ADAPTED REMOTE LEARNING: LIVE VIDEO-STREAMING *VERSUS* PODCASTING, A PRACTICAL APPROACH

Dr. Markus Ehses

Institute for Inorganic Chemistry, Saarland University

Stuhlsatzenhausweg, Building C4.1, 66123 Saarbrücken/Germany

e-mail: m.ehses@mx.uni-saarland.de; web: http://www.uni-saarland.de/~m.ehses

Summary. Live streaming of lectures can overcome the requirement to meet at a specific date in a defined place without loosing interactivity. The rather new technique Podcasting allows students to review knowledge after the lecture more efficiently.

Introduction

Despite modern methodology for class room teaching, location and time are still limiting factors in academic teaching.

A student has to visit a lecture at a defined time in a certain hall to acquire the presented knowledge. Knowledge transfer is therefore a singular event. Even in the context of international post-graduate training programs, people have still to arrange exact dates and places to interchange news and knowledge.

In the following, I would like to present two methods to meet the needs of the above drawn scenarios, which can be realized with a minimum of technical equipment.

Overcoming distances: Live Video Streaming

Research groups from the universities at Saarbrücken/Germany, Metz, Nancy, Strasbourg/France and Esch-sur-Alzette/Luxembourg form the International Research Training Group (IRT) 532. [1] The members are group leaders (professors) permanent staff, doctorants and post-docs. An ambitious educational program designed especially for the doctorants and post-docs accompanies the interdisciplinary scientific program and consists of three main components:

- workshops, in which the members of one participating research group introduce their daily laboratory work to the colleagues within the IRT
- seminars, in which the doctorants present their latest results to the members of the group, and
- lectures, in which the group leaders introduce their research topic to the IRT

The workshops require the presence of all participants because of its experimental

approach. The seminars aim at supervising the ongoing of the individual research and training of presentation skills. Therefore, physical presence is of great importance in these events. However, the lectures are class teaching with following feedback. The lectures are typically scheduled every 2-3 months for 1-2 hours each and would not justify the travel of 10-20 participants between the member laboratories.
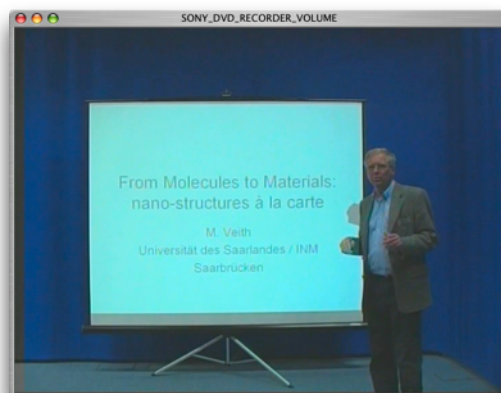

Figure 1. Screenshot from the streaming of one of the latest lectures of IRT 532 at Saarbrücken.

Therefore we set up a live internet streaming scenario in collaboration with our computing centre and video studio at the Saarland university. The lectures are given in front of the Saarbrücken students in a video production studio. The studio is equipped with white board, video beamer, wireless microphones, video camera, a professional audio/video control room and features excellent acoustic and illumination properties. The analog video and audio signals are synchronized, encoded as windows media stream on a Pentium IV computer running Windows Media Encoder and sent *via* the video server of the computing centre to individual computers at the partner laboratories. The on-line watching students need a windows media player compatible client on various platforms to watch the stream; the presentations have been provided on a server prior to the lecture so that the students can follow the lecture and take notes simultaneously. To enable feedback of the students, questions and annotations from the outside participants are posed by text chat and alternatively by e-mail and read to the lecturer by the moderator. To enable this degree of interactivity, the audience in the studio and at the screens in the partner laboratories have to watch the same content at the same time: they are interconnected at the same time in different places.

Overcoming time and location: Podcasting

Podcasting is a relatively new technique of making audio and video material available over the internet. The term is composed of terms derived from the portable multimedia device „*iPod*" from Apple® and „*broadcast*" for radio/tv shows and thus could be named „*portable shows on demand*". The end user is subscribing to a podcast feed with a podcatcher (such as e.g. iTunes) and gets the latest episode automatically. However, he can listen/watch the episode on his preferred tool (desktop or portable computer, mp3 player, iPod) when and where it fits best to his needs.

One of the main problems with class teaching is the reviewing of the knowledge from ones own notes taken quickly during the lecture. With a podcast, the student can follow his own notes while listening (or watching) the lecturer again giving exactly the same explanation as he did in the lecture hall. Additionally, the podcast is enriched with presentations (pdf-files) and interactive animations of molecular structures in QuickTime format (produced with CrystalMaker). Since the black board writing is not given in the audio podcast, it cannot substitute the physical presence of the student in the hall, but helps adopting the knowledge.
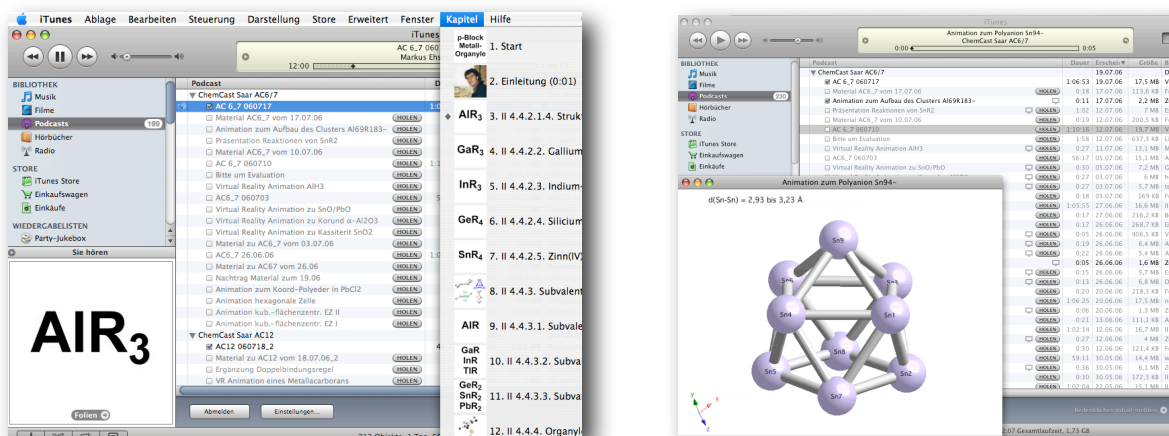
Figure 2. Screenshots from iTunes showing the podcast „*ChemCast Saar AC6/7*" and one episode in chapter view (left) and a separate window for interactive animations.

The technical requirements are relatively low using standard tools on the MacIntosh platform. The lectures are recorded with a iPod equipped with a mono microphone. After the lecture, the audio take is transferred to the computer *via* iTunes into GarageBand, optimizing sound, deleting idle time (e.g. black writing/cleaning) and subdividing the file into logical chapters, which can be accessed directly by the end user. The episode is handed over to iWeb, where the feed is composed, translated into

html and transferred to the sever. The new episode can then be accessed either via a podcatcher, a RSS feed reader or directly on the homepage of the podcast on various platforms. [2]

Conclusion

From our experience, streaming is recommended for occasionally occurring lectures where special knowledge is delivered. Enhanced podcasts are very helpful in supporting the reviewing of notes from regular lectures in basic or advanced graduate courses.

Both means have become available broadly with lower costs and less needs for expertise due to cheaper hardware, more user friendly programs and availability of broad band connections also to private end users thus considerably lowering technical obstacles. This easier performance of transmitting multimedia content over the internet in both methods helps making teaching more efficient from time saving (less travels) and from more intensive reviewing of lectures.

References

[1]   http://www.uni-saarland.de/fak8/veith/HP-GRK/kolleg1.htm.

[2]   http://www.uni-saarland.de/fak8/veith/vorlesung_ehses/ChemCast Saar AC6 AC7/ChemCast Saar AC6 AC7.html; http://www.uni-saarland.de/fak8/veith/vorlesung_ehses/ChemCast Saar AC12/ChemCast Saar AC12.html