Recording and Podcasting of Lectures for Students of Medical School

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Abstract. Information and communication technology (ICT) becomes an important way for the knowledge transmission, especially in the field of medicine. Podcasting (mobile broadcast content) has recently emerged as an efficient tool for distributing information towards professionals, especially for e-learning contents.The goal of this work is to implement software and hardware tools for collecting medical lectures at its source by direct recording (halls and classrooms) and provide the automatic delivery of these resources for students on different type of devices (computer, smartphone or videogames console). We describe the overall architecture and the methods used by medical students to master this technology in their daily activities. We highlight the benefits and the limits of the Podcast technologies for medical education.

Keywords. E-Learning, Medical education, Podcast, Podcasting, Virtual university

1. Introduction

Historically, the Medical School of Rennes University has greatly expanded the dematerialization of educational resources, through its free web content on education servers [1] and the Virtual Radiology University in 1996 [2]. Podcasting (mobile broadcasting of audio and audio-video) has recently emerged as an important information technology tool aimed at information professionals, for communication, continuing education and professional support for research and health training [3-4-5].

The chosen system had to offer a simple solution for collecting records from the teachers and requiring cheap technical support for the institution by promoting the use of material and human resources available. It was then extended as a social possibility to exchange comments (blogs) between teachers and students that is more interactive and attractive than traditional email system while being visible to everybody. The system would also allow the transfer and consultation of the new medical educational resources on new mobile devices such as tablets and smartphones.

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2. Method

To support the development of this work, we used the teachers' portable personal computer or workstations and platforms currently available (Mac OS X, Linux and Windows XP). For the acquisition of audio-video data, we used solution-oriented software "embedded" primarily in commercial products such as Podcast Producer (Apple), Camtasia Studio (TechSmith), Profcast Company (Humble Daisy) and Inwicast (Inwicast).

The audio-video supports from these lectures were then collected through the proposed open-source software tools for communication download with the opportunity to comment these resources. These software solutions are suitable for the integration of podcasting opportunities via RSS (multimedia) syndication to deliver information and resources medical teaching in an automatic and voluntary basis (subscribing to these feed).

3. Result

The audio-video and audio are directly available from the portable computer of the teacher and is associated with the course materials such as PowerPoint (Mac OS, Linux and Windows) or Keynote (Mac OS X) using the software solutions currently available such as Camtasia Studio (Windows and Macintosh), and Podcast Producer ProfCast (Mac OS X). These audio-video files are the exact copy of the course and the teacher can then check them to correct any errors. Audio clips are saved as standard MP3 playback suitable for most digital music players owned by students. The audio-video recorded in standard MP4 format suitable for playback on most portable video held by students. This same format is ideal for workstations and mobile devices.
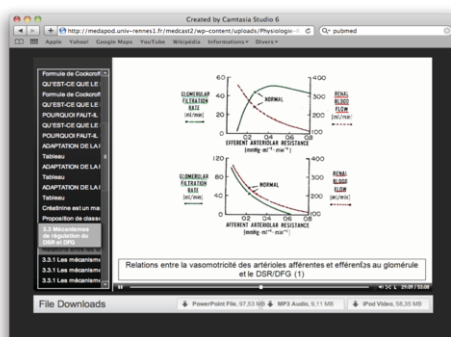
Figure 1. A Physiology resource with its chapters

The resulting files are then transferred to a storage space on a workstation to be re-encoded in other formats specific to certain mobile platforms like smartphones or personal digital assistants (PDAs) The new Internet Tablet, the games consoles, laptops, televisions, etc ... The same audio and audio-video can also be "enriched" by the inclusion of a presentation lectured for navigation and access facilities to specific parts of the course record.
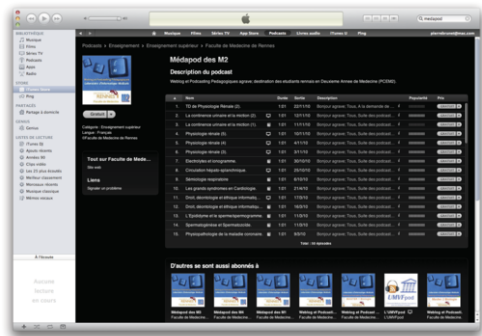
Figure 2. The podcast of PCEM2 (2nd year) from the iTunes application

Once the files (audio and audio-video) are validated by the teacher, they are available to students through a website (blog under Wordpress engine) for direct visualization of the resource or download associated with a short abstract presentation of the teacher to the students can respond specifically after authentication.

To make available a simple keyword search at the application responsible for the collection of podcasts, the different podcast feeds (carrying multimedia educational resources) are declared and referenced. Direct access to these resources enables automatically download depending on the status of university students. There is indeed a podcast feed specific to each academic year for a better dissemination of these resources, but also for direct playback through a podcast aggregator application itself (the application has a built-in video player).

Medico-pedagogical resources obtained directly from their in-class teaching source are made available on major mobile players such as smartphones or other audio-video players. They are converted to standard formats like MP3 and MP4 compatible with the main devices of the market.

Figure 3. Mobile access to the medical resource from a smartphone

This mobile access is used to supplement the students taking notes and thus enhance the process of class attendance: it is very easy to revise or re-listen to all or part of the course at any place and at any hour of the day to improve his own notes or « group-notes » frequently used by students.

4. Discussion and Conclusion

The concept of automated dissemination of classical educational resources (at format text and/or diaporama presentation) or multimedia (audio and/or audio- video) seems to have caught the attention of medical students [6-7-8-9 -10-11].

Indeed, a recent survey with 108 students at Medical School of Rennes on the evaluation of digital resources website (www.umvf.org) and the podcasting system confirmed that students know this concept (94%), incorporate it in their studies (73%) and that it brought additional important improvment to taking notes (51%) while regretting that it is not widely offered in different years of medical training at the medical school[12].

A new more comprehensive study detailing the usability of this new delivery method will be offered with a larger number of students during the academic year 2010/2011. The collection system of teaching ressources directly in classroom to make available new resources on the Medical School of Rennes meets the key objectives we set ourselves using a facility for recording live lectures.for the teachers. A new feature for the teacher to re-listen or to review and validate his teaching before release to these students will also be given during the academic year 2011/2012.

The students fully embraced this concept by adopting it as additional support to their own notes while awaiting the arrival of new mobile devices like Internet tablets perfectly suited to this release.

Under the program UMVF Podcast, over 250 hours of teaching courses (Physiology, Physio-Pharmacology, Pharmacology, Bacteriology, Oncology, Medical Informatics, etc ...) are currently available in several standard formats for mobile education from the website UMVF and from various websites of the Medical School of Rennes.

Finally, this study could be potentiated by another mode of dissemination of resources like streaming for more efficient memory resource of mobile devices and the best use of wireless networks (Wi-Fi) deployed on the university campus.

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