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The Use of Synchronized Audio, Video, and Slides to Enhance the Online Learning Experience

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Abstract

Multimedia technologies are becoming more common in online education, and student response to materials presented in ways other than text is overwhelmingly positive. Multimedia presentations using synchronized audio, video, and slides can be quickly and easily created for a variety of uses, including introducing courses, explaining difficult concepts, and including supplemental material. Targeting these short (three–five minute)

presentations to a single problem or example maximizes viewership while also effectively supplementing or clarifying course material. Software packages to create and publish these presentations are discussed along with specific examples of targeted presentations.

Introduction and Background

The online learning environment offers the well-documented advantage of flexibility in both time and space (El Mansour & Mupinga, 2007; Hurt, 2008; Nagel & Kotze, 2010). This flexibility allows students to take classes while balancing the demands of work, family, and other concerns. However, several disadvantages have also been shown to accompany online learning, including 1) lack of face-to-face contact (Hurt, 2008); 2) asynchronous communication (El Mansour, & Mupinga, 2007); 3) student difficulties interpreting an instructor's intent through written communication (Dykman & Davis, 2008); and 4) technology compatibility issues (Hurt, 2008). These disadvantages are inherent aspects of the online environment in general and will therefore never be eliminated entirely. They can, however, be mitigated by moving beyond what Nagel (2010) calls the "paper-behind-glass" style of online learning. This can be accomplished through the incorporation of targeted video presentations.

The use of multimedia technologies in both in-person and through online learning has also been well documented in the educational literature, with overwhelmingly positive student perceptions of lecture-based videos (Copley, 2007; Evans, 2008; Huntsberger & Stavitsky, 2007). To quantify the positive response to podcast videos in an in-person classroom environment, Dupagne, Millett, & Grinfeder (2009) determined that over 73 percent of students who viewed video podcasts of classroom lectures found them to be very helpful; 88 percent said that including the videos was a good idea; and 76 percent said that watching the videos was enjoyable. However, among the 261 students in the Dupagne, Millett, & Grinfeder (2009) study, only 41 percent on average viewed each video that was available and only 5 percent viewed all twelve videos that were available. Among the students who didn't watch the videos, 28 percent said that the videos were simply repeating lecture material, 18 percent said they didn't have enough time, and 10 percent had technology problems that didn't allow them to view the video.

Student response to podcast videos is even more positive in the online learning environment than it is in the traditional classroom (Murphy, 2000; Palmer, 2007). In a comparative study of on-campus and online course delivery, Palmer (2007) reports that 80 percent of students in the online course who watched supplemental videos found them to be useful, compared to 64 percent in the on-campus course. Furthermore, the number of students who viewed the videos in the online class was 90 percent compared to less than 50 percent in the on-campus course.

Online presentations with synchronized audio, video, and slides can be utilized as a method for alleviating the disadvantages associated with online learning while maximizing student viewership through targeting the presentations to specific problem-solving situations and minimizing technical difficulties.

Targeted Presentations with Synchronized Audio, Video, and Slides

Software Options

Several types of online presentations are common: audio only; voice-over slides; screen capture with audio; video with audio; and synchronized audio, video, and slides (Lawlor & Donnelly, 2010). It is reported in the literature that student attitudes toward any type of multimedia presentation in online learning are positive (Copley, 2007; Dupagne, 2009; Evans, 2008; Griffen, Mitchell, & Thompson, 2009; Huntsberger & Stavitsky, 2007). These studies, however, were all conducted in online or mixed-mode classes at institutions that are primarily classroom based and where instructors teach primarily in a traditional classroom setting with significant face-to-face interaction time. The unique nature of the fully online learning environment is

that the instructor is often "faceless" to the students. To simulate the face-to-face learning experience, only presentation methods that included video of the instructor were evaluated in this work. The use of audio and video alone was excluded from consideration as it provided little more than a "spoken e-mail" to the students.

Several commercially available software packages are available at the time of publication that allow for the synchronization of audio, video, and slides, including Microsoft Producer for PowerPoint (2007), Momindum Studio (version 1.2.1, 2008), iPresent Presio (version 1.5, 2010), and Camtasia Studio (version 7.1, 2010). These programs accomplish the same task, but each has its own strengths and weaknesses as summarized in Table 1. All software was evaluated on a PC running the Microsoft Windows 7 operating system (Professional version, 2009).

Microsoft Producer for PowerPoint is extremely user-friendly and supports slide animations, but browser incompatibility issues and long load times (> 25 percent of the presentation length) make it difficult for many students to access and view presentations. Momindum Studio creates excellent presentations, but its user interface is not straightforward and several errors and bugs were experienced during testing. Camtasia Studio is the most complete and polished software package tested, with far more capabilities and options than the other programs, and it can produce presentations of extremely high quality. Navigating through all of these options, however, greatly increases the time it takes to create and publish a presentation. iPresent Presio produces high quality presentations with a professional look, is easy to use, and produces presentations with extremely fast (< 1 percent of the presentation length) load times.

It is worth noting, however, that software is frequently updated and that newer versions of these software packages could be significantly different from the description given here. Any instructor wishing to incorporate the methodologies presented in this chapter should carefully evaluate the available software options.

Software Package	Strengths	Weaknesses
Microsoft Producer For PowerPoint	Simplicity, ease of use Excellent user interface Compatible with slide animations	Incompatible with browsers other than Internet Explorer Long presentation load times
Momindum Studio	Compatible with all browsers Fast presentation load times	Difficult to use Incompatible with slide animations
Camtasia Studio	Many options and uses Compatible with all browsers Fast presentation load times Professional looking presentations	Requires skilled user Lengthy process to create and publish presentations
iPresent Presio	Simplicity, ease of use Compatible with all browsers Fast presentation load times Professional looking presentations	Incompatible with slide animations

Table 1. *Summary of the strengths and weaknesses of software to synchronize audio, video, and slides.*

Creation of presentations in iPresent Presio is a simple process, with step-by-step guidance in a logical order. The presenter

must first create the slides to be presented in Microsoft PowerPoint and then import the PowerPoint file into iPresent. Video recording can be done with a webcam directly in iPresent Presio or recorded with any device capable of downloading the video to a computer (most digital cameras and camcorders) to be subsequently imported into the iPresent software. The presenter then synchronizes the slides to the video by watching the video and clicking on the screen to advance the slides at the appropriate time in the video. The presentation is then ready to be published to the web via an FTP server. The entire process for a five-minute video takes about an hour, although the bulk of that time is spent planning and creating succinct and meaningful slides. A screenshot of the final presentation can be seen in Figure 1.

Presentation Philosophy

While the creation of lecture-length presentations is certainly possible, literature shows that fewer than half of students watch them (Dupagne, 2009) and that a text-based method is still the best way to deliver most course materials (Berns, 2005). It is accepted in the literature (Berns, 2005; Buckley & Smith, 2008; Case & Hino, 2010; Young, 2008) that short videos (three–five minutes in length) targeted at a certain problem or specific topic are an effective method to supplement and clarify course material**.**

A specific example illustrates this philosophy. A homework assignment in a managerial finance course included a problem from a section that teaches a multitude of financing formulas and financial ratios. This specific problem, however, is solved through simple arithmetic, and students were struggling with trying to fit the question into one of the chapter's formulas. After seeing the students' frustration with the problem on the course discussion board, a presentation was quickly produced to help walk the students through the problem and alleviate their frustrations with it (see www.keithfoe.com/p6-4a/ for the presentation). Seeing and hearing the instructor in this type of targeted presentation allows students to easily infer from the instructor's body language and tone that the difficulties they've been having are understandable, and that they can easily solve the problem once they get started correctly.

Another example of the use of targeted presentations is as a course introduction at the beginning of each quarter (see http://www.keithfoe.com/Welcome/). These give the instructor a face and a voice from the very beginning of the course and set up a feeling of connection between the instructor and the student that is often absent in online education (El Mansour & Mupinga, 2007). The introductory presentation is also an excellent opportunity to cover the course policies, procedures, and expectations.

Other targeted presentations have been produced to explain difficult concepts in the course textbook, to expand upon inadequately covered material, to add relevant material that isn't covered in the text, and to provide hints for topics that will be on upcoming exams.

Student Feedback

Exclusively positive student feedback, both direct and indirect, has been received in response to the use of synchronized audio, video, and slide presentations in this author's online courses. Direct comments from students include

> "The video instructions were a memorable and clever touch."
> "The videos were great! Would love to see more of those in my courses."
> "I really value the video tutorials."
> "The videos were very helpful and well timed."
> "The introduction video was a great help in getting started. Every course should have one!"

Conclusion

The use of targeted presentations with synchronized audio, video, and slides has the ability to mitigate many of the disadvantages associated with the online learning environment. The presentations allow for the simulation of face-to-face contact, while audio along with video provides for more insight into an instructor's intent than simple text can provide. El Mansour points out that asynchronous communication in online classes "tends to remove any feelings of connection between the student and instructor" (2007). Though the videos are still communicated to students in an asynchronous fashion, the inclusion of audio and video in the presentations restores much of this perceived connection. Finally, though technology and compatibility issues may never be completely removed from the online learning environment, an evaluation of software to create the presentations has been performed to minimize these issues and maximize compatibility across multiple computer platforms.

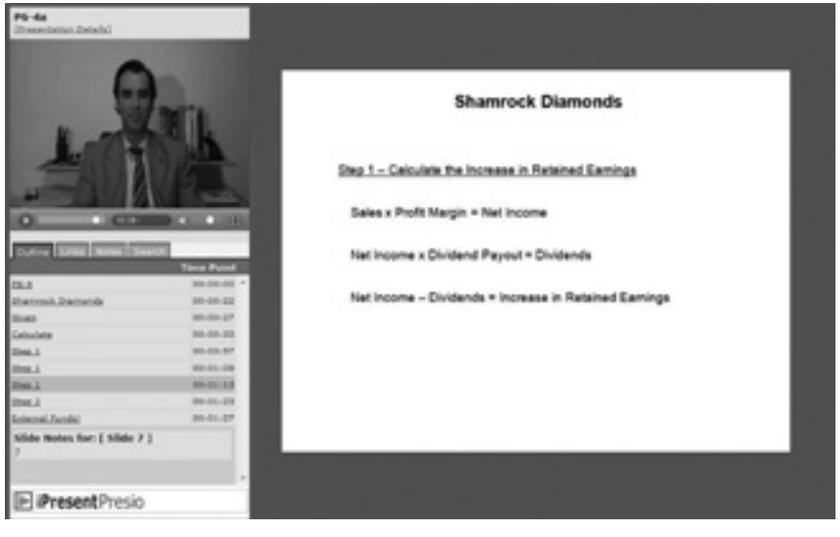

Figure 1. *Screenshot of a published presentation in iPresent Presio.*

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