- **PROJ:** Grade on a project that required the creation of a spreadsheet.
- **WC:** Word count; the total number of words the student wrote in the discussion over the entire course, the range was 391 to 5524 with a mean equal to 2164, N.
- **WMBA:** Whether the student considered him/herself a Web-MBA student as opposed to student who takes most courses in a F2F environment, WMBA=1 for Web-MBA students, else 0; the mean was 0.684.

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