

## MINI-LECTURES ENHANCE ON-LINE STUDENT LEARNING: A LESSON IN LISTENING

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Students learn in many different ways; some may learn best by reading, some by group discussions and activities, and others by listening to an expert give a lecture. A lecture can deliver information with very high bandwidth, and this is both an advantage and a problem. We have come to believe that lectures are actually a poor place to learn; learning is a more private practice, where the student can stop as necessary for reflection and repetition, which are not possible in lectures where de novo learning is the objective. Thus on-line courses, where teaching materials are archived, could offer some improvements. But many courses prepare on-line lectures by capturing a classroom (or classroom-like) session digitally and putting it on a streaming server; unfortunately, a full-length lecture on-line (50 or 75 minutes) is too long to hold student attention, especially if it features a talking head, small window, mediocre sound, and a low frame rate.

We teach an immunology course to about 80 non-traditional, fully on-line PharmD students. The major course materials are a complete set of notes available as .pdf files, an interactive Web site, and the usual discussion groups and threads. Based on our live classroom experience, we think the best use of lecture time is to help students *understand* material they have already begun, and will continue, to *learn*. We examined the 22 lecture units and identified the 2-4 most difficult concepts, or places where a clinical story could help crystallize the underlying science, in each. We then scripted and recorded audio-only mini-lectures. The lectures are stored as .wav files embedded into the on-line course (hosted on eCollege). The students can listen to these mini-lectures for each section, or when they are finding a certain area more difficult to understand. No mini-lecture is longer than 4 minutes.

The feedback from the students demonstrated that mini-lectures indeed enhanced their learning experience. An example: *“A few times I'd read something over a couple of times in my notes and not be fully sure about something. His audio lectures really put the pieces of the puzzle into place while making it very interesting”*.

The logical next step is video mini-lectures, when there is supplementary material best presented that way. We are beginning to replace some of the audio mini-lectures, using a mix of simple chalkboard talks and Flash animations. Our aim is to make these as straightforward and easy to prepare as possible so that anyone can do it; and we are sizing the files for Podcasting and Vodcasting.

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