DEFINING EFFICIENT INTERNET-LEARNING FROM COMMON E-LEARNING

A MOTIVATION FOR DESIGNERS OF LEARNING-TOOLS TO HAVE A CLOSER LOOK ON MEDIAS CHANCES AND CORRESPONDING LEARNING TECHNIQUES

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ABSTRACT:

E-Learning is considered as the approach to facilitate and enhance learning by means of personal computers (PC), CD-ROMs (and alike media) and the Internet. While CD-ROMs are used to demonstrate and to train by use of PCs' multimedia capabilities, this mostly behaviouristic or instructional approach is also still dominating the construction of Internet-based learning-tools such as learning-management-systems (LMS). Although the Internet is a huge medium to store and transport knowledge of networked people, and informational services like Usenet, Google and Wikipedia, or commercial services like Amazon are considered successful, whereas LMS – built to transform information into knowledge – are widely unknown and unused.
The more sufficiently services make use of a medium's capabilities the more successful they are. In case of the Internet this means the use of public services, open standards, learner networking and the use of learner behaviour as criteria for rating and co-construction of learning materials. Sufficient use of the Internet in learning context supports corresponding learning techniques like constructivism-based cooperative, collaborative and self-determined learning. It can be concluded that Internet-Learning is useful, but it is not efficient by itself in any (institutional) learner organization.
Solutions for successful Internet-Learning differ from current E-Learning approaches. Only the combination of certain subjects, medium, methods and organization leads to a successful learning synergy. As an example for simple but sophisticated Internet-Learning, COMETS could open creators' minds for constructing new efficient learning tools und environments.

KURZFASSUNG:

E-Learning bezeichnet eine mit Hilfe von elektronischen Hilfsmitteln wie PCs, CD-ROMs und Internet unterstützte Lernform. Während CD-ROMs insbesondere zu Demonstration und Training mit Hilfe multimedialen PCs herangezogen werden, dominiert diese Herangehensweise auch die Konstruktion von Internet basierten Lernwerkzeugen wie Learning-Management-Systemen (LMS). Obwohl das Internet ein gewaltiges Medium zur Speicherung und zum Transports von Wissen der darüber verbundenen Menschen darstellt, sind einfache Informationsdienste wie das Usenet, Google und Wikipedia oder kommerzielle Dienste wie Amazon allgemein bekannt und erfolgreich, während LMS – die eigentlich zur Transformation von Wissen aus Informationen aufgebaut wurden – der Allgemeinheit völlig unbekannt sind.
Je suffizienter ein Dienst die Möglichkeiten des Mediums ausschöpft, desto erfolgreicher kann er sein. Für Internet-Lern-anwendungen heißt dies, Eigenschaften wie Öffentlichkeit, offene Standards, Vernetzung von Lernenden und Einbeziehung des natürlichen Verhaltens von E-Lernern für die Bewertung und das persönliche Co-Arrangement der Inhalte für die Anwendung zu verwenden. Die Ausnutzung typischer Internet-Eigenschaften im Lernkontext fördert die damit übereinstimmenden Lernmethoden wie konstruktivistisch basiertes kooperatives, kollaboratives und selbstbestimmtes Lernen. Es liegt der Schluss nahe, dass Internet-Learning nützlich ist, aber nicht per se in jedem (institutionellem) Lernkontext angewendet werden kann.
Lösungen für erfolgreiches Internet-Learning unterschieden sich von üblichem E-Learning. Nur eine geeignete Kombination aus Inhalten, Medium, Methoden und Organisation führt zu Synergien beim Lernen. COMETS dient als Beispiel für derartiges Internet-Learning, das abschließend Entwicklern Ideen für neue Lernwerkzeuge und Umgebungen geben soll.

1. INTRODUCTION

1.1 Motivation

Current work on evaluation of E-Learning systems conclude that E-Learning has no higher learning outcome compared to common learning arrangements (Schulmeister 2002, Lehner 2004a). Authors agree mostly in the fact that the didactical possibilities of the Internet are not exhausted yet.

1.2 Related Work

Because of its founding by technicians E-Learning is mostly defined from a technical point of view. After initial restraint the area of E-Learning is taken increasingly by the pedagogues who comment on didactic necessities and examination from teaching experiences. Constructivism becomes an important meaning in this (Arnold, 1998, Kochan 1999, Schulmeister 2002).

The high synergy potential of constructivist didactics and E-Learning becomes clear first with a containment of the area on

the Internet under aid of the media theory (McLuhan; Tapscott) and leads to a decisive role the Internet might play.

2. FROM E-LEARNING TO INTERNET-LEARNING

E-learning is considered as the approach to facilitate and enhance learning by means of personal computers (PC) as an interface to content taken from CD-ROMs (and of course alike closed media) and the Internet. While most of the content in the Internet is free, the closed media were used to be applied due to their high data capacity and a common sales model.

With the running trend towards higher bandwidth and more storage capacity on the Internet closed media will further lose weight and remain at most for economic reasons.

While CD-ROMs are used to demonstrate and to train by use of pc's multimedia capabilities, this mostly behaviouristic or instructional approach is also still dominating the construction of Internet based learning-tools such as learning-management-systems (LMS) (Schulmeister 2002). Although the Internet will be the dominating medium in E-Learning, only the old didactics to closed media is used. The more sophisticated capabilities of the Internet have to be uncovered and must be analysed on usefulness for learning purposes.

2.1 The Internet from a Social Perspective

In the later sixties of the last century, a long time before the Internet developed, Herbert Marshall McLuhan founded the actual media theory and gave means to analyse the development of media and their impact. The intensive use of a certain medium will influence people in their attitudes and structures in thoughts. He proposed, an "electric net" decentralizes and leads to a social behaviour like in villages, a narrative culture, but in a global scope. In addition, the Internet owns many other qualities by which some should be lifted out that can be considered important for upcoming conclusions.
1. The Internet has to be seen as a network of people rather than a network of data storage.
2. With a computer interface the network is usable individually.
3. The Internet holds an infinite digital data space.
4. The technical and social union on the Internet is voluntary. Hence, there is no hierarchy or power structures.
5. Everyone obtains the possibility to participate easily.
6. Content is topical, but of varying quality.

2.2 Corresponding Structures in Education

The characteristic points of the Internet advantage certain didactics and organisation of education:
1. Finding people of the same interest supports learning in subject oriented groups, especially intrinsically motivated co-learners.
2. Individual use of a medium supports self-determined learning organisation and learning subjects.
3. Digital data leads to a culture of copying, sharing, using and advancing content (Negroponte, Tapscott).
4. Just being a teacher gives no authority: The voluntariness of the interaction demands indirectly attention, quality of contributions and friendliness towards others.

5. Easy participation makes it possible for learners to join other group works or even to improve learning materials offered by teachers.
6. Especially actual and discursively handled, pluralistic content offers to make an issue with E-Learning (Schulmeister 2002).

These points show that learning with the Internet goes along with so-called "new learning cultures" (Arnold 1998) which stand in opposite to current teaching in educational institutions like schools, colleges and universities.

2.3 Limitations in Institutional Use

If educational institutions decide on a certain E-Learning system, their criteria tend to fit the teaching organisation rather than improved and motivating learning techniques: today all universities in Berlin establish learning-management-systems (LMS) reproducing the traditional organisation for monetary reasons. Necessary improvements from this objectivistic learning approach towards constructivist insights as strongly demanded by Arnold & Schüßler are neglected. Even university teachers choose a type of software that only reduces their effort in making lectures (e.g. Microsoft PowerPoint) instead of establishing software that makes students work *active* on the subject, although there are partial promising approaches such as EASE in computer science education (Draheim 2003).

Lehner (2004b) cites Schulmeister and Kerres (2001) and concludes that LMS used for virtual learning settings don't enhance learning in general. And even though the Internet is a overwhelmingly huge storage of information, only insiders know about LMS or ITS, while other services like Google, Amazon, Ebay and even the Usenet are known by many.

The problem with the application of E-Learning software is structural and leads to "frictional losses". The didactical potential offered by the Internet is in contradiction to the momentary learning culture at higher educational institutions:
1. Learning in groups is considered to be good for practise, but bad for examination, which is an extrinsic driving force that overlaps intrinsic motivation.
2. Self-determined learning competes against the curriculum.
3. Solved exercises can be shared easily. Teachers must give different exercises for each unit. Commercial courses must hide useful material from other users on the net.
4. The authority is the examiner. Specialists among the learners become unimportant.
5. Juristic necessities and the belief in objectively true knowledge of the teacher that should not be falsified argue against participation on learning material.
6. Other material on the Internet could question the given learning material and shows unwanted opinions on a subject.

The Internet seems not to be an appropriate medium in conservative institutional education. To benefit from its sophisticated didactics, learning institutions have to establish a new learning culture.

2.4 Efficient Internet-Learning

Internet-Learning in a narrow sense means learning based on the use of the Internet, where especially those qualities are exhausted that differ from other media's qualities and that correspond to learning promoting didactics. From today's point of view this means especially learning based on constructivist learning theory.

Efficiency in the first place means efficiency in learning, thus

- faster learning, when answers and insights can be found faster, or
- more sustainable learning, which can be achieved by active working with the contents rather than reception by reading or listening.

Also the teacher or the author or the producer can improve her job. In this case efficiency means

- faster production of learning-material,
- up-to-date quality of contents and
- reaching more learners.

Internet-Learning is not restricted to institutional education. On the contrary Internet-Learning seems in the moment more sensibly in connection with Computer Supported Cooperative Learning (CSCL) and Just In Time Open Learning (JITOL) (Grune 2000, McConnel 2000). It is vital to have a personal interest in a learning object. Thus efficient Internet-Learning applications have to be disposed where people turn to desiring to solve a problem of there own that requires deeper learning.

3. DESIGNING APPLICATIONS FOR INTERNET-LEARNING

3.1 Learning from Successful Internet Services

No explicit learning application is widely known among the people on the net. For learning purposes people use to "google" for their subject of interest by typing the keyword, often in combination with "tutorial" to reach an online-tutorial. Other useful resources are the Usenet or Wikipedia, and even commercial sites like Amazon offer required information. What makes sites as Google, Wikipedia or Amazon more successful in a network that has been built up for knowledge purposes than actual learning systems?

In my opinion – it's a pity – these services are simply more useful than current learning systems. These successful systems accumulate additional information from users just by letting them do what they wanted to do anyway:

- Google uses the natural behaviour of homepage-editors to link the pages they find useful. More often linked pages are ranked higher.
- Wikipedia uses readers being irritated about mistakes or vacancies and lets them improve the text.
- Amazon gives links to related products by tracing other users' interests ("customers who bought this also bought that").

3.2 A Synergy between Content, Media and Didactics

Working on a subject intensively lets learners remember longer than they would have been done if they had only read or listened. Constructivism emphasizes the personal relation of new information to obtained knowledge. Best motivation is intrinsic motivation.

A personal problem gives intrinsic motivation for starting and continuing a self-determined learning process. This Just In Time Open Learning is based on constructivist learning theory. Methods on learning are considered more important than the subject itself. Knowledge that develops and changes is more useful to be learned in the moment it is needed.

The Internet is a space where knowledge can be obtained. If this is open content as in Wikiwikis, the learning process could be used to work on improving this content. The possibility of easy participation on the Internet lets learners work with just gained information in the same place. Computer Supported Cooperative Learning uses learner networks that the learning-system has formed automatically. Peer tutoring lets learners help each other so that they get personal help or even consolidate their knowledge by helping others. Free learning applications bring the most people together and enhance the probability of finding collaborators.

Learning with the Internet on open content with free applications and constructivism based new learning cultures go hand in hand with each other.

3.3 Successful Internet-Learning Applications

In order to build up useful Internet-Learning applications we should profit from synergies between the Internet, its typical content, learning-cultures corresponding to the acting among the internet-community and modern didactics – and learn from other successful internet-services:

1. Internet-Learning software has to be free, at least available to everyone. The more people use the application, the greater is the advantage for each learner. This can be achieved, in particular, with open-source licensing and platform independence.
2. Internet-Learning software has to be built up in places where people could have a problem. Ideally they have to be integrated in the application that makes them want to know more while working with it.
3. Internet-Learning software has to be easy to use. The learner must be relieved from organisational overhead of his personal learning intention to concentrate on the content he really wants understand.
4. Internet-Learning software offers content that helps solving a problem and in a way that motivates to go broader or deeper into subjects that authors consider important to know. Let the personal problem just be the first step into a great explorative learning session!
5. Internet-Learning software organizes personal support if this is needed for understanding. Ideally this support helps with other useful work automatically (e.g. learning by explaining, building up FAQ etc).
6. Internet-Learning software has to be set up easily by authors of free learning materials and frees them from other organisational work or support. If free content is wanted, then voluntary work of authors should be made easy.

4. EXAMPLES OF PROMISING INTERNET-LEARNING

4.1 Social Software

When cooperation and working on the learning subject are main criteria for beneficial Internet-Learning applications, any social

software could be used. The term "social software" came up 2002 as a name for software as Wikiwikis and Blogs and refers to applications that "facilitate virtual connection and collaboration between people on a network" (Wikipedia). Thus, even Instant Messaging, forums, etc. and learning applications such as VITAL belong to social software. The use of Social Software for learning purposes – especially Weblogs – is at the moment new and interesting for students. Due to the additional motivation using a Blog for learning activities this is a current subject of research as described in Beuschel 2005.

4.2 COMETS

The Communication Enhanced Tutorial System (COMETS) also belongs to the category "Social Software" even though it has been designed especially for CSCL / JITOL learning purposes. It is a simple but sophisticated tool for Internet-Learning (Rademacher 2003, 2005):

COMETS uses the tension of users to read common online-tutorials when they have a problem and they are intrinsically motivated to go deeper into the subject. When they reached such COMETS enhanced tutorial, the system networks those readers that are working on the same topic anyway to facilitate cooperative learning between them. COMETS organizes the peers for peer tutoring and offers a well known chat, so that readers can ask questions to other learners that work on the same or related content.

COMETS is a free system designed for freely offered content. Learning should be improved without demanding further work done by voluntary authors to set up the system and keep it running. Therefore, the system identifies related interested co-readers automatically from tracing the learner's way through the tutorial.

5. CONCLUSION

In the field of E-Learning especially Internet-Learning offers rich synergy effects with new and favoured learning methods. Using E-Learning could be a symbolic action to establish new learning cultures in traditional learning institutions (Lehner 2004a). Besides this recommended development, Internet-Learning applications can facilitate learning anytime and anywhere to exhaust a learner's intrinsic motivation just when it appears. The question whether E-Learning is more efficient than traditional learning has not to be answered if E-Learning just leads to an *additional* successful learning activity.

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