Name: Mark Braun  

Title: Professor of Pathology  

Department: Medical Sciences, Jordan Hall 104  

Campus: IUB  

Project Title: Does access to podcast modules enhance learning and application of knowledge to the study of human anatomy, physiology and disease?  

Project summary:  

The purpose of the Medical Sciences podcast program is multifaceted. We know from earlier studies of student use of online teaching aids, specifically virtual microscopy\(^1\), that learning efficiency is improved by having ready, off-campus access to course-related teaching materials. Even so, we wanted to see if this advantage extended to additional class derived, online teaching aids. Thus, we proposed to develop a series of Internet-ready podcast teaching modules, not only to assist student learning but also to address the following questions:  

1. What is the preferred, and most effective, format for student podcast delivery?  
2. Does making the teaching module available for the student’s convenience increase the likelihood that it will be used?  
3. Do students ‘archive’ the podcasts and review them as needed?  
4. Does the convenience of podcast delivery contribute to course content retention and application?  
5. Do students expect this type of technology as part of their educational experience?  

Our ongoing study is currently assessing the teaching effectiveness, and student preference, of a number of podcast teaching modules. These teaching modules were created for students at various levels of the educational process, among them: students of professional school (medical and optometry students) as well as graduate and undergraduate students. Although most of the modules have been developed by faculty, a number of anatomy dissection modules have been produced by first-year medical students. Below is a list of currently developed and implemented podcast modules that have come about as a direct result of the equipment provided by this grant.  

1. A web-based library of pathology lectures for the second-year medical students assigned to the Bloomington campus: http://medsci.indiana.edu/c602web/602/c602web/lect_mp3/lecture.html  
2. A series of web-based podcasts detailing specific aspects of laboratory assignments for second-year medical students assigned to the Bloomington campus. Here is a sample of one of the laboratory review modules: http://medsci.indiana.edu/c602web/602/c602web/lect_mp3/liv_slides.htm  
3. A series of podcast review modules for second-year medical students taking pathology courses C601 and C602. Here is a link to a sample dealing with acid base regulation: http://medsci.indiana.edu/c602web/602/c602web/lect_mp3/acid.htm  

---  

4. Podcast modules designed to augment the Medical Sciences medical and graduate student anatomy course. These consist of student produced video files of cadaver dissections.
   http://medsci.indiana.edu/c602web/602/c602web/lect_mp3/anat_lec.html

5. Podcasts designed to augmenting the laboratory component of the Medical Sciences undergraduate anatomy course, A215, by providing video reviews and summaries of laboratory assignments.
   http://medsci.indiana.edu/a215/virtualscope/docs/virt_use1.htm

6. Podcasts designed to augment laboratory assignments for a pathology course taught to optometry students. IU login required for this link: https://www.indiana.edu/~sabs/v543/labs/docs/lab6_14.html

7. Podcast recordings of Optometry pathology lectures:
   http://medsci.indiana.edu/c602web/602/c602web/opt/braun/braun.htm

As of the writing of this report, we are in the initial phases of assessing the usefulness and student satisfaction of these educational modules. As a visit to the above listed websites will show, they consist of Camtasia recorded lectures as well as Camtasia developed videos and screen capture animations. Assessments so far consist of review of course and instructor evaluations, aggregate grade comparisons plus results from online student use and satisfaction surveys. The studies undertaken are IRB approved with anonymous surveys administered on the Bureau of Evaluative Studies and Testing (BEST) server.

Both course and instructor evaluations, as well as anonymous use and preference surveys, indicate students appreciate and make substantial use of the all the teaching aids produced so far. All of the involved instructors believe that retention of course content and general student satisfaction has been improved by the addition of these teaching aids and recorded lecture files. Additionally, the posting of the recorded lectures has not negatively impacted lecture attendance, a concern voiced by many as we initiated this project.

Of particular interest has been the enthusiastic student involvement in helping to produce some of the teaching aids. Specifically, the creation of a collection of anatomy dissection review movies. For this purpose, the department purchased an underwater case for one of the Flip cameras. The case protects the camera and allows its use in the cadaver dissection laboratory. Students were invited to make movies for archive and review as the dissections proceeded through the year. As the student produced movies were finished, they were posted on a common website for all to view. As we see it, this is an important advancement in the teaching of human anatomy. The main reason being that as the cadaver dissection proceeds, the earlier phases, and more superficial parts of the body, are permanently lost to review. The movies clearly preserve these early steps and observations.

An additional factor, and not at first anticipated, has been the involvement of graduate students in the process of evaluating the educational effects of the podcasts and web-delivered teaching materials. Currently, two graduate students are involved with studies of this sort, and one has produced a manuscript that has been submitted for publication.

In conclusion, I would like to say how grateful we are to have been awarded one of the podcast grants. The grant has facilitated the development of a wide range of teaching materials now used by professional, graduate and undergraduate students. What has been set in motion continues to grow and will enhance student learning on the Bloomington campus for years to come.