Self-directed and cooperative learning with lecture recording

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1. Introduction

Beside the Internet-based communication and collaboration tools as well as learning management systems, eLearning focuses on the preparation of electronic media. In the 90th the research and development on eLearning were characterized by the design of „computer based trainings" (CBT). With the networking of computers with internet „web based trainings" (WBT) became popular. Nowadays CBT and WBT are available for several different topics like foreign languages, mathematics or history, being adopted in the different learning arrangements .

In the middle of the 90th the computer-based production of "lecture recording" became more and more popular. A lecture recording can be easily produced with a multimedia computer and a video-camera[1]. The lecture recording can be distributed by CD, DVD or Internet. The learners have the possibility to see the lecture anytime and anywhere on their own computer. A big advantage of lecture recording is the easy, fast, and cheap preparation of electronic media[2] that can be produced by each teacher without high technical knowledge.
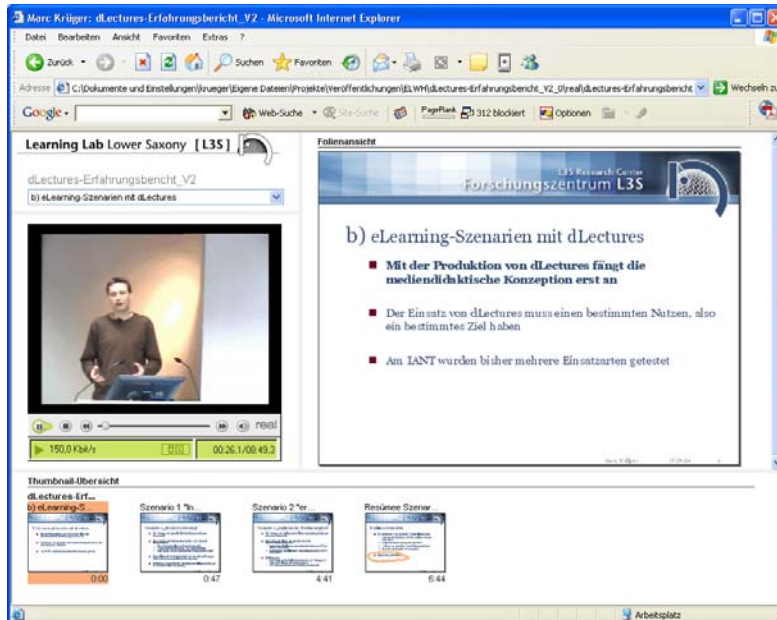

Figure 1: Example of a lecture recording

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[1] Wolfgang Effelsberg: Quo vadis, alma mater? Stand und Zukunft der virtuellen Lehre an unseren Hochschulen. In: Stephan Pinkau, Thomas Gerke (Hrsg.): Reader zum Workshop der ingenieurswissenschaftlichen Projekte im bmb+f Förderprogramm "Neue Medien in der Bildung" am 25. und 26. Juni 2003 an der Hochschule Anhalt in Dessau

[2] Paul-Th. Kandzia, Gabriela Mass: Course Production – Quick and Effective. 3rd NLT-conference, 13./14.9.2001, Fribourg, Switzerland

Figure 1 shows an example of such lecture recording. The teacher can be seen on a small video on the left, while his slides are shown in a separated picture on the right. The scroll bar below enables the direct choice of a slide of the talk and jump to the according part of the lecture. The lecture recording can be stopped and spooled by the user becoming an interactive media. Because of the easy way to produce such kind of electronic media the lecture recording find their increasing adoption in the education.

2. Research perspective

Contemporary aspects

The change from the industrial to the knowledge society is the driving force of modernisation. The German "Enquet-Kommission" compares this with the change from the agrarian to the industry society[3]. The transition from the industry to the knowledge society immanent is the necessity of live-long learning[4]. Therefore new ways of knowledge presentation will be possible by information and communication technologies. With a computer infrastructure and network overall available the handling of electronic media becomes a key qualification like reading, writing and calculating[5]. The competency of self-directed and technology supported live-long learning becomes also a key qualification for the vocational and private success.

Aspects of the Educational media research

The educational media research traditionally concentrates on the design of information in text and figures for radio, television, and computer[6]. During the last years there has been an enhancement of research topics. KERRES[7] says that the media research has also to focus on the conditions at which specific media have to be designed for specific learning target. From the basis that there is no best model to the modus of designing learning with media[8] KERRES formulate his „gestaltungsorientierte Mediendidaktik" (loose translation: design orientated pedagogic of media): The design of educational media has to serve to the development and the conception of electronic media supported learning[9]. From a constructivist point of view ESTREAM[10], HORZ et. al.[11] and KERRES[12] point out that electronic media within their interactive

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[3] Enquete-Kommission: Zukunft der Medien in Wirtschaft und Gesellschaft. Schlussbericht der Enquete-Kommission. Deutschlands Weg in die Informationsgesellschaft. In: Deutscher Bundestag (Hrsg.): Drucksache 13/11004, Bonn, den 22.06.1998 S. 48

[4] Wissenschaftsrat: Stellungnahme zum Verhältnis von Hochschulausbildung und Beschäftigungssystem. In: Wissenschaftsrat (Hrsg.): Drucksache 4099/99, Würzburg, den 09.07.1999, S. 13f

[5] Bertelsmann Stiftung / AOL Time Warner Foundation (Hrsg.): White Paper. 21st Century Literacy in a convergent media world. Deutsche Version, Berlin am 7./8. März 2002, S. 65

[6] Michael Kerres: Information und Kommunikation bei mediengestützten Lernen – Entwicklungslinien und Perspektiven mediendidaktischer Forschung. In: Zeitschrift für Erziehungswissenschaften, 3. Jahrgang, Heft 1/2000, S. 116

[7] Michael Kerres: Information und Kommunikation bei mediengestützten Lernen. S. 123

[8] ebenda S. 116

[9] Michael Kerres: Gestaltungsorientierte Mediendidaktik und ihr Verhältnis zur Allgemeinen Didaktik. In: B. Dieckmann, P. Stadtfeld: Allgemeine Didaktik im Wandel. Klinkhardt Verlag, 2004

[10] eStream: http://estream.schule.at (05.03.2005)

[11] Holger Horz, Stefan Fries, Anja Wessels: Die Virtuelle Hochschule Oberrhein (VIROR)[...].

attribute make possible a learner-centred learning. EULER and PÄTZOLD[13] establish the hypothesis that in a learner-centred learning arrangement with electronic media soft-skills like competence of self-directed learning, competence of working in a team and competence of media will be enhanced. Over all the design of learning arrangements with electronic media have to formulate a surplus about traditional learning arrangements[14].

Self-directed and cooperative learning with lecture recording
FOERTSCH, MOSES, STRIKWERDA and LITZKOW[15] refer to the self-directed and cooperative learning with lecture recordings with the corresponding research results. In this learning arrangement students, instead of assisting to a present lecture, go to a computer room and work with the lecture recording in teams of three students, having a tutorial support of the professor and the teaching assistant: instead of the presence lecture, the student can anytime ask questions to the teacher. The teacher can play the role of tutor intensively and doesn't need to sacrifice his work time and attention reporting the learning content. Working with the lecture recording, the students have the possibility to control the speed of learning by themselves, stopping, repeating and jumping over a chapter.

Abstract of the research's perspective
The abstract of the research's perspective will be constituted as follow: The contemporary aspects call for additional competence to the future employees. The educational media shows the potential of learner-centred learning arrangement by new electronic medias. EULER and PÄTZOLD[16] establish the hypothesis that electronic medias enhance soft-skills like competence of self-directed learning, competence of working in a team and competence of media. An interesting point of view was formulated by EULER and WILBERS for a pedagogic approach for the university of St. Gallen: Self-directed and cooperative learning with electronic media. Lecture recordings can be integrated for the education in several learning arrangements. The learning arrangement practised by FOERTSCH, ET AL.[17] promises a good pedagogic design to enhance soft-skills. This learning arrangement opens out the teacher-centred learning approach and enables a limited degree of freedom for self-directed learning. This indirect approach[18] for self-directed learning ranges between teacher-centred and learner-centred approach and build a bridge among those both learning arrangements. The lecture recording allows a similar and

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[12] Michael Kerres: Information und Kommunikation bei mediengestützten Lernen.

[13] Dieter Euler, Gunter Pätzold: Selbst gesteuertes und kooperatives Lernen in der beruflichen Erstausbildung (SKOLA). Gutachten und Dossiers zum BLK-Programm. In: BLK (Hrsg.): Materialien zur Bildungsplanung und Forschungsförderung. Heft 120, Bonn 2004, S. 20f

[14] Michael Kerres: Gestaltungsorientierte Mediendidaktik und ihr Verhältnis zur Allgemeinen Didaktik.

[15] Julie Foertsch, Gregory Moses, John Strikwerda, Michael Litzkow: Reversing the Lecture/Homework Paradigm[…].

[16] Dieter Euler, Gunter Pätzold: Selbst gesteuertes und kooperatives Lernen in der beruflichen Erstausbildung (SKOLA). S. 20f

[17] Julie Foertsch, Gregory Moses, John Strikwerda, Michael Litzkow: Reversing the Lecture/Homework Paradigm[…].

[18] Charlotte Nüsche, Andrea Zeder, Christoph Metzger: Selbständiges Lernen und Lernstrategieansatz. Eine empirische Studie zur Bedeutung der Lern- und Prüfungskonstellation. 2003, S. 9f

well structured offer about the learning facts. All learners have the possibility to reach the same standard of knowledge. The self-directed learning process enables the practise of learning strategies. By this way the learner can be slowly trained in self-directed learning. Furthermore learning in groups of three learners advances the competence of working in a team.

The results of this learning arrangement show a high acceptance about this kind of learning by learner and teacher. Furthermore it shows that this learning arrangement is practicable. Actually there are no research's results about the advance of the soft-skills. Moreover the authors give very few information about how to design the learning arrangement.

3. Goal of this work

Goal of this work is the study of the learning arrangement from FOERTSCH ET AL. The main question will be if is it possible to enhance the soft-skills self-directed learning and competence of working in a team. This will be done focusing on the formulated research perspective. For this purpose it is necessary to follow these three core questions:

    a)   How should be designed the learning arrangement to enhance the soft-skills.

    b)   It's possible to enhance the soft-skills

        - self-directed learning and

        - working in a team?

    c)   What is the surplus of this learning arrangement?

In the context of this work the learning arrangement should be accomplished in classes for vocational training as well as in university courses. Intention of evaluating two different educational institutions is to find out special and universal design aspects of this learning arrangement.

4. Own publications in the view of lecture recordings

Andreas Heinrich, Marc Krüger: The Interactive Learning Lab: A Complex and Flexible but Easy to Use Multimedia Environment. International Conference on Education and Information Systems: Technologies and Applications, Orlando, Florida, Jul 21.-25.2004

Marc Krüger, Andreas Heinrich, Klaus Jobmann: Das iL2 - ein leicht zu bedienender Multimediaraum für eLearning. In: Jan von Knop, Wilhelm Haverkamp, Eike Jessen (Hrsg.): E-Science und GRID, Ad-hoc-Netze und Medienintegration. Lecture Notes in Informatics (LNI) der Gesellschaft für Informatik e.V. (GI). Düsseldorf:, 2004, pp. 181-203

Marc Krüger, Klaus Jobmann, Jose-Esteban Garcia: The Integrated Networks Lecture. International Conference on Engineering Education, July 21–25, 2003, Valencia, Spain

Marc Krüger, Torsten Klie, Andreas Heinrich, Klaus Jobmann: Interdisziplinärer Erfahrungsbericht zum Lehren und Lernen mit dLectures. Vorgetragen zum eLearning Workshop Hannover zum Thema "Einsatzkonzepte und Geschäftsmodelle", 27. und 28. September 2004. Veröffentlichung Mitte 2005 im Springer-Verlag