Online Learning: Does it make the Grade?

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Abstract

The purpose of this study was to compare two face-to-face science content courses for teachers to two sections of the same course online. The instructor was the same as was all course content and assignments. Students in the face-to-face courses scored higher on the final exam, but online students rated their courses higher on the end of course evaluations. The online students rated the course higher on the following variables: intellectually challenging and stimulating, thinking critically, connecting what they learned to other experiences, and learning to use various resources to enhance learning. They also rated the instructor higher on the following variables: conveyed knowledge of the subject, encouraged critical thinking, used fair evaluation procedures, used learning resources effectively, promoted an open atmosphere, respected students, used class time effectively, and was an instructor they would recommend. Face-to-face students rated the instructor higher on the variables of preparedness, explanation of concepts in a clear manner, feedback on student performance provided in a timely manner, and enthusiasm about the subject. With increasing number of students enrolling in online courses, instructors must be diligent in their preparedness and enthusiasm for the course, prompt in providing feedback on student performance, and clear in explaining concepts.

Key Words: Face-to-face, science content, teachers, course evaluations, final exam grades

Introduction

Distance learning began as a way for universities to offer more courses in a cost effective manner (Spooner, Jordan, Algozzine, & Spooner, 1999). Now, it has become a legitimate mode of instruction which has gained popularity because it offers more flexibility for students and faculty alike than face-to-face courses (Spooner, Jordan, Algozzine, & Spooner, 1999; Wuensch, Aziz, Ozan, Kishore, & Tabrizi, 2008; Hiltz & Turoff, 2005). As advances in technology grow, educational institutions will be even more capable of educating students in far reaching locations through online learning (Anderson, 2008).

More students are taking online classes and earning degrees online. The enrollment of students in as few as one online class exceeded 4.6 million during the fall of 2008. This rate of growth far outweighs the rate of increase in the overall population of students enrolling in higher education courses. Data suggests that there is currently a higher demand for online course delivery than face-to-face courses (Allen & Seaman, 2010). As a result of the current economic situation in the United States more students are choosing an online format as opposed to commuting for on ground instruction. (Allen & Seaman, 2010). "Online courses are defined as those in which at least 80 percent of the course content is delivered online. Face-to-face instruction includes courses in which zero to 29 percent of the content is delivered online. This category includes both traditional and web facilitated courses" (Allen & Seaman, 2010, p. 4).

Despite the increase in online format enrollment, face-to-face courses have several advantages over online learning. For example, face-to-face courses have more natural student/student and student/faculty interactions due to the physical setting of the class as well as the body language and facial expressions of the students and faculty. The visible behaviors exhibited by students promote frequent conversation with faculty. A professor can readily assess student comprehension of material and determine the degree of on task behavior. There is also more immediate feedback to student questions and concerns than in online courses. A student can raise his/her hand and within moments have an answer to a question. In an online class, a student must type a question and wait for the instructor to log on, read the question, and type a response (Wuensch et al., 2008). No matter how one defines interactions, based on recent research it is clear that when the level of interaction is inadequate or nonexistent, learners often feel isolated and an overall degradation of the learning experience can take place (Bibeau, 2001; Howland & Moore, 2002; Mann, 2005). In recent years, higher education has recognized the value of interaction in online courses. Various levels and types of interactions are supported (Brown & Long, 2006).

Another advantage of face-to-face courses is that instructors have better control over assessment in face-to-face classes. It is difficult for an instructor of an online class to control the testing environment for factors such as cheating and plagiarism. Students occasionally find it more difficult to fully comprehend material presented in online courses. However, students agree that online courses are more fitting for working students due to the flexibility and self-paced schedules (Wuensch et al., 2008). The overall goal for online courses is for instructors to establish meaningful ways of engaging with the students that will enhance the content of the course and application of the knowledge.

Online course discussions have several advantages over those in face-to-face courses. With online classes, there is a collectable record of individual course discussions which makes it is easier to quantify participation. This also allows faculty to reflect on individual and whole class comprehension or lack thereof in regard to course material. In online course discussions, students are given the opportunity to reflect on the questions as well as revise their answers before submitting them, which may lead to greater comprehension of course material and reinforcement of good communication skills. The virtual classroom course discussions take away some of the fear of shy students who resist speaking up in face-to-face courses. The requirements of online courses include more active course participation. The flexibility of the online format allows for class discussions to occur at any place and time. Online courses have social as well as cognitive benefits due to the potential to bring together a wider spectrum of the population than would have been able to attend face-to-face courses. This would allow students to be exposed to a broader range of thoughts, insights, and lives of a more diverse group of peers (Maurino, Federman, & Greenwald, 2007).

There is not a consensus in the literature as to comparability of online verses face-to-face courses. In a survey of institutions of higher education, 53% claimed that online and face-to-face course learning outcomes were similar (Allen & Seaman, 2010). A survey of students in online and face-to-face courses revealed that students preferred face-to-face courses if they only took one online class, but preferred online classes after they have taken at least four online classes. The students who rated face-to-face courses higher did so based on faculty/student interactions, student/student interactions, and prompt feedback from the professor. The students who preferred the online courses felt that the courses were of higher quality in the areas of critical thinking and rigor. Students also agreed that face-to-face classes were less flexible than online (Wisan, Nazma, & Pscherer, 2001).

A recent study comparing course evaluations for face-to-face courses to course evaluations for the same courses online, reported that there was no difference in how the students rated the course and instructor (Spooner, Jordan, Algozzine, & Spooner, 1999). A similar study indicated that students only marginally preferred face-to-face courses and did not feel that there was a difference in the overall value of the online learning experience (Johnson, Aragon, Shaik, & Palma-Rivas, 1999). Another study in which students attended a face-to-face class and then switched to an online class, stated that they learned as much through the online portion of the class as they did during the face-to-face portion (Beard & Harper, 2002).

A study at Brenau University was conducted in 2006 and 2007 that compared face-to-face science content classes to the same courses online. A discussion of the methods, participants, and data collected on these two formats indicates that, although students in face-to-face classes outperformed online students, online students rated their courses higher on course evaluations.

Methods

The study involved graduate students in two face-to-face and two online sections of a science content course for teachers. The face-to-face courses were taught at two different campus locations during two different semesters. One was taught during the spring of 2007 and the other during the spring of 2008. The online sections of the course were taught by the same instructor as the face-to-face courses during the fall 2007 semester. Due to small sample sizes, the two face-to-face courses and the two online courses were each combined into one face-to-face group and one online group for comparison purposes. All course content and assignments were the same for the online and the face-to-face courses. End of course evaluations and final exam grades were used to compare the students in the face-to-face courses to the students in the online courses. There were 27 students in the face-to-face courses and 24 in the online courses. An independent sample t-test was used to compare the mean scores on the final exam for the face-to-face and online students as well as to compare the means of the overall course evaluations.

Results

The results comparing the end of course grades showed that the students in the face-to-face courses had significantly higher grades than did the students in the online courses ($p=0.005$). However, the online students rated the course as a whole significantly higher than did the face-to-face students ($p=0.013$). Overall, online students rated the course higher on the variables of intellectually challenging and stimulating, thinking critically about the subject, and connecting what they learned to other experiences. These students also indicated that they learned to use various resources to enhance learning. Instructor comments included positive feedback on the instructor suggesting that the instructor conveyed knowledge and relevance of the subject, encouraged critical thinking and problem solving, while employing fair and appropriate evaluation procedures. Additional comments about the instructor included: used learning resources effectively, promoted an open atmosphere, respected students, and used class time effectively. The instructor was one students would recommend to other students. The face-to-face students rated the course higher on the variables: the instructor's preparedness for class, explained concepts in a clear and understandable manner, and provided feedback on student performance in a timely manner. Students also indicated that the instructor was enthusiastic about the subject. The face-to-face students rated the course higher exclusively on instructor variables.

Discussion

The higher course evaluation ratings of the online students on the variables of intellectually challenging and stimulating, thinking critically about the subject, and connecting what they learned to other experiences can be attributed to the requirements of the online courses. In this study, only the online students were given weekly discussion questions in which they had the opportunity to reflect on the questions as well as revise their answers before submitting them (Maurino, Federman, & Greenwald, 2007). They were also required to relate the discussion questions to their teaching experiences. Therefore, the online discussion forum could establish the rationale for why the online students rated these variables highly.

The online students stated that they learned to use various resources to enhance learning and that the instructor used learning resources effectively. This is a natural occurrence in an online course because the students are learning via the Internet and have various educational resources at their fingertips. The students in the online courses also rated the instructor higher on the variables: used fair and appropriate evaluation procedures, promoted an open atmosphere, respected students, used class time effectively, and was an instructor they would recommend to another student. This could also be the result of the requirements of an online class. In the online class, the students were given participation points each week for adequately answering the weekly discussion questions. This was not a part of the face-to-face courses. The fact that the online students were rewarded for their work in answering weekly discussion questions may be the reason they rated the instructor high on the variable of used fair and appropriate evaluation procedures.

The instructor in this study responded quickly to student questions and problems as well as was a source of continued encouragement for the students. This could be attributed to the social benefits of online learning such as sharing of a wider range of experiences between students and faculty (Maurino, Federman, & Greenwald, 2007). This could also be why online students agreed that the instructor promoted an open atmosphere, respected students, and was an instructor they would recommend to another student.

Online students also have the flexibility of being in class when and where they want (Spooner, Jordan, Algozzine, & Spooner, 1999; Wuensch, Aziz, Ozan, Kishore, & Tabrizi, 2008; Hiltz & Turoff, 2005) so it is natural that they would agree that the instructor used class time effectively.The face-to-face students rated the course higher on the variables: preparedness of the instructor, explanation of concepts in a clear and understandable manner, feedback on student performance provided in a timely manner, and enthusiasm about the subject. These ideas can be attributed to the nature of face-to-face courses in that the students can assess the preparation of the instructor. In this study, the instructor would have an outline of the class period on the board as well as various materials for the students to use. It is also easier to see instructor enthusiasm in a face-to-face course. Research has shown that students find it easier to fully comprehend material presented in face-to-face courses (Wuensch et al., 2008) which could also explain why the students felt the instructor explained concepts in a clear and understandable manner. The students in the face-to-face courses also scored higher on the final exam. There is more opportunity for immediate feedback to student questions and concerns in face-to-face courses because a student can raise his/her hand and within moments have an answer to a question (Wuensch et al., 2008). This could be the rationale for why the face-to-face students rated the instructor higher on the variable of feedback on student performance in a timely manner.

Conclusions

This study provided an examination of several variables that impact both online and face-to-face courses. There are positive and negative aspects of both online and face-to-face classes. The more positive responses of providing feedback in a timely manner in the face-to-face classes as opposed to the online courses indicates that the online instructor should be cognizant of offering more immediate feedback on assignments. The study would also suggest that the instructor must be organized and well prepared in the delivery of online content. The online instructor must read all responses from students, learn their interests, get to know their students individually through personal web pages, and use additional delivery vehicles such as "live" communication sessions. Given the desired flexibility of delivery of college courses and the increase in enrollment of the nontraditional student, online courses are a positive response to the growing need for accessible college degrees.

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