Podcasting In Higher Education: Does It Make A Difference?

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ABSTRACT

Podcasting is a growing trend in higher education. Major software companies, such as Apple, have dedicated entire websites to podcasting. These podcasts are available to college students to be used as supplemental material for specific coursework at their particular college or university. Unfortunately, due to the new and progressive nature of the technology, empirical studies of the effectiveness of this pedagogical device are rare. This paper presents an empirical study of the effectiveness of podcasting when incorporated as supplemental course material in a university course.

INTRODUCTION

University professors nationwide are introducing new teaching technology into their courses, and collegiate aviation is no exception. Collegiate aviation professors are using technology in the classroom to replace large, impersonal lectures, supplement course materials, and allow the students access to course information any time or anywhere. Many of these professors are using podcasts. Podcasts are being developed throughout many of the major universities. Drexel, Stanford, Duke and American University are among well-known universities that have podcasting programs (Tyre, 2005).

Podcasting is the creation of audio or video files for use on ipods and other mp3 players. It allows the user to view or listen to downloadable files wherever or whenever desired (Morris, 2006). The name "podcast" is simply a compound word, combining iPod and broadcasting (Brenner, 2005). Podcasting does not involve broadcasting and an iPod is not required. Podcasts are downloaded from the web and may be played on a mp3 player and also on a computer through free software available from Apple. This software is called Quicktime. Podcasting originally was designed for audio. However, the new video enabled iPods permit viewing of film, television, and a variety of other visual media. In 2005, over 32 million iPods were sold, which is equivalent to one per second (Castelluccio, 2006).

The growth of podcasting in higher education has been rapid. In a presentation given to Jacksonville University, Mark Benno, Curriculum Evangelist for Apple Computers, stated a Google search for "podcast" in 2004 would have received 24 hits (Benno, 2006). A search today would yield more than 115 million hits (Google, 2008). Despite this amazing growth, many educators are still searching for the best way to implement podcasting in their courses, and to find the most efficient and cost effective way to initiate a podcasting program. The growth, understanding and acceptance of this technology are clearly evident to the students currently entering our colleges and universities. According to a study at Jacksonville University, approximately 67% of the 350 students enrolled in the college of business own some type of mp3 (iPod) player (JU Survey, 2006).

There is a vast amount of literature that compares and contrasts the incorporation of podcasts into college courses. The authors were unable to acquire any empirical studies that examine benefits of podcasting into collegiate aviation curriculums. Therein lays the purpose of the study.

To access this problem, podcasts were implemented into a collegiate aviation private pilot course. These podcasts were used as supplemental material to a 50 minute course lecture. An externally created FAA quiz was

given to both the control and treatment groups. Quiz grades were evaluated to determine the effectiveness of the supplemental (podcasts) information.

PURPOSE OF STUDY

The purpose of this study is to empirically evaluate the benefits of incorporating podcasting into a university course. The study conducted will attempt to answer the following research question:

Does the inclusion of podcasts as a supplemental tool in a blended university course have an effect on student learning outcomes based on course grade?

The research question leads to the following null and alternative hypotheses:

HYPOTHESES

Null Hypothesis: There is no difference between the mean score of the podcast group and the non-podcast group on the FAA quiz.

Alternative Hypothesis: There is a difference between the mean score of the podcast group and the non-podcast group on the FAA quiz.

LITERATURE REVIEW

As previously stated, the authors were unable to ascertain any empirical studies related to the affect of podcasting in higher education. However, there is an extensive amount of literature that discusses the explosive growth of podcasting and examines its benefits.

In 2004, podcast usage increased from 820,000 to five million users by year end (Potter, 2006). A Google search of "podcasts" in February of 2008 produced more than 125 million hits and yet podcasting is still, at some universities, considered a new phenomenon (Bradbury, 2006). Apple CEO Steve Jobs calls podcasting "the next generation of radio (Barnett, 2005)." In fact, National Public Radio and its member stations offers close to 200 different podcasts (Potter, 2006). Podcasting is finding its way into many parts of society and the opportunities are vast (Barnett, 2005). Education is one of these avenues. In the fall of 2004 Duke University gave all new students an iPod (Barnett, 2005). The University has since incorporated podcasting into its many parts of its curriculum. "Lectures can be disseminated through podcasts, teachers can listen to professional development audio files, and students can submit oral projects (Barnett, 2005)." Jane Bradbury goes on to state that expert interviews can be a very powerful way to use podcasting (Bradbury, 2006). At the modern day university, podcasting for educational benefits seems endless. "What will be important, however, is to ensure that educational podcasts-commercial or otherwise-are updated regularly to remove outdated information" (Bradbury, 2006).

Podcasting is defined by Microsoft as "personal on-demand broadcasting". In higher education, professors use podcasts as supplemental educational material. Podcasts help place this supplemental course material into the hands of students in an effective and efficient manner. "To engage this cell-phone generation, we have to deliver instruction using their preferred means of communication, which is both digital and portable (Steppe-Jones, 2006)." Students may access this information through their personal computers or iPods. Even the automobile industry has identified the potential of this technology and will equip more than 66% of this year's new automobiles with iPod compatibilities (Benno, 2006).

Proponents claim it is a great tool to increase participation and interest in course material for students enrolled in large courses in their early college careers. These students have been raised on technology and enjoy working with it. However, "students aren't interested in absorbing every word like passive sponges," states Duke professor Dr. Richard Lucic. Therefore, podcasts should be used as supplemental material. Podcast technology allows supplementing courses with guest speakers, topical reviews and complementary information (Tyre, 2005).

Opponents argue that podcast presentation may reduce interaction between professors and students. However, students think it is only natural that classroom material should mingle with leisure-time entertainment (Campbell, 2005). Podcasting delivers traditional components of higher learning in a format kids love—most have been downloading their favorite songs onto their iPods or MP3's since high school" (Tyre, 2005).

Despite the perceived benefits of Podcasting, some individuals in the academic community have expressed concerns over replacing class attendance with this type of technology. Experts claim that regular class attendance teaches students time management, scheduling and self discipline. Furthermore, regular contact with professors significantly reduces drop-out rates. Lectures focus students on course content and provide them the opportunity to ask questions, interact with each other, and interact with the instructor (Tyre 2005).

Higher education is seeing significant growth in Podcasting as a medium to supplement both traditional and distance-learning curricula. Initial concerns over the perceived cost of hardware and software technologies necessary to create a Podcasting program are no longer an impediment to implementation. The basic elements required to initiate a Podcasting program consist of a personal computer, microphone, audio editing software (available at no cost from Audacity.com), web server and a website. This indicates that basic Podcasting applications can be created with very little initial investment. Any faculty member desiring to incorporate basic audio or audio/still image technology into their courses can do so at virtually no cost.

RESEARCH METHODOLOGY

This study was conducted at a university in Florida during the spring 2006 semester and fall 2007 semester. The course selected for the study was "Aviation Science for Private Pilots" (AVS 101). During the semester, the professor posted four different ten to fifteen minute podcasts on the course website. Each podcast was an illustrated summary of a specific fifty minute lecture given during regular class time. The podcasts were intended to give the students in AVS 101 the opportunity to review an abbreviated version of a particular lecture with some amplifying illustrations and sample problems.

The AVS 101 course met for three fifty minute periods each week over the course of a 16 week semester. The fall 2007 classes used for the study had a total enrollment of 29 students. The professor identified four subject matter areas in which former Private Pilot students have demonstrated difficulty in comprehending the material in a single fifty minute period. These areas of difficulty were "Introduction to Very High Frequency Omnidirectional Receiver (VOR) navigation", "Aircraft Weight and Balance", "Cross Wind Calculation" and "Aircraft Cruise Performance". After each one of the lectures was identified, the professor posted a tailored voiceover PowerPoint podcast on the Blackboard website for the course. The students had access to this podcast information for the entire semester after the identified lectures had been given. To insure access to podcasts by all students, they were downloadable and playable on any MP3 device, personal computers, or computers in university labs. Individual student participation was tracked through the monitoring feature of the Blackboard website.

Following the lecture series and introduction of the podcast material for each subject matter area, the students were given a standardized test made up of questions from the Federal Aviation Administration (FAA) question bank. The results of these tests were compared to the previous class who received the same lecture from the same instructor and had access to comparable supplemental study materials (excluding the podcasts).

RESULTS OF THE STUDY

As noted above, a FAA quiz was administered to a group of 40 students in the fall term of 2006, when podcasting was not available. The same quiz was given to a smaller group of 29 students in the fall term of 2007, when podcasting was available. Table 1 provides information on basic descriptive statistics for these quizzes.

Table 1: Descriptive Statistics for FAA Quiz

Variable	Sample Size	Mean	Standard Deviation
Quiz with Podcast	29	70.7	19.6
Quiz without Podcast	40	76.5	17.6

A hypothesis test was performed to determine if there is a difference in the mean score on the FAA quiz between the two groups of interest. The null and alternative hypotheses of interest follow.

Null Hypothesis: There is no difference between the mean score of the podcast group and the non-podcast group on the FAA quiz.

Alternative Hypothesis: There is a difference between the mean score of the podcast group and the non-podcast group on the FAA quiz.

The five percent level of significance was selected. A two sample t-test was performed to determine if there is a difference in the mean score of the two groups on the FAA quiz. Since there is no statistical difference between the variances of the two groups, the equal variances version of the test was used. The results of this t-test are summarized in Table 2.

Table 2: Two-Sample T-Test Results for FAA Quiz

Difference (With Podcast - Without Podcast)	df	Test Statistic	Critical Value (2 tail, α = 0.05)	P-Value
-5.81	67	-1.29	±1.996	0.202

Since the p-value of 0.202 is not smaller than the stated level of significance of 0.05, the null hypothesis (no difference in mean score with and without podcasting) is not rejected. The sample evidence suggests that the mean score on the FAA quiz is not affected by the availability of podcasting.

CONCLUSION

Research on the affect of delivery media on learning has been going on for many years. Richard Clark (1983) stated that "Consistent evidence is found for the generalization that there are no learning benefits to be gained from employing any specific medium to deliver instruction." The results of the study discussed herein, while investigating the benefit of using podcasting technology to supplement traditional classroom learning, are consistent with Clark's historical view. The availability and use of podcasts had no significant difference on student learning. Based on this result and the historical data on media research, the authors will not undertake continued quantitative evaluation of podcasting. A related qualitative evaluation of student attitudes towards and perceptions of podcasting is in process.

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