

Lifelong Learning and Doctoral Studies - Facilitation with Podcasting Techniques

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Abstract - In the following paper a review of the state of the art, procedures and current progress in the field of e-learning at Graz University of Technology /Austria (TU Graz) are given. An introduction to the necessity of lifelong learning in modern society, especially in the rapidly developing field of technical knowledge is followed by the way of improving the flexibility of the learning / teaching process for distant learning. One of such modern technical keys to the improvements of teaching is the method of podcasting on the base of RSS-technology as being introduced at the new TU Graz TeachCenter in the recent past. This paper concentrates mainly on the use of podcasts for higher education and lifelong learning

Keywords: Lifelong learning, podcasting, e-learning, web2.0, RSS, TU Graz TeachCenter

I. INTRODUCTION

The Worldwide Web has changed radically within the last year [7]. A lot of new internet-technologies have been arisen that will change our behavior of using the internet not only in our common life but also for educational purpose. These technologies are summed up in the term of "Web2.0" by Tim O'Reilly. In the strict sense Web 2.0 helps to create and manage content and communities on demand or editing online pages on the fly by anybody with only very basic knowledge of IT required. Possibilities for new didactical strategies are emerging already and are going to be implemented into and supplementing traditional ways of teaching and learning besides offering script-download via internet [4]. That may lead to a change of educational scenarios in the long run.

An active progression of modernization in the field of education has been started when the European Commission has launched a European-wide debate on a comprehensive strategy for implementing lifelong

learning, by producing the "Memorandum of Lifelong Learning" and taking into account the summits of the so called "Lisbon Strategy" in 2000.

This strategy aims to "make Europe, by 2010, the most competitive and the most dynamic knowledge-based economy in the world" and is based on the rapid change being experienced by Europeans, including technological and digital developments, intercultural relations, the ageing population and the global market. In this context education and training throughout life is seen as the best way for everyone to meet the challenge of change" [3].

Against this background also universities have to re-define their role and to think about the contribution they make to lifelong learning (Ján Figel, commissioner of education and culture, EC, 2006).

In Austria, the new university law established in 2002 defines as one task of the universities to act as a provider of continuing education opportunities especially for their alumni. Taken up these directives the universities began to enlarge their activities within continuing education that most of them had started only in the 1990s (it must be said that there is no lasting tradition of University continuing education neither in Germany nor in Austria).

II. EXPANDING TU GRAZ STUDY SERVICES

A. Bachelor, Master and Doctoral Studies at the TU Graz

The new curriculum for the bachelor, master and doctoral studies at the TU Graz is characterized by a high degree of interlacing lectures and exercise lessons. This is preferably organized in the 2:1 model. That means that for each two hours of lecture there is one hour of exercise, either as classroom or laboratory exercise. The advantage of this structure is that the transfer of theoretical knowledge (lecture) is quickly followed and thereby more immediately deepened by the succeeding exercise unit. It is therefore the preferred model for the basic lectures for both beginners and advanced students.

Keeping in mind that that many students are no longer full-time students this leads to the wish to offer other supporting media for those who are not in a position to attend certain lecture parts of the curriculum. Therefore innovative means of knowledge transfer close this gap up to a certain degree. Of course the full effect of direct teaching interaction cannot be attained, e.g. if one keeps in mind the meaning of transporting the “story behind the story”, which is soft contents and will not show up on conventional or electronic teaching media.

Especially the new system of doctoral studies might profit from these innovative means of knowledge transfer, since there is an increased part devoted to advanced lectures. Especially doctoral students who have already started a working career outside of the university may profit from exchanging contents and feedback through electronic media.

B. The Office for Lifelong Learning at the TU Graz

At Graz University of Technology the Office for Life Long Learning has been established at the end of 2005 taking into account that learning is a lifelong process as described above.

The office especially wants to approach young graduates as well as experienced professionals with a technical and scientific background interested in vocational education and training. By acting as a provider of continuing education and lifelong learning activities Graz University of Technology has to face a number of challenges:

First of all it must be taken into account that adult learners have specific and individual learning needs that are in many ways different from those of our ordinary students. Especially the time factor is very important, so that we have to adapt our programs fitting into a structure with modules and a time schedule concentrated on evening and week-end classes. Due to the fact that most of the “adult students and learners” are mainly not at the TU Graz campus because of their daily working or even come from foreign countries methodologies helping to reduce the dependence from time and place are from high interest. In this context it must be noted that also many “regular” students are no longer full-time students but have to earn their living by working besides their studies and therefore should be supported by innovative means of knowledge transfer. Therefore the Office for Life Long Learning had to arrange for e-learning facilities that would enable to follow the programs. The foundation of the Working Group “Vernetztes Lernen” (WG Social Learning) at the TU Graz under the direction of Martin Ebner came in the nick of time. A pilot project in the context of e-learning is the postgraduate master program “Traffic Accident Research” where podcasts are used as a new tool facing the special edge conditions described above [5].

C. The Working Group Social Learning at the TU Graz

Electronically supported learning, briefly e-learning, in the form of very good single initiatives has been practiced for years at the TU Graz [6]. These activities to bundle („to network“) was the basic idea for the Vice-Rectorate for Teachings, the Office for Life Long Learning, the Institut for Information systems and computers media, as well as

for the Center of Computer and Information Services (CIS). In September 2006 the Working Group “Vernetztes Lernen” (WG Social Learning) became a new service of the Vice-Rectorate for Teachings. By the imbedding of the Working Group in the CIS established synergies can be used and the service achievements be extended with a further component. Main focus of the Working Group under the direction of Martin Ebner is to implement (where necessary) the possibilities of network-based, communication-oriented teaching and learning methods in a didactically meaningfully way and establish them lastingly at the TU Graz.

A great step forward due to the aims introduced above was done by the WG Social Learning by implementing the so called TU Graz TeachCenter within the digital structure of the TU Graz study-services landscape. The TU Graz TeachCenter is a free electronic platform for the promotion and management of digital teaching activities for all teachers of the TU Graz. It is meant to be a useful extension to the time in lecture room but not to displace them.

Furthermore in October 2006 the TU Graz LearnLand was launched. By using the open source software ELGG (<http://www.elgg.org/>) a blogosphere is offered to each member (lecturers and students) of the university. After the first logon a personal weblog is created where contribution can be published very easily. Users can establish digital identities and connect with other members, collaborate with them and discover new resources through their connections.

III. MODERN INFORMATION DISTRIBUTION – AN INTRODUCTION TO RSS TECHNOLOGY

All new technologies of the Web2.0 progression are connected with each other and use one thing in common – Really Simple Syndication (RSS). The great efforts of RSS are the new quality of finding and receiving information and the high capability of networking by referencing RSS users on each other.

Technically RSS can be described as an XML based data format that carries the content of a website in a strict standard format which enables a clear separation between content and format. Each time the content changes at a website subscribed to RSS all subscribers of the website get the new content as a so called RSS-feed automatically sent to his RSS Reader displayed in a style each subscriber can choose. RSS Readers periodically check for new feeds and also download embedded media files which is of interest for podcasting [9].

The definition of “podcast” from Wikipedia (<http://de.wikipedia.org/wiki/Rss>) is: “A podcast is a media file that is distributed by subscription over the Internet by using syndication feeds, for playback on mobile devices and personal computers.” With other words: only media files (audio or video) distributed over RSS technology leads to a real podcast [1].

The two platforms for social learning at TU Graz, the TU Graz TeachCenter and the TU Graz LearnLand, provide RSS technology for their users and administrators.

IV. PODCASTING AT THE TU GRAZ

A. Podcasting – risks and chances

By introducing a new technology or method in the field of Higher Education it must be considered that there are of course some risks, but also chances.

The main problems due to the usage of podcasts can be summarized as:

- **Recording:** The recording it selves comprised a lot of tiny sources of error. A number of steps in the beginning of the record must be taken into consideration and also during the recording. The ease of use aspect seems to be very essential in such circumstances. The position of the microphone is of essential meaning.
- **Rework:** If the recording of the audio was not very well, the rework of the audio track is a very time-consuming complex job.
- **Screen capturing:** For the TU Graz does not film the lecture with any kind of camera but captures the screen of the laptop by software all teaching activities which are not taking place via laptop will not be recorded. Therefore common methods like drawing on the blackboard or using overhead slides are not realizable in this way.

On the other side there are big advantages for education:

- **Process capturing:** In combination with a tablet pc and for example PowerPoint or any other software that enables handwritten input the content can be processed during the lecture step by step. Particularly for understanding mathematic equations this is a great benefit.
- **Repeatable process:** Podcasts show this step by step developed process of the whole lecture. During the learning activities learners can repeat the recording as often as they need it.
- **Lecturers:** Podcasting as done at the TU Graz by now is a record of a live situation. This means that it is not comparable to a professional record, for it is not the aim to replace the lecturer by a perfect studio recording. During the learning-process learners like to remember the live situations and not to listen to a new recording
- **Multiple learning materials:** The learning material will be enhanced by audio and video files. Learners can choose which fits best.
- **Learning on demand:** Learning on demand becomes reality with multiple devices, for example by hearing MP3 files or watching a video file during a railway trip.
- **Easy to get:** The RSS technology allows an very easy and effective distribution of media files produced.

B. Podcast activities at TU Graz

An initiative of the WG Social Learning at the TU Graz is supporting lecturers with podcasts. The current main goal of these podcasts activities is to produce live recordings of the lectures held during the courses, rework the record for quality aspects and distributing them on the TU Graz Teach Center in several formats using RSS technology (Fig.1.).

The recordings are done with the software “Camtasia” (<http://de.techsmith.com/camtasia.asp>).

By capturing the screen of an laptop or tablet pc (as done for the course “Mechanik 1”) and recording the audio during the lecture – without a live filming of the teacher a media file is produced that is then easily distributed via RSS-feed offered on the TU Graz TeachCenter. The students themselves only need to subscribe to RSS on TU Graz TeachCenter website and the rest will work automatically on their RSS-reader software (Fig.2.). The course “Mechanik 1”one gains a unique position within the podcast activities at TU Graz because the lecture was held as an interactive presentation where the teacher was generating the content on his tablet pc in real time during the lecture. Because of sound quality reasons some of the recordings had to be re-recorded afterwards again unfortunately missing the live character. After a reworking of the audio track a number of different media files are being produced, that can be played by multiple devices – on a PC, on an iPod or even on a mobile phone.

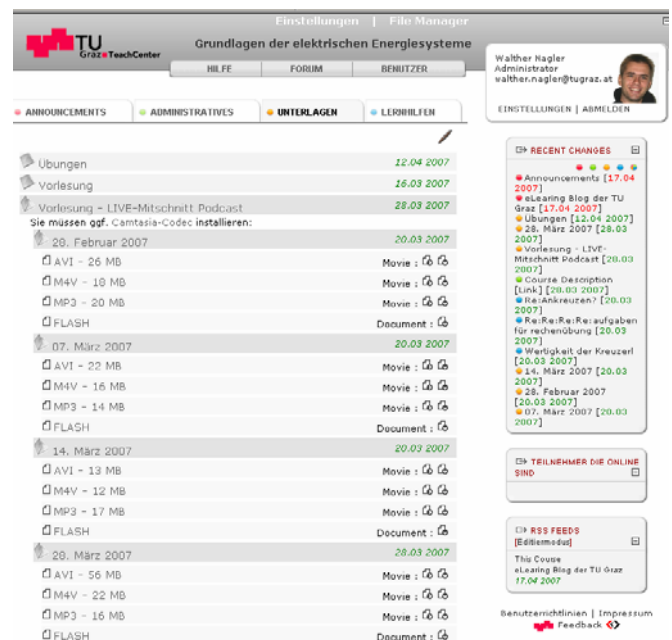


Fig.1. Offering podcasts of the course “Grundlagen der Elektrischen Energiesysteme” on the TU Graz TeachCenter in several formats (AVI, MP3, M4V and Flash) using RSS technology (RSS-feed in the right bottom corner)

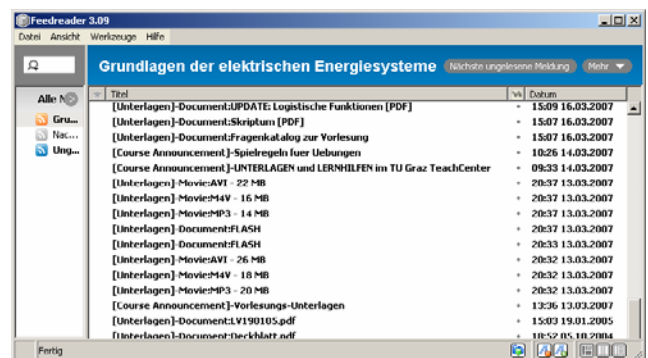


Fig.2. Podcasts of the course “Grundlagen der Elektrischen Energiesysteme” obtained from the TU Graz TeachCenter via RSS technology on the software “Feedreader3.08”

The following lists the activities of podcasting at the TU Graz:

- A growing number of several university course (10 currently) for the Lifelong Learning postgraduate program "Traffic Accident Research"
- University course "Einführung in die strukturierte Programmierung"
- University course „Elektrische Energiesysteme 1“
- University course „Grundlagen der Elektrischen Energiesysteme“
- University course "Informatik 1"
- University course „, Gesellschaftliche Aspekte der Informationstechnologie “

C. Summary and future perspective of podcasting activities

The assistance for learners who are not able to attend the lecture on a regular basis is a further goal of the initiative, but it must be pointed out once again that a podcast of a lecture will not be able to replace the real life lecture. A new didactical concept is maybe the combination between a blended learning scenario and the use of podcasts during the online phase. Students can prepare for the next meeting by hearing some inputs and discuss or learn with it. The lecturer themselves answers questions and accompanied the online process and is able to prepare new input by the result of the learning process.

First evaluations of the podcasts activities at the TU Graz result that the consumption of and the work with podcasts depend on the didactical setting of the course [10]. The acceptance of the podcasts from the course "Mechanik 1" was very high because of the usage of a tablet pc on which the lecturer was able to develop the content step by step (mainly mathematic calculations). The quality of the podcasts were rated "good" in general but should be improved. The students appreciate the live character of the recording as an important quality and reason to listen to the lecture again. This statement points out the importance of the human factor within podcasting and teaching in principle.

It can be summarized that podcasts will help to improve education, but there is lot of research work to be done. Didactical concepts for implementing podcasts into higher education are still in the fledgling stages [2]. The technical support for a high number of podcasts is a challenge for the future. Search ability within podcast files by Optical Character Recognition (OCR) will be one of the next demands to be achieved Furthermore the improvement of the usability for lecturers to minimize user errors during record time is of most practical importance.

X. CONCLUSION

Web 2.0 and especially podcasts have a great potential to improve learning and teaching. In future these technologies will be more and more used [8] [11]. The "net generation" or "digital natives" already grow up by using audio and media files for learning processes. From this point of view it is necessary to take the research for new didactical concepts and scenarios implementing the possibilities of Web2.0 very seriously.

Bachelor, master and doctoral studies will improve in quality by adding new media. These help students who due to their financial or professional situation cannot attend all lectures to keep up with the teaching process, especially when the model "lecture:exercise = 2:1" is enforced.

REFERENCES

- [1] Almonte, A., Gilroy, K. (2005). *Podcast for Learning*, © The Otter Group | Cambridge, MA
URL:http://www.ottergroup.com/blog/_archives/2005/9/16/1232728.html (last visit 2007-01-24)
- [2] Campbell, G. (2005). *There's Something in the Air - Podcasting in Education*, EDUCAUSE Review, vol. 40, no. 6 (November/December 2005): 32-47
URL:<http://www.educause.edu/er/erm05/erm0561.asp> (last visit 2007-01-24)
- [3] Commission of the European Communities. (2000). *A Memorandum on Lifelong Learning*, Commission staff working paper, Brussel SEC(2000) 1832.
URL:<http://www.bologna-berlin2003.de/pdf/MemorandumEng.pdf>
- [4] Dorok, S. (2006). *Podcasting im Unterricht*, lehrer-online, Schule ans Netz e.V.
URL:<http://www.lehrer-online.de/dyn/9.asp?path=/podcasting> (last visit 2007-01-24)
- [5] Ebner, M., Stöckler-Penz, C., Gugler, J., Hoschopf, H. (2007). *Podcasting – Zukunftschance für die universitäre Weiterbildung?*, Zeitschrift für Hochschulentwicklung, ZFHE Jg.2/Nr.1 (März 2007), in print
URL:<http://www.zfhe.at>
- [6] Fickert, L., Schmutzner, E., Nagler, W., Kamrat, I., Stojke, C., „*Experiences and Adaption of Teaching Concepts in the Field of Multimedia Learning for Electrical Power Systems at the University of Technology Graz*“, Paper, MIPRO Conference 2004, Opatija, Croatia 2004
- [7] Grossman, L (2006). *Time's Person of the Year: You*, 2006 issue of Time magazine,
URL:<http://www.time.com/time/magazine/article/0,9171,1569514,00.html> (last visit 2007-01-29)
- [8] Lane, C. (2006). *UW Podcasting: Evaluation of Year One*, Office of Learning Technologies, University of Washington,
URL:http://catalyst.washington.edu/research_development/papers/2006/podcasting_year1.pdf (last visit 2007-01-24)
- [9] Nagler, W., Korica-Pehserl, P., Ebner, M. (2006), *RSS – the Door to E-Learning 2.0*, Tagungsband 13. Tagung FNMA-Austria, in print
- [10] Swiss Banking Institute of the University of Zurich (2006), *Bildung für unterwegs: Evaluationsresultate der Semester 04/05 und 05/06*, eCF Corporate Finance, Swiss Banking Institute of the University of Zurich
URL:<http://www.getinvolved.unizh.ch/podcast.html> (last visit 2007-01-24)
- [11] Wunschel, A. (2007), *Die deutschen Podcast-Hörer – Zusammenfassung der Ergebnisse der zweiten Podcast-Umfrage*,
URL:<http://tellerrand.typepad.com/tellerrand/podcastumfrage/> (last visit 2007-01-24)