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The Changing Face of Learning in Higher Education Institutions

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Content

1. Openness and Adaptability of Learning Materials

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1.1. Introduction

Distance learning programs on a university level can be generally characterised by learning besides a professional life and by self-regulated learning at home. The students of distance teaching universities are on average older than the students of traditional universities, typically they are employed and they have several years of professional experience. This situation requires a relatively high geographical and time flexibility of the learning programs. For students learning at a distance, there are practical problems that stand at the beginning of their learning process. Therefore it is necessary to use adequate topics and approaches in the learning material and to develop appropriate know-how by the teaching staff. The objective is to enhance problem solving, creativity and the methodical competence of the learners. Against this background, the educational concept of the Distance University of Applied Sciences Switzerland consists of a blended learning scenario with three elements: Face to face meetings every two weeks, self study at home and online study complete the setting. A Learning Management System (LMS) supports the organisation, the distribution of information as well as the distribution of learning material (besides the delivery of printed books). Also the other activities of self-regulated learning phases and cooperative learning are supported by several tools of the LMS. The ratio of distance self-regulated learning and cooperative learning (face to face or online) is 80:20. Therefore the online learning activities, especially the support of the learning process, play an important role within the integration of the three elements.

To enhance this integration of print-, online learning material and online learning activities as well as the combination of the online activities and face to face meetings, we introduced a model called “model of reference courses”. In the foreground there are two aims: The quality management with regard to the whole blended learning setting. This means that besides the criteria of the evaluation of educational software, didactic aspects have also to be taken under consideration at the level of university teaching (Bremer, 2006, p. 185) and the sustainability to use and reuse findings and experiences in and after projects as well as in- and outside of the involved units or organisations. (Kruppa, Mandl & Hense, 2002, p. 7).

In this paper we present an approach to develop adaptive online learning material, to ensure an appropriate quality management and to achieve sustainability within the development. The core issue in this model is not technology but some didactic and organisational arrangements like the construction of open learning settings and cooperative knowledge production.

1.2. Educational scenario ”didactic tetrahedron”

The basis for education and the model of reference courses at the Distance University of Applied Sciences is „the didactic tetrahedron”. In addition to the classical aspects teacher, student and learning material in the didactic triangle (Haugan & Hopmann (2004, p. 82)) a new element is added: the community. The community plays an important role because of the initiation of social learning activities which help to develop key competences and practical skills (Bergamin & Brunner-Amacker, 2007, p. 27). The elements of the didactic tetrahedron are in relation to each other as explained in the following paragraphs.

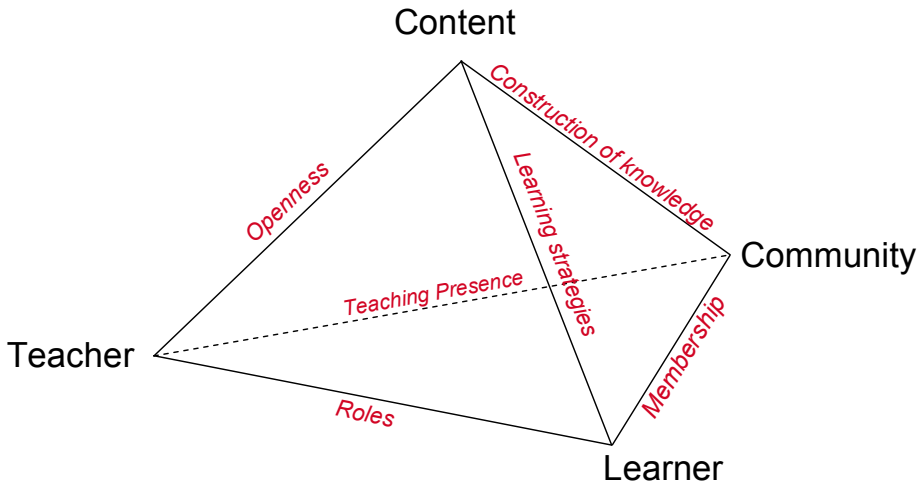

Figure 1 The didactic tetrahedron. source: Bergamin, Brunner-Amacker, 2007

The picture shows an overview of the relationship between the different elements of the didactic tetrahedron.
In this model[1] we find 6 types of relationships which can be used to analyse the scenario and transferred to teaching actions.

a) Relation teacher - student
>> Keynote: the teacher as coach
We look first to the relationship between teacher and student. This is affected by the quality of communication and the learning climate (Reusser, 2005, p. 167). Wedekind, (2004) shows that role concept of the teacher has an major impact the teaching and learning activities. In this context Carell, Kienle & Herrman (2004) propose five types of roles of a teacher:

- the “omniscient” teacher
- the professional adviser
- the tutor
- the moderator
- the coach

[1] For further information about the didactic tetrahedron: http://www.ifel.ch/forschung-entwicklung/didaktisches-modell/forschungsbericht-1-gemeinschaft.pdf

In this perspective the quality of communication and an enhanced learning climate will only be good when the teacher adopts the role of a coach.

b) Relation teacher - content
>> Keynote: the external openness of the learning content leads to internal closeness and vice versa
The relation between the teacher and the learning material can be described with the model of openness (Zimmer, 1994). In this approach, the learning situation can be characterized as a tight relationship between teaching activities and content. In conventional distance learning programs the learning content and tasks are fixed in a fairly rigid way. This means that the internal openness is rather small, although this leads to a greater external openness (and the possibility of studying anywhere and at any time). To create a greater flexibility regarding the learning situation and the requirements of students – which we expect from „good education" – we need both, clearly positioned learning goals and a flexible adaptive content. Schulmeister (2004) proposes two typological constellations of online teaching that can be described as individual learning with standardized content or cooperative learning in community with flexible content.

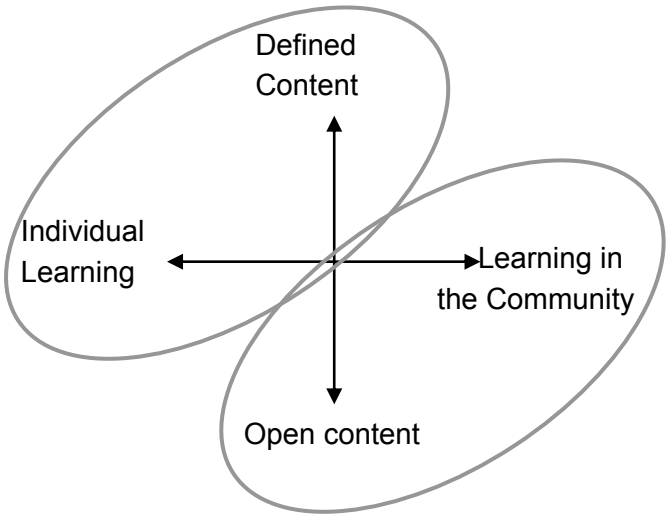

Figure 2 Two types of virtual education. source: Schulmeister, 2004.

Following these ideas, this means if you wish to create learning content that is adequate to learner requirements and to different learning situations, you have to pay attention to the openness of the learning content.

c) Relation student - content
>> Keynote: Surface-oriented learning strategies vs. in-depth-oriented learning strategies
On one hand the transfer of standardized know-how in individualised learning environments is quite simple. On the other hand open questions and problems (often in the form of project-oriented methods) in learning environments with communities are much more beneficial. In the context of blended learning as much as in the context of academical learning the understanding of learning by the students plays an important role (Pfäffli, 2005, p. 30). To explain this, the concept of learning strategies is useful (Schulmeister, 2004). Basically we can make the distinction between an in-depth-oriented and a surface-oriented way of learning. This

differentiation refers to the level of examination of learning objects and the learning goals. It is quite evident that in-depth-oriented strategies in learning environments with a certain level of self-study are more adequate than those which are surface-oriented.

d) Relation community - content
>> Keynote: from informal exchange to cooperation
Learning communities consist of two dimensions: the cooperative knowledge construction and the affiliation to the community (Arnold, 2003, p. 62). The construction of knowledge can be divided into three different phases (Kerres, 2001):
1.) informal exchange (getting to know each other)
2.) project-oriented collaboration to reach a collective goal
3.) cooperation (development of new goals and definition of common steps to achieve the objectives).

In the model of the pedagogical tetrahedron the knowledge construction should contain all three phases to be productive.

e) Relation community - student
>> Keynote: from novice to expert
There are different elements of structure in a community. At the beginning in many cases there is a common idea or goal that has to be realised by the members of a community (Bielaczyz & Collins, 1999). By communicating and interacting in the community the members develop common values, attitudes, rules of behaviour and communication as well as rituals. An additional and important element of this process is the growth of trust (Winkler & Mandl, 2002). The existence of a community depends on the needs and aims of its members. These aspects of the structure of a community can be combined in the term “affiliation”. The character of this affiliation can be defined by different roles:

- visitor
- novice
- regulars
- experts.

In our pedagogical scenario there should be place for all roles. Only then can students evolve from novice to expert.

f) Relation community – teacher
>> Keynote: the student assumes control of the learning process (from the teacher)
Another issue is how the teacher acts towards the community. From the perspective of the learner, the interaction to develop knowledge plays the most important role in the process of learning. The learners must be supported in their learning activities with instruments such as checklists, guidelines and formats for cooperation and communication. But there is still the question of how much the community must be guided or instructed.
Czerwionka & de Witt (2006, p. 119/120) propose in their article about communities of inquiry the basic support activities as follows:

- Stimulation and support in the process of acquiring knowledge
- Support of self-regulated learning phases

- Initiation and counselling in the group process
- Allocation of a conductive framework
- Support in technical problems
- Conception of learning offers and preparation of learning materials.[2]

1.3. Reference courses as a possibility of creating adaptive learning material

1.3.1. Definition

The term “reference” implies a framework for the implementation of online courses in a blended learning scenario. To produce the learning material in form of learning modules, three different main focuses can be mentioned here:

1.) didactic quality by determination of standards for teaching activities

2.) creation of content and learning material (texts, exercises, examples and so on) in accordance to a clearly-defined curriculum

3.) definition of methodological standards and recommendations for learning activities (interaction and communication) regarding the individual learning process and organisational aspects according to the idea of the pedagogical “Takt” of Herbart (Adl-Amini/Oelkers/Neumann 1979).

In accordance with these three elements, the reference course composes the framework for teachers to implement their own learning modules by adapting and complementing the existing settings and learning material. These changes are always done to adjust learning and teaching activities to specific teaching situations before or after starting a course. Other motives for adapting a reference course could be the introduction of new findings, new requirements of students or personal learning experience.

The experience has shown five important core issues to implement this approach. These are:

1.) high media literacy of the developer of the reference courses

2.) an elaborated qualification and didactic support for the teacher using this reference courses

3.) effective quality management and didactic monitoring

4.) good technical support

5.) confident channels of distribution.

The adjustment of these factors has to be clearly defined and a reference course passes different phases which are explained below.

Let us mention first some formal, didactic and methodological factors. The formal elements can be summarised as follows: A reference course consists of one bachelor module for one semester. It is constructed by a developer of reference courses who is qualified for this job.

Before the approval takes place, the course is checked by a professional evaluator regarding its content and its didactic quality.
The didactic elements are:

- a clearly-defined curriculum

- a study guide

- a schedule

- literature

- tests and exercises

- applications for communication

- a file repository for the students

- project rooms

1.3.2. Quality and sustainability

Quality management

The didactic quality of the reference courses can be described by the principals of the five pillars of the Sloan Consortium (Moore, 2005):

1.) learning effectiveness

2.) cost effectiveness and institutional commitment

3.) access

4.) faculty (employee) satisfaction

5.) student (customer) satisfaction

We do not want to deepen this discussion of general quality criteria but we want to show with which factors we are working, especially in the approach of the reference courses. There are three main focuses to mention:

- Integration of self-, online- and face to face-learning

- Openness of teaching settings

- Cooperative knowledge production.

These factors are assured by clearly defined and monitored didactic standards. To give an example, this means for the methodological part: “the supported online studying consists of exercises, tests and problem-based assignments. It permits contact between teachers and students in face-to-face meetings and during the preparation phase of exams”.[3]

Sustainability

To ensure effective implementation of the learning material we refer to the knowledge and experience of the teachers and students. A reference course is developed by a teacher with

[2] Internal research report FFHS: Blended Learning: The Recovered Community, 2006
[3] Internal Report of the University of Applies Sciences, Switzerland: Media Literacy : A key factor to the Implementation Blended Learning Scenarios in Universities, 2007 (translation by the authors)

professional competences for this job. As already mentioned, the course is based on a set of didactic standards. The maintenance of these standards is monitored. At the beginning of the semester, every teacher receives a copy of the reference course in his topic. After the students are allocated to the different courses by a central service, the reference courses are newly-named as “single courses”. The teachers are now al-lowed to adapt these courses according their own concepts, the specific teaching situations and the requirements of the students. During and after the semester, the experience with the single courses is exchanged in a trainer forum. The information of the postings is classified afterwards and a short report is produced (including an evaluation of the students). These reports are used for the next preparation phase of the new reference course in the following semester. This process leads to sustainability because different people are working with the reference courses, and the experience of the teaching activities is used for the renewal of existing or the produc tion of new courses. The following graphic shows an overview of the whole process:

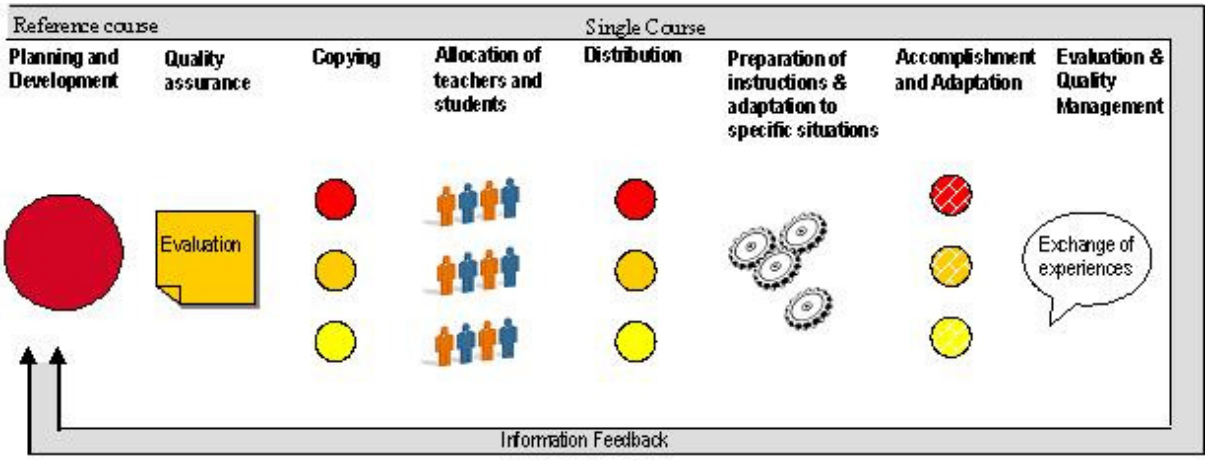

Figure 3 Process to ensure quality and sustainability in the implementation of online materials (source: Bergamin, Brunner-Amacker, 2007).

1.3.3. Standards and Openness – do they fit together?

To ensure a specific quality standard we need to define a set of quality standards. As we mentioned above, an important quality criteria is the openness of teaching settings, but we have also mentioned that the maintenance of standards is also very important. At a first glance it seems to be a contradiction. But in discussions of monitoring with the producers we have seen that via the didactic standards and the idea of producing adapt-able learning material and settings, there is a strong force to produce content that is not fixed and to formulate open recommendations. However we were surprised that the producers of the reference courses asked us after a workshop to set up a community for them with the idea of exchanging information and helping each other with the construction of the reference courses. But let us return to the description of the different phases of the development process.

Phase 1 – development of reference courses by standards

As already mentioned, the development of reference courses is carried out by professional developers of online courses, followed by an evaluation of the course by our institute and finally at the end of the semester by the students. Conclusion: we guarantee a specific quality level by assuring the development of the course by a set of standards.

Phase 2 – Adaptation by the teacher

After the evaluation, the course for a specific module is copied and the teacher(s) and students are integrated into the course. Now, the learning space is open for adaptation to the teacher's personal way of teaching. He can change things in the course, add learning materials as texts, links, exercises and so on. Then the course proceeds and grows during the semester.

Phase 3 – Feedback loop and adaptation

After the end of the course, the teacher gives feedback in the trainer forum (online). He comments the course and his experience with it, especially with the adaptations he made personally. These comments are integrated in the adaptation of the course for the next semester.

1.3.4. First experience with the model of reference courses and next steps

We started the course production with the approach of reference courses about one and a half years ago in 2006. The evaluation showed us that we had different courses, for instance a lot of new settings, new learning material (exercises, tests, scripts and so on). But a content analysis of the single courses showed us on one hand that new communication spaces or the publication of additional learning material were integrated, but on the other hand, there was only sporadic adaptation of specific instruction situations. Surprised about this fact, we have carried out and are still carrying out interviews with teachers and tutors. At the moment it seems that the answers to the phenomenon of this sporadic adaptation can be classified in four groups:

- students do not want new time-consuming learning activities
- exercises are not adaptable because of the standardized content
- costs and benefits are not balanced
- lack of technological competence (by the teachers).

These answers lead us to a first conclusion that still has to be confirmed after we have concluded the interviews. In a long-time perspective we have to focus more on a problem-based didactic within the courses and look to how we can stimulate computer-added process control in the online learning activities. As a short-time perspective we will try to set up the introduction of open-learning phases as a didactic standard in reference courses. This means that we have to introduce a defined amount of student work-load in a reference course.

1.4. Literature

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2. *Web*ucating the Reflective Practitioner Towards Competence Development in E-Learning

Ulf-Daniel Ehlers & Dirk Schneckenberg

2.1. Introduction

In his book “Educating the Reflective Practitioner” Donald Schön (1983) claims that education has to change. Although made a quarter of a century earlier, this claim is still at the core of educational debates today. He suggests that a major part of education should be done in a way of a *reflective internship*. This “practicum” should aim to help students to become proficient through coaching and reflection-in-action. The approach of Schön signifies a move from a knowledge transfer to competence development in education. Such a “changing face of learning” is at the core of this paper. We describe how Web 2.0 tools can be used in order to create educational scenarios in form of reflective laboratories aiming to foster competence development of learners.

One reason for the growing importance of competence orientation – rather than mere knowledge transfer – in the educational field is the increasing complexity that we face in our lives. In the globalised world of the 21st century, societies are confronted with a challenging economic and societal competition. Citizens need to be equipped with new competences to adapt to constantly changing work and life conditions in knowledge-based economies and societies. The value of knowledge as production factor has led to a wide recognition that people are the most important asset for growth and employment in society and in companies (European Commission 2005; Samuelson & Nordhaus 1995, p. 532; Albrecht 2005). How can web 2.0 tools be used in educational scenarios to foster reflection and competence development rather than mere knowledge transfer? (Erpenbeck 2006; Robes 2007)

To answer this question, we take three steps: In section two we will discuss the conceptual and learning theoretical background for competence development. We will explore the difference of qualification vs. competence and its implications for learning design, discuss related approaches of transmissive vs. participative learning and will introduce the concept of reflection for competence development. Based on the described concepts we will present a case study in section three. We will show how weblogs can be used to create laboratories for reflection and foster competence development of learners. Reflective writing and peer-reflection activities are in the centre of the example presented. Finally, we draw in section four general conclusions for the application of weblogs as reflection tools in the educational practice of teachers in higher education.

2.2. Understanding Competences

We can make a distinction between formal instruction and competence development by outlining the difference between 'qualification' and 'competence'. *Qualifications* are one integrative element of *competence*, but they do not necessarily include a moment of performance – the responsible and adequate action within a given context, while integrating complex knowl-

edge, skills and attitudes (Van der Blij 2002). Qualifications represent descriptive educational learning objectives, which are taught in formal pedagogical settings like study courses. Acquired qualifications are directly measured through knowledge tests and certified by educational institutions. Competences on the other end include the dispositional ability to *efficiently act in complex situations*; they cannot be taught, instead they require pedagogical approaches which are based on active learning and experience-making. The results are *dispositions for adequate behaviour.* They can not be directly measured, but need to be interpreted through an analysis of the performance of individual in an authentic context.

2.2.1. Can Competence be Developed Through Learning?

McClelland & Boyatzis (1973, 1982) define competence as a prerequisite to master specific challenges in a concrete field of activity. They assume that individuals can improve given and gain new competences through learning and experience. The learning, which takes place, and the experience, which is made in authentic situations, is seen as the basis for a process of individual or collective competence acquisition. Weinert (1999) supports this view and states that learning is a necessary condition for the acquisition of prerequisites that enable a successful mastery of complex tasks – which is one description for competence (Weinert 1999, p. 7; ibid. 2001, p. 63). Thus, competence is considered a learnable human trait.
One important aspect for the role of learning in competence development is the unstable character of the learning process. Learning is sparked and initiated through a state of irritation, which is caused by action that takes place in an unstable, non-routinised and complex context. In this unfamiliar and complex context, the effect of individual or collective action is not predictable, as any experience on the effect of action is lacking. Challenges under such uncertain conditions lead to a *labilisation* of the existing value system – the learners have to learn through *concrete experience* about the effects of their actions in a new and complex context. When the action has been completed, the gained experience and knowledge is incorporated into the existing value system, and thereby modifies existing attitudes of the learner (Erpenbeck 2006). Thus, to develop competences requires authentic challenges in uncertain contexts.
Friedrich & Mandl (1992) link competence development in the field of cognitive psychology to the model of *active learning*, which describes learning as an active reception and processing of information. The reception and assembling of information is characterised as active, self-directed and constructive process – a learner acquires knowledge, skills and abilities through active reflection on a specific learning object. In this view, individual competence development follows a certain pattern: It starts with the acquisition of accessible and available knowledge, which is required for competent action. In the process of learning, this new knowledge needs to be interpreted, classified and integrated into existing body of knowledge and into the value system of the learner. Learners' progressively develop strategies for *adequate* action in specific contexts which consist of knowledge, values, skills and experiences – the dispositional competence components of the learner. When a motivation to act adds to the other dispositional competence components, the performance strategy of the individual learner will realise in action. In this way, the learner's performance strategy results in action competence, which Erpenbeck & Heyse (1999) define as self-organised, dispositional ability to act, while integrating knowledge, values, experiences and skills (Erpenbeck & Heyse 1999: 163).

Finally, competence development is facilitated in complex contexts. To cope with complexity, individual actors have to acquire and to integrate new knowledge, to apply this knowledge within a specific action, and to assess and to value the results of the action. This way, learners acquire competences in confrontation with their immediate environment.

2.2.2. Competence Based Learning

What are characteristics of competence-based learning environments? One key assumption which has been stated above is that learning has to be active and participative. Mandl & Krause (2001) propose a concept of constructivist learning as pedagogical framework for the design of a stimulating and interactive learning environment. This concept considers learning as a self-directed process, which builds on the learner's active construction of knowledge. When learners acquire new competences, their existing body of knowledge, their experiences, and their attitudes influence their learning process. Learning of an individual learner depends on their self-directed and active knowledge construction (Mandl & Krause 2001, p. 4ff, Zawacki-Richter 2004, p. 262) – a call to rethink learning environments. They have to be active and engaging and learner-centered, concepts which are long discussed but often not practiced. To put them into practice three key assumptions should be met (Baumgartner & Welte 2002):

1. Regular Articulation and Reflection (Mandl et al.1997): Reflection is seen as a key component for competence-based learning. Students are seen as reflective practitioners (Schön 1983) with the aim to develop the competence to reflect on their behaviour. The reflection takes place during the action (reflexion-in-action) as well as after the action has been finished (reflexion-on-action) and includes the action itself as well as the contextual conditions for the action. Students gain theoretical insights in form of reflected experience in this process, which contains contextual knowledge, but includes in addition generalised knowledge which is relevant beyond their specific action context. The process of reflection follows the underlying rational of making the implicit actions, assumptions and knowledge explicit to formulate so called ad-hoc strategies in situations where problems are perceived (Baumgartner 1993, 250ff, Mandl et al.1997). Once learners have reflected on the results of their decisions and actions, they incorporate and interiorise the learned experience into their internal system of values and into their network of relationships (Erpenbeck 2005, Lewin & Graumann, 1982).

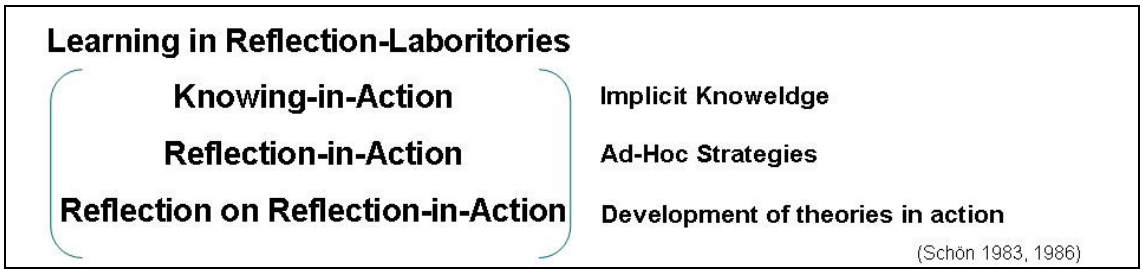

Figure 1: Learning Environments as Reflection Laboratories

The experiential learning theory of Kolb & Kolb (2005) is also emphasising reflection as an important component (see fig. 3). One model for reflection that has been used in the case described in this paper is based directly on Kolb & Kolb's (1984, 2005) experiential learning cycle where active experimentation leads to a transfer of learning from a current to a new

cycle. Kolb & Kolb are using a holistic approach for the design of learning environments. Their model emphasises that learning needs to combine phases of action and reflection; and learning is heavily based on interaction.

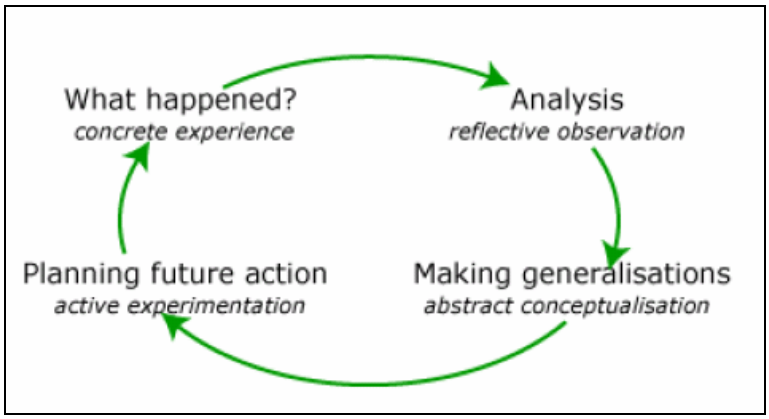

Figure 2: Reflection cycle (Kolb & Kolb 1984)

2. Use of Learning Diaries/ E-Portfolios[4]: Articulation and Reflection in learning environments can be fostered through the use of an e-portfolio for reflective writing through writing assignments that require students to engage in critical and reflective thinking. Section three shows how to integrate reflective writing using weblogs in educational scenarios. Reflective writing can include the use of readings, observation and experience related to the learning situation in question. It can be highly structured as in a take-home exam or unstructured as in stream-of-consciousness writing. Reflective writing may also be inwardly or outwardly focused depending on the degree to which reflection is directed towards self-awareness or development of domain content (Varner & Peck, 2003).

3. Learning with complex problems in uncertain contexts: Schön (1983, 1986) has developed the concept of the reflective practitioner which is very much at the heart of helping students to use reflection as a tool in order to progress on their way towards becoming professionals and acquire competences. It is the self-responsible identification and definition of the problem, which creates an attitude-based relation of learners to learning tasks. This means for the pedagogical design of a course unit, that a complex learning problem is developed by the students themselves. Main pedagogical objective is that students are encouraged to make autonomous decisions in an uncertain and complex context, and that they learn how to take and to share responsibility for the decisions which they have taken - in an ideal scenario the learning environment reflects to a high degree the complexity and uncertainty of decision-making in real work contexts (Salzgeber 1996, 282ff).

In addition to these three basic elements, Erpenbeck (2005) points out that learning environments have to include a component of value- and experience orientation in order to foster competence development. Values are challenged when decisions have to be made in uncertain contexts when dealing with authentic problems. Once learners have reflected on the results of their decisions, they incorporate and interiorise the learned experience into their

[4] E-Portfolios are web-based information management systems which use electronic media and services. Learners can use E-portfolios as digital archive for personal annotations, comments, collecting relevant material or documenting their learning artefacts. (IMS Global Learning Consortium 2004, Meder 2006).

internal system of values and into their network of relationships (Erpenbeck 2005, Lewin & Graumann, 1982). Based on these conceptual considerations, we discuss below the potential of electronic tools, in particular web 2.0 tools, and pedagogical scenarios for competence development in e-learning.

2.3. Implementing Web-Reflections: A Case of Learning with Web 2.0

The following section describes how constructivist learning scenarios can be implemented into an effective practice in universities using weblogs. The case shows that it is necessary to open up educational concepts to harness the potential of new technology and that there is a dependency of the pedagogical scenario and the characteristics of the technology used. These interdependencies lead to new requirements on both learner and on teacher side as will be shown in the case study.
The presented case is a synopsis of teaching experiences which have been made in the context of several university seminars in different universities and in different Master programmes: Educational Media, Business Information Science and Multimedia Design. The students in each seminar were in the Master study cycle, the seminar took place as a blended learning seminar with presence meetings, coaching phases and virtual project work. The Weblogs, which were used, served as place for reflection and documentation of progress made in the learning projects.

2.3.1. The Learning Potential of Web 2.0

A number of authors perceive web 2.0 not necessarily as a new stage of internet technologies, but rather a paradigm shift in which users make use of the potential of the internet for mutual interaction and collective creation of knowledge. Web 2.0 stands for a portfolio of emerging tools, which form the basis for a more mature and responsive internet, in which users collaborate, share information and create network and scale effects in large communities (Albrecht et al 2007, Kerres 2006, Mc Afee 2006, Musser & O'Reilly 2006, O'Reilly 2005, Seufert 2007). The adaptation rate of web 2.0 tools is high. They are easy to use and intuitive, and they are useful, as they allow for a direct online publication of user content in the web. In this perspective web 2.0 tools comply with two key conditions, which Davis and Venkatesh (2003) have identified and empirically verified in their research on technology adaptation processes. They assume in their Technology Acceptance Model (TAM) that ease of use and usefulness predetermines the intention to use an innovative technology in a sustainable way (Venkatesh et al 2003).
Web 2.0 tools shift the content production in the internet from a centralised broadcasting model to a peer-based collaboration model. Whereas formerly broadcasting units like companies and educational suppliers pushed generalised information towards web users, now the users act as peers and use aggregation tools to pull specified content into their personalised work environments. The instant publishing technologies of web 2.0 enable everyone to become both author and publisher at the same time. This active participation of users through content production, personalisation of information retrieval, and exchange of knowledge requires new roles of distribution in the internet: the broadcasting model of information distribution, where media and corporate companies served as providers and users as recipi-

ents, is gradually converging into a collaboration model, where corporations and users interact in social networks and new knowledge emerges from mutual collaboration.
This potential of web 2.0, if it is efficiently applied in the pedagogical design of learning environments, might enhance in educational institutions the shift from teaching to learning, the shift from transmissive to participative learning models. Teachers need to design learning environments which are structured according to the constructivist principles and which include collaborative and interactive tools like blogs, wikis and ePortfolios (Zawacki-Richter 2004, 263). The changing roles and functions of teachers from instructor to moderator of learning sequences and the empowerment of learners, as well as the impact on educational structures and decision processes is summarised in the table below:

FROM	TO
classroom instruction	learning design
control of teachers	autonomy of learners
Classification of data	recognition of patterns
push of content	pull of content
general knowledge	contextual knowledge
centralised planning	decentralised decision-making
mechanistic structure	adaptive behaviour

Table 1: Shifting learning and teaching modes

2.3.2. Construction, Reflection and Weblogs: A Case

In the case, a project-based approach has been employed in which students develop their own problems, work out own projects and develop educational micro-scenarios, which they teach to others in short workshops.[5] The whole process is combined with extensive reflection phases. The reason for this is the essential role reflection plays in the development of reflective professionals – they do not only reproduce solutions in their field, but have capabilities to renew and innovate their strategies on the spot.

[5] The project based seminar approach has been developed and implemented in two university programmes with different student groups (Business Information Science, Educational Science, Multimedia Design) students in the field of on quality management and two on educational design for e-learning.

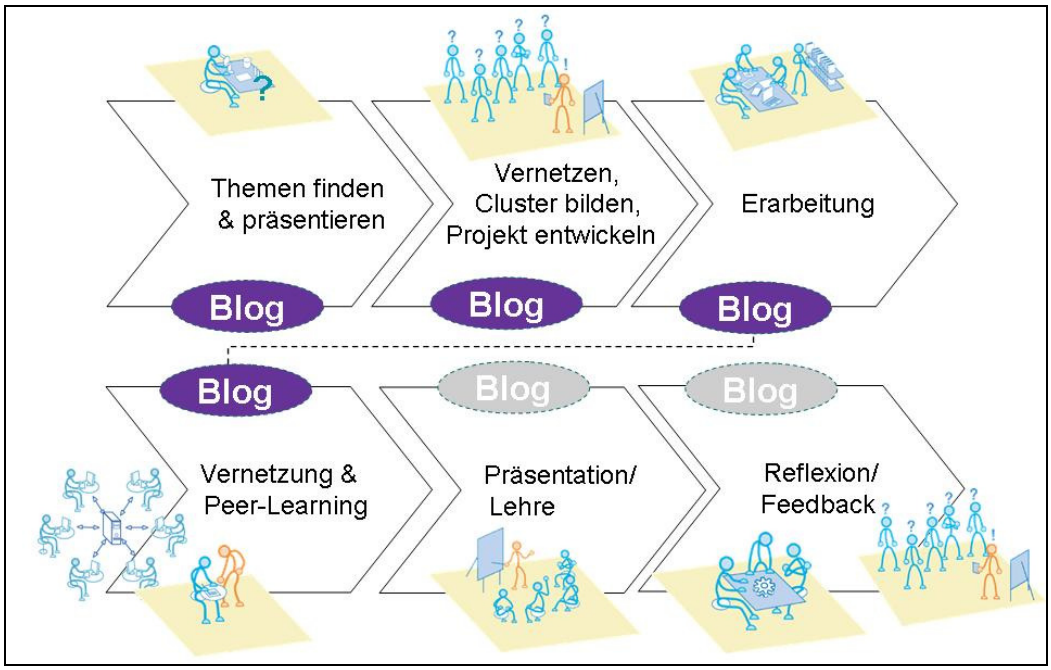

Figure 3: Weblogs for Reflection in the Project Based Teaching Scenario

The project is based on six steps and is following a constructivist approach in so far as the students have to (1) identify their own learning problems, (2) work in social networks, (3) reflect on their (self-reflection) and others learning processes (peer-reflection), and (4) are coached by the teacher, who is in a support and not in a lead role. Weblogs are used as the medium where students document their reflections. Reflection processes, either self-reflection or peer-reflection, are encouraged in each of the six steps. The approach is driven by three central characteristics of the constructive learning model presented earlier (section 2.2):

- Regular articulation and reflection (Mandl/Gruber/Alexander 1997)
- Using weblogs as learning diaries for reflective writing
- Learning with complex problems in uncertain situations (Schön 1983 und 1987)

Phase 1: Definition of themes and complex problems

The course starts by encouraging students to invent complex problems in the general thematic area of the course: Students are asked about their questions concerning the topic of the course. This introductory activity is reversing the consumption mode of students, who passively listen to a teacher, and immediately requires them to adapt to a participative mode of learning. (The usual experience is that it takes a while until students get used to the role of leading their own learning process. Institutional learning processes often teach students to consume rather than to proactively shape educational offerings and learning processes.) During the first two to three sessions of the course, students are asked to develop a set of complex problem descriptions. It is helpful to have a short input presentation by the teacher to introduce to the thematic field; then students should freely develop problem descriptions. During this time students are encouraged to do their own research and to use the internet for

exploration of topics. Experience shows that the success of the learning process depends to a large extend on the initial problem definition. Coaching and reflection by the teacher is important in this initial phase to work out criteria for meaningful problems with the students. Already in this initial stage the Weblog plays an important role. It needs to be introduced to students and initial documentation starts with noting down thematic considerations, problem descriptions and definitions. The process of reflection and articulation helps students to develop a language and understanding for their own learning process. They become reflective in learning, researching and sharing information amongst each other. On their way from reflection novices to experts they increasingly relate to their motives, actions, barriers and own action strategies. It is difficult in this initial phase to reflect about ones own underlying motives and strategies. Therefore, concise feedback and help from the course facilitator about strategies and themes for students' reflections is helpful. Ideally, students understand that the process and the documentation of reflection in writing is not an optional add-on, but rather an integral part of learning in the course, and the course topic is rather the medium than the central learning objective.
Possible questions for reflection: Why is the chosen topic of relevance to you?

Phase 2: Cluster and Network
In this phase students take over the responsibility to decide on a relevant topic for their learning project. They do so in social interaction, they create networks of ideas and negotiate research topics with the aim to cluster topics to project groups. Students are asked to read through problem descriptions on the Weblogs. In a discussion which follows in a presential phase, students are encouraged to ask questions for clarification purposes and to form groups on basis of similar or related problems. Main objective is that students are able to agree on a common problem for their learning project. Once the negotiation and agreement phase is over, the seminar is sub-divided into groups which work on specified problems. Each group gets the assignment to develop a knowledge base and an educational microscenario which they plan and organise for the whole group and in which they work with the others on case studies, give them the necessary background material and lead discussions. Through this approach are taken into an authentic, real-life situation, in which they have to make decisions based on their own teaching strategies and to reflect on the learning process of others. All students are asked to document their reflections as well as the process of negotiation, their experiences and the final decision in their Weblog. The group then develops a project plan, including a timeline on how to work out their project.
Possible questions for reflection: What did you discuss? How did you choose a common topic?

Phase 3: Research and Inquiry Phase
In the inquiry and development phase students are asked to do desk research on the problem, the background and possible solutions and to collect information which they are asked to put together into a background reader. They develop in addition an educational microseminar. The groups work individually on their projects. It has proved to be important for the groups – especially in the initial phase – to offer frequent coaching possibilities in which they get feedback, report on their current status and their additional needs. It is important to remind students that the reflection exercise is an integral part of the learning experience, as the

start of the research and inquiry phase for many of them seems to be “the real work”. The documentation of their reflections, learning experiences and outcomes within a Weblog is in the foreground. As a general rule, students are encouraged to provide their written reflections to the facilitator before they come into a meeting and discuss their study project.
Students are asked to perceive themselves as multipliers of their knowledge rather than to just learn for themselves. The background reader should be ready and send to the group one week in advance of the final workshops to allow for time to prepare the seminar. The micro-scenarios should be learner-focussed and include mainly support activities on the teachers’ side.
Possible questions for reflection: How do you work on your learning project? Which strategies did you chose? Which problems did you solve? What are the next steps you will take?

Phase 4: Networking and Peer-Reflection
Articulation and reflection can be facilitated through peer-reflection and networking events during the research and inquiry phase. In this phase the student groups work pretty much for themselves for about 6 to 8 weeks. They are authoring their experiences and report on the state of the projects in their Weblogs. A supportive activity of the teacher is to organise one or two peer-learning and networking events in this phase. The facilitator pools together two teams and asks them to make a mutual peer-reflection on the current status of their respective project works. This should start with assessing and mutually commenting their Weblogs, and then have a presential or virtual meeting to discuss and share information on issues which are unclear. A mutual reflection report should be provided containing the main recommendations and findings. The networking and peer-reflection phase has a mentoring function – an experience which again should be reflected in writing in the Weblog.
Possible questions for reflection: How is the other group working? Where do you see similarities with your own group? What can you learn from them? Where can they learn from you?

Phase 5: Presentation and Teaching
The presentation and teaching phase puts students into an authentic professional situation. They are in a situation where they have to develop ad-hoc strategies while they teach, they reflect in action, and they find alternatives. In the presentation phase students organise seminar days for which the individual project groups conduct workshops with the whole group on the topic they have worked on. The activity of the teacher should be kept low in favour of student activities. In this phase students actually change roles and take over the teachers’ role. They practice teaching themselves and they practice reflection in action. It is a real-life example of a practice situation. In the reflection phase students' action strategies are identified, analysed and a feedback by the other students and the teacher is given and complements the self-reflection phase.
Possible questions for reflection: How did the group manage to activate you? What could you learn from them – apart from the content – for your own presentation?

Phase 6: Reflection and Feedback
The learning objective to become reflective professionals and to develop the ability to invent ad-hoc strategies for action requires a continuous reflection process. Although it is part of a university course, the teaching situation provides an authentic environment for reflection in

action. It is followed by a structured group feedback and an individual (unstructured) feedback from the teacher. It is important to ask students about their experiences and to give them freedom to express these experiences through writing in their Weblogs. At the end of the course, students take time to recapitulate their weblog entries. This is an important process for students to understand their own progress towards becoming reflective professionals. *Possible questions for reflection:* How did your own capability to reflect evolve? Do you find recurring themes in your own learning experiences?

2.4. Conclusion

Our reflections and evaluations of the experiences presented here lead to five main conclusions and messages which are in line with findings in the literature:

Peer-Learning and Reflection as „Nice to have“: Many students understand the activity of reflection as a “nice-to-have” and voluntary add-on to a seminar. They do not regard it as an integral part – in teacher's perspective it is THE essential part – of the learning process. It is therefore important to find strategies which introduce reflection and peer-learning activities to students in a comprehensive way. We know from research that there is attitudinal and behavioural acceptance of aspects related to technology-enhanced learning (Bürg & Mandl 2004). This finding requires for our case to create a culture of reflection in the class from the beginning by asking students to think about their underlying behavioural strategies, about their motives and values. The Weblog, which serves as instrument to reflect and to document the learning process of students, has to be linked to the class schedule. This may function well if general rules have been established which specify that for every work task there is one related reflection task to be done. To make reflection an important part of the course success also means to include it into the grading of students' performance. If class activities, research, presentation, and reflection are all linked, this approach works well.

Regular reflection times and tasks: Reflection needs to be an essential part in the everyday learning activity. The use of Weblogs makes the learning process and the way how students work on their projects more transparent, as the times when they work and the way how they work is documented. Although reflection can not be thought and prescribed, it has proven to be important that teachers arrange a regular time sequence for reflection activities in the same way they do it for other learning activities. To set deadlines also allows to enter students into per-reflection phases by asking them to mutually read and comment on their reflections. Especially in the beginning of a course students are often novices in reflection; therefore they need clear tasks and comprehensive feedback by the course facilitator.

Universities as primary place for personal development: Universities are often not perceived by students as the primary place for their personal development. Therefore, students lack attitudinal acceptance for the suggested reflections tasks in courses. Reflection demands to from students more than producing learning artefacts and to engage but on a different level, reflect their underlying assumptions, behaviours and values. It is a prerequisite that students understand that the course they are taking goes beyond being a knowledge container, and aims to reach into their competence portfolio, thus addressing values, atti-

tudes and motivations. As a strategy to achieve commitment, it is useful that teachers create from the start of the course a culture of learning and reflection, explain students why and what to do, and emphasise reflection as an activity which contributes to the institutionally recognised learning process.

Openness, Empathy, Feedback Rules, Culture: Self- and Peer-Reflection requires a class atmosphere that of values each others contributions and creates openness for collaboration. This is a frequent educational challenge, which goes hand in hand with the point which has been raised above - university as place for personal development. Reflection is an activity with its own importance and needs to be embedded into the overall institutional learning culture. Openness is a prerequisite, and empathy from the course facilitator as well as from the other students needs to be practiced. All participants have to understand that it needs a lot of practice to become a reflective professional. This practice needs support through feedback rules, which the teacher might develop together with the student group.

Rooting refection and weblogs in the universities teaching and learning culture: Using Weblogs in university seminars means to introduce a new element into the set of already well known mechanisms how teaching, learning and grading functions. Often neither students nor teachers have experiences and have a notion what it means for their teaching and study efforts respectively. In order to achieve the desired objectives it is of high importance that Weblogs and the reflection process is perceived as an integral part of the educational scenario of the described project-based seminar. It is essential to give students advice and to coach them in the initial phase and to give them continuous feedback on their reflective writing. The use of Weblogs has to be defined as one of the elements of the seminar without which the seminar cannot be successfully completed. It has to be granted that a quantitative indicator cannot be applied to judge the quality of individual reflections. However, our experience shows that there are two critical factors which determine the efficiency of reflection as an activity for learning and competence development: First it is important to give the students a structure and questions which they can use when they reflect on their learning experiences; it has proved to be useful to show them examples and inspire them how efficient reflective writing may look like. Secondly and most important it is necessary to give students a regular and positive feedback on their documented reflection processes.

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3. Relation between students' willingness to participate in virtual courses and their perception of the course (A 3 cases' study at University of Fribourg)

Sergio Hoein & Hervé Platteaux

3.1. Abstract

After a period of "hype" for the implementation of new information and communication technologies (ICT) in learning environments, a more reflexive moment develops now, with an effort to understand why those implementations successfully happen or not (Tergan, 1997, 2002).
This paper explores the possible relations between students' willingness to attend other courses with virtual supports, and their perceptions concerning different aspects of 3 courses using virtual supports held at the University of Fribourg (CH).
Crosstab analysis shows a relation between students willingness to attend other courses with virtual support and their perceived quantity and quality of learning (vs. a "traditional" course). No relation was found for use and utility of course resources, subjective time load perception. Results stimulates us to focus our further explorations on two points: the way perceived learning quantity and quality influences acceptance of hybrid courses (with virtual support), and the way use and perceived utility of resources influences, or not, acceptance.

3.2. Purpose of the study

After a period of "hype" for the implementation of new information and communication technologies (ICT) in learning environments, a more reflexive moment develops now, with an effort to understand why those implementations successfully happen or not (Tergan, 1997, 2002).
This paper presents a part of the analysis made with 3 courses using virtual supports (hereafter called hybrid) held at the University of Fribourg (Switzerland). We explore the possible relations between students' willingness to attend other courses with virtual supports, and their perceptions concerning different aspects of the hybrid course. This variable, called global acceptance, is evaluated at the end of a hybrid course.
Then we divide our students in two groups depending on their willingness to attend other courses with virtual supports. We compare the perception of the two groups of students concerning different aspects of the courses, in order to explore possible factors influencing their positive or negative attitude towards hybrid elearning courses. We want also to determine if there is a relation with the willingness to attempt other courses with virtual supports.
Different factors influencing acceptance of elearning courses are found in literature. The most popular seems to be usability (or ease of use) and utility. Inspired from the TAM (Technology Acceptance Model) (Davis, 1986), Selim (2003) finds ease of use and usefulness as dominant factors for acceptance of a course website. Other findings show the influence of perceived usefulness and ease of use on acceptance: Chang et al. (2008), Ong et al. (2004),

Tselios et al. (2001). But other factors show influence on acceptance in some settings. Keller (2007) identifies contextual factors, as institutional context, as a factor related to acceptance, as she finds that utility and ease of use are not always influencing significatively acceptance. Lau and Woods (2007) find users beliefs and attitudes have relationship with behavioural intention, that itself predicts actual use of learning objects. Sivo et al. (2007) finds students attitudes and subjective norms to affect to some degree intention to take more courses with the same LMS. Chang et al. (2008) find compatibility, perceived system quality and computer self-efficacy as critical factors influencing students intention to use a course website. Nistor et al. (2005) find perceived learning efficiency to influence acceptance of an elearning course.

3.3. Methodology

According to the taxonomy of De Ketele (1996), this analysis is a preliminary exploratory research work aiming at a better comprehension and formulation of hypothesis concerning factors influencing students' attitudes versus elearning courses. It is based on previous formative evaluation of projects developing elearning resources for hybrid courses. The continuous formative evaluation and research of hints to improve elearning and hybrid courses is a task of the NTE Centre of the University of Fribourg (Platteaux, 2004).
We provide descriptive quantitative analysis of students responses, crossing the variable "Willngness to take other courses with virtual support" with variables of students perceptions about different course aspects. We represent those crossings graphically with stacked column charts and explore relations by chi-square analysis. We did not push relation analysis (e.g. regression analysis) further with this data, as the number of subject and their distribution did not allow it. More analysis will be possible once more data are gathered after this first exploration, to provide more support for chosen hypothesis.

3.3.1. Data gathering tool

Our data are gathered with a questionnaire, developed on a previous research (Zahnd & al. 1998) and adapted to fit the needs of the formative evaluation of the projects that NTE Centre supports. It contains the factors that a literature review showed as key elements of a course evaluation. There are the perceived degree of use of the course resources and the perceived usefulness for learning of the course resources (Tricot & al., 2003). There are also quality and quantity of learning compared to a traditional course, ability to identify course objectives, estimation of time investment for the course, usability of resources, communication processes, objectives' identification, organization of time and perception of specific contents and tools used for the courses (Thompson 1987; Ragan 1999). The questionnaire reflects the student perception of the attended hybrid course (Williams, 2002).
The core of the questionnaire remains the same for all courses, so to enable a crossover analysis, as the one presented here. But the questionnaire was also adapted to the specificities of the evaluated courses and, in some degree, to the needs of the teachers / project leaders, who had specific requests concerning the evaluation of their course.

3.3.2. Courses and population

We gathered data from three classes held in 2003-04 at the University of Fribourg: "Psychologie de l'adolescent" (35 students – Educational Sciences) and two Swiss Virtual Campus projects: "Antiquit@s" (45 students – Historical Sciences degree) and "Embryology" (57 students – Medical Sciences degree). First and second year students attempted the three courses.

These courses have a hybrid pedagogical scenario (Charlier, Peraya & Deschryver, 2006), alternating moments of face-to-face interactions (more or less participative) and distance work supported by virtual resources (individual or group work). The three analysed courses belong to the scenario category of ICT use to support and improve the F2F teaching/learning (Peraya, 2006).

The courses were already held prior 2003-04, formatively evaluated and improved, so we can assume they had an acceptable quality and exclude, or at least minimize, interferences caused by poor global course quality. The present article completes previous analysis of different courses – "Antiquit@s" (Platteaux & Dasen, 2004), "Embryology" (Platteaux & al., 2003; Platteaux, H., Hoein, S., & Adé-Damilano, 2004) – and a first cross-analysis of the same courses (Hoein & Platteaux, 2006).

3.4. Results and discussion

3.4.1. Global acceptance

At the end of their elearning course, we asked the students, if they would attend other courses with virtual supports. A positive answer is estimated as a global acceptance, with the assumption that this attitude of a person shows she accepts hybrid courses with virtual supports.

Results show that about 58% of our students are favorable, and 42% would not take another course of this kind. Even if this variation between courses is not statistically significant (chi2 = 2.275, df 2, p. not sign.), we can see some minor differences. If the Embryology students split in half, the Psychology students seem quite more favorable to their course scenario. Antiquit@s students are situated between the other two (see Figure 1).

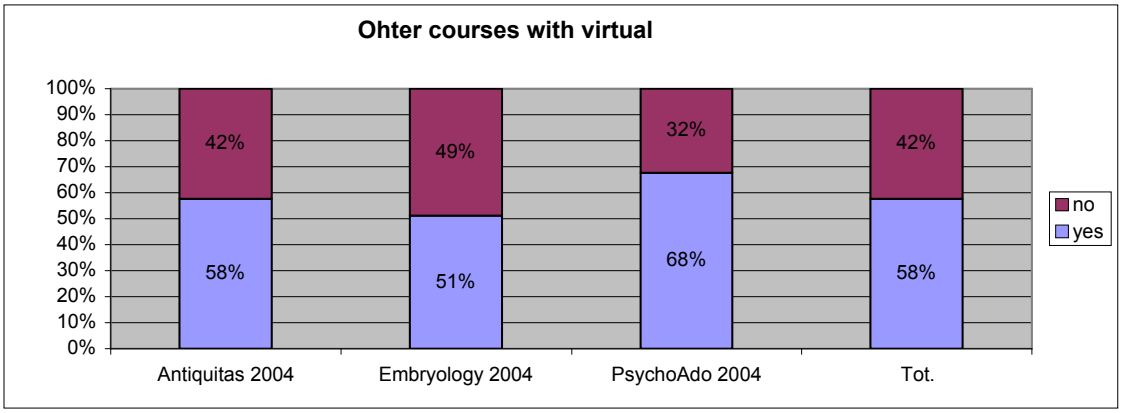

Figure 1: Would you attend other courses with virtual supports?

We separate our students in two groups depending on this variable in order to see how they evaluate their experience in the hybrid course they attended. The background question is: for what variables is there a difference between the two groups? We would like this way to find hypothesis concerning the factors that influence global acceptance of a hybrid course situation. Then, for our analysis of the different variables, we always dichotomized the answers to cross them with the results about general acceptance, creating series of 2x2 crosstabs (see annexes).

3.4.2. Use of course resources

We asked students how much they used the different course resources. And we didn't find statistically significant relations, for any of the three courses, between the perceived use of the course resources by students and their willingness to attend other course with virtual supports after the one they just attended. Our two groups of students express more or less the same degree of use for the major resources (Appenddix Table 1). However some small differences were found between the two groups for singular elements, in one course or another, but with no statistics' significance.

This can be interpreted as a little surprise. One could indeed expect a relation between these two variables. If someone uses the resources of a course, he could like them and/or get familiarized with them, then more wanting to continue using them in other courses, after having done the effort of learning to use them. This is not the case for our students. The resources were quite well used (with variations and exceptions of course) but it seems not to influence the willingness of following other courses with similar tools. For sure the use of the resources was recommended by teachers. Then a sort of "social pressure" could influence the global use, as resources' utility could do. And one hypothesis can be made to explain the lack of relationship we found. Students used the resources needed in a course, not being aware of their possible use for other courses.

3.4.3. Utility of course resources

Within the perception of students about the resources' utility for learning in the course, we don't find statistically significant relations with the willingness of students to attend other courses with hybrid supports (Appendix Table 2), except for the Website globally (chi^2 6.624, 1 df, p .010) and the eBook content (chi^2 4.884, 1 df, p .0270) of the "Antiquit@s" course.

As for the resources' use, we could expect an influence of the course resources' utility. If a student perceives the resources as useful for his learning, he should be more willing to use them in future courses. This seems to be the case for "Antiquit@s" course Website and his theoretical content, but not for the other resources and courses.

Following the Technology Acceptance Model (Davis, 1986), also adapted for learning (Selim, 2003), the perceived utility of a tool can influence the willingness to use it when needed as found by Ma, Anderson and Streith (2005). Our results do not align. We can make the hypothesis that students make distinction between courses, and are aware that a resource can be useful in a course scenario but not in another.

3.4.4. Learning amount: elearning vs. "traditional" course

We asked students to evaluate the amount of learning achieved during the hybrid course, compared to a more traditional course, without ICT. Figure 2 shows how students' willing-

ness of attending other future courses with virtual supports is related to their perceived amount of learning in the course (compared to "traditional" courses). A significant relation is found for two analyzed courses: "Antiquit@s" (chi^2. 13.407, 2 df, p .001, phi_c .571) and "Embryology" (chi^2 5.909, 2 df, p .052, phi_c .358). For the course "Psychology of Adolescents" the relation is not statistically significant.

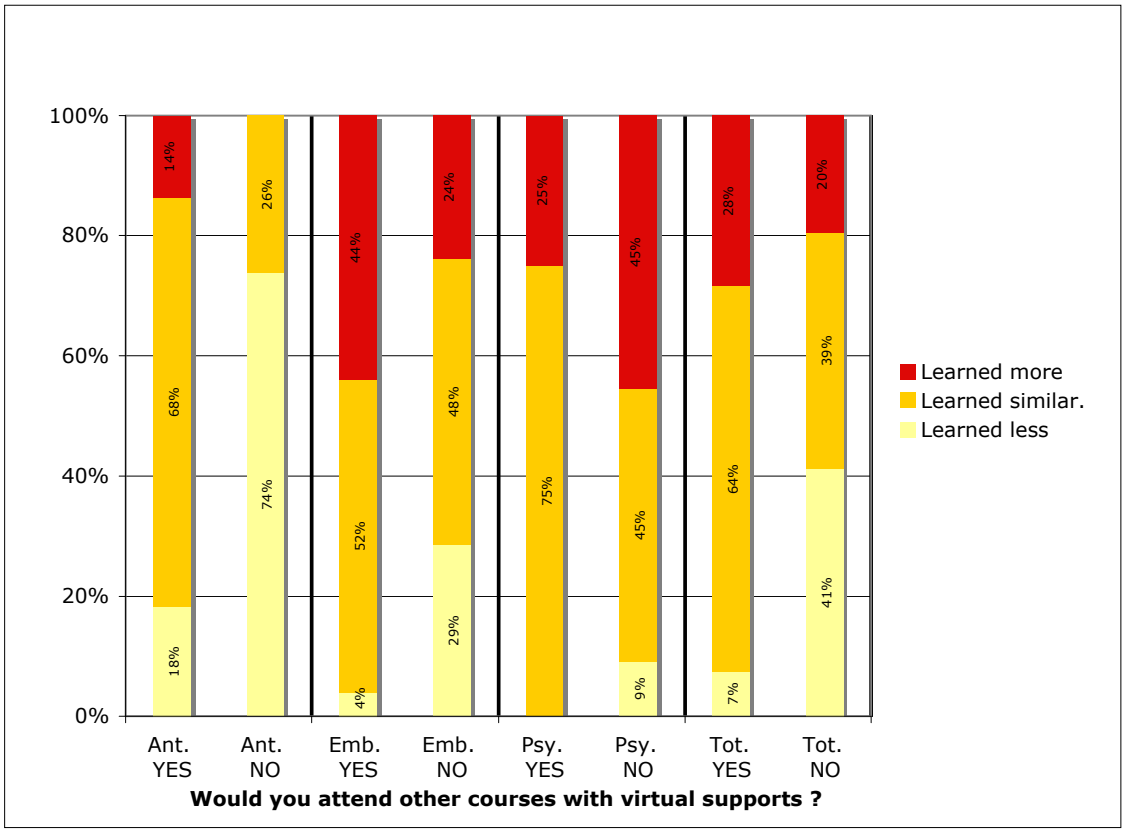

Figure 2: Students perceived learning achievement (quantity) in the elearning course vs. a "traditional" course. Distribution of the 2 groups: would (left columns) or wouldn't (right columns) take other courses with virtual supports

We can make the hypothesis that if students estimate to learn more in a hybrid course than in a traditional one, they will be more likely to attend other hybrid courses. This makes sense because usually, in a university course, there is a big amount of materials to learn. Then, if virtual supports help to learn more of them, students should want them in their courses.
The exception of the psychology course perturbs this assumption. Even if not statistically significant, it shows an opposite trend. A trend of students, who declare not wanting to attend other courses with virtual supports, is to declare learning more. In this case, perhaps other factors intervene, other hybrid scenarios' aspects that those linked to elearning.

3.4.5. Learning quality: elearning vs. "traditional" course

We asked students to evaluate also the quality of their learning in the hybrid course compared to a traditional one.

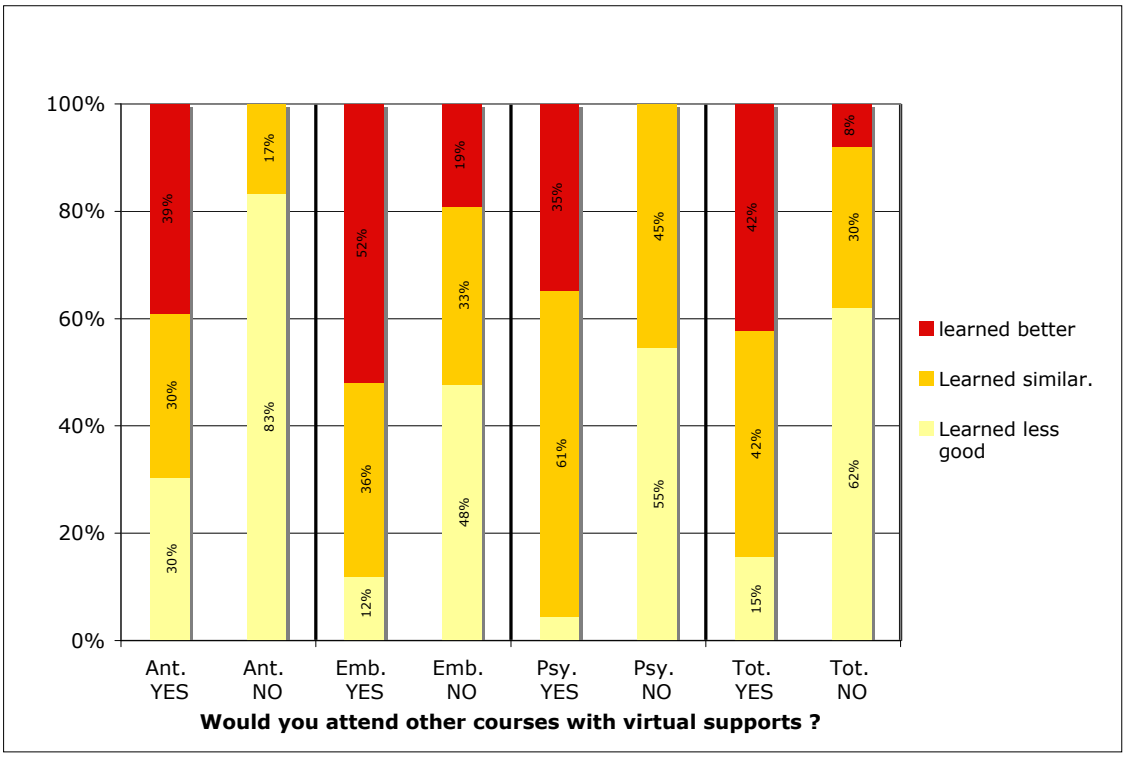

Figure 3: Students perceived learning quality in the elearning course compared to a "traditional" course. Distribution of the 2 groups: would (left columns) or wouldn't (right columns) take other courses with virtual supports

Similarly than for the amount of learning, students' willingness to attend other courses with virtual supports is related to their perceived quality of learning (Figure 3). This is found for all the three analyzed hybrid courses: Antiquit@s (chi^2 13.094, 2 df, p .001, phi_c .565), Embryology (chi^2 8.500, 2 df, p .014, phi_c .430) and Psychology of Adolescents (chi^2 13.250, 2 df, p .001, phi_c .624).
Here we make a hypothesis. Students, who perceive to learn better in a hybrid course, are more willing to attend other courses with such a scenario. It could be interesting to confirm this hypothesis for other courses.

3.4.6. Ability to identify course objectives

We asked students if they were able to identify course objectives for the hybrid course they attended. The declared ability of students to identify course objectives seems not to be related with their willingness to attend other courses with virtual supports, except for the "Antiquit@s" course (chi^2 5.103, 2 df, p .023, phi .340). But we see that the majority of students are able to identify course objectives, even if this tendency strength varies between courses.

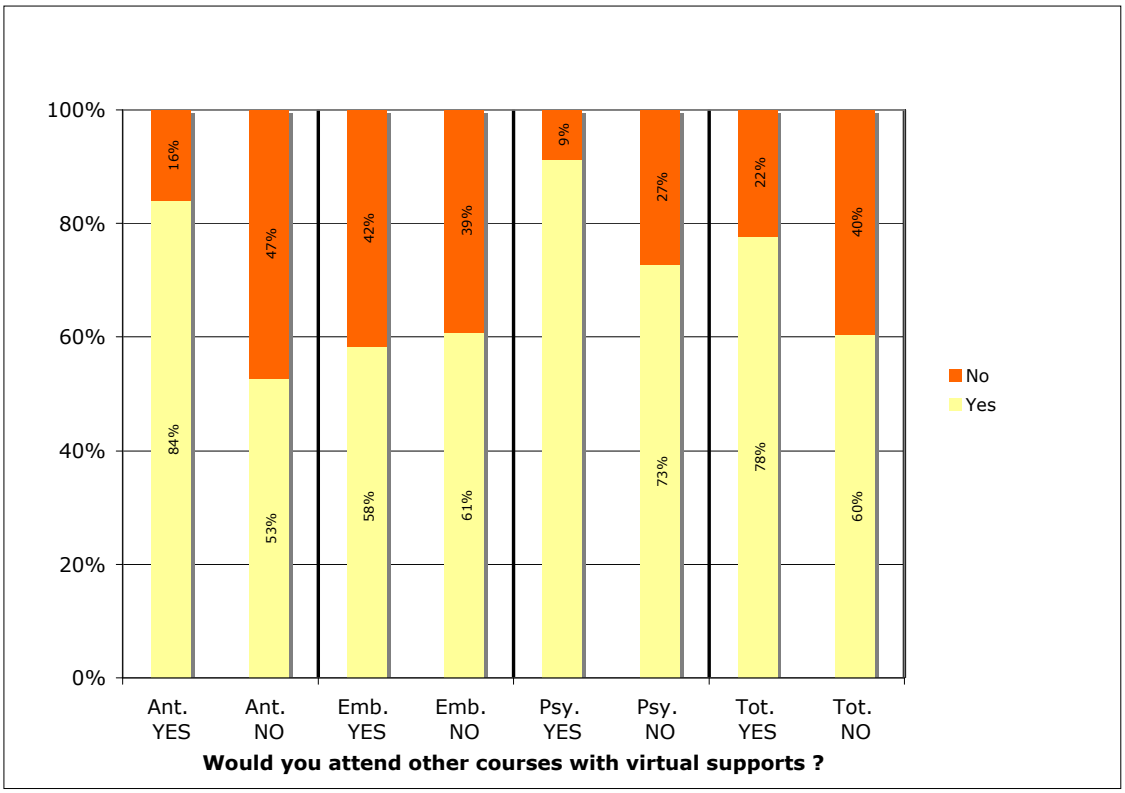

Figure 4: Students perceived ability to identify course objectives. Distribution of the 2 groups: would (left columns) or wouldn't (right columns) take other courses with virtual supports

It would be interesting to see if this lack of relation is also found in courses where the ability of identifying learning objectives is more heterogeneously distributed among students. But we will not create, on purpose, such a negative effect in real courses that would mean lower quality courses.

3.4.7. Time investment

We asked students to make a subjective estimation of time quantity they had to invest in the course, from very low to very high. A preliminary study of our students' population showed they had no (or very few) experience in course with virtual supports. This indicates they will refer mostly to a prior learning experience that was developed in traditional courses.

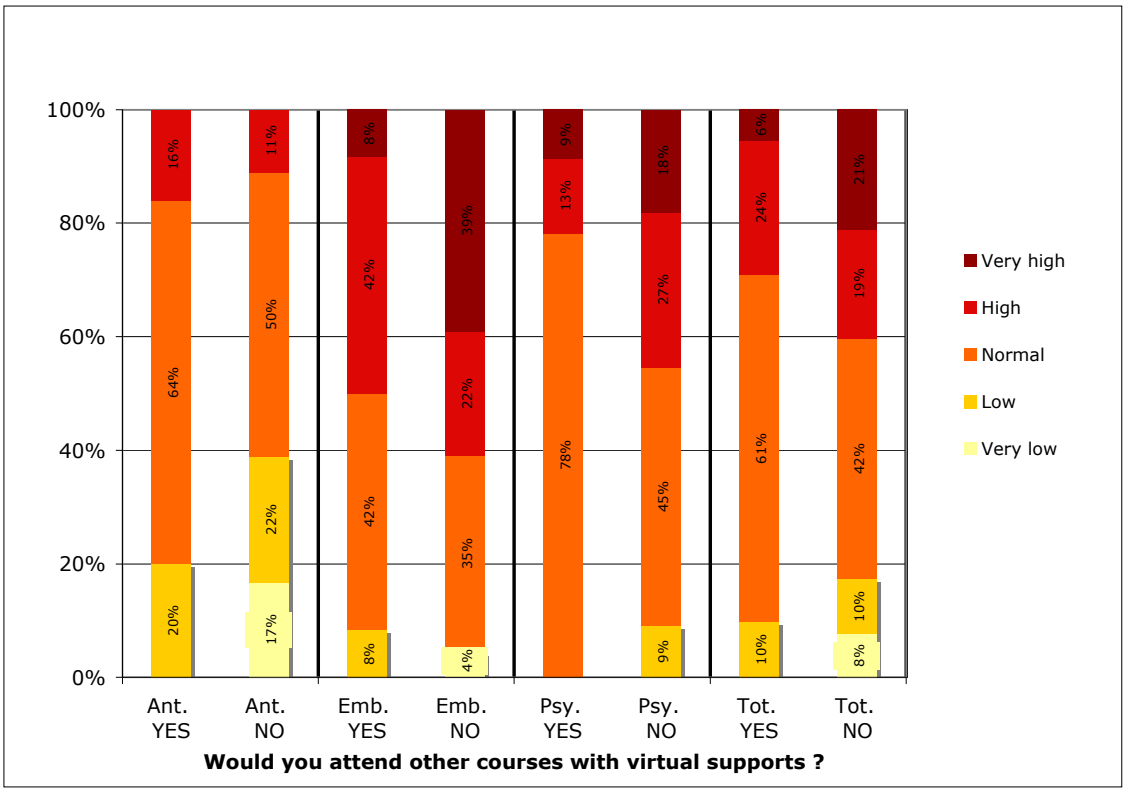

Figure 5: Students perceived time amount invested in the course. Distribution of the 2 groups: would (left columns) or wouldn't (right columns) take other courses with virtual supports

The results show no statistically significant relationship between the subjective time load perception of students and their willingness to attend other courses with virtual supports (see Figure 5), except for the "Embryology" course (chi^2 9.326, 2 df, p .053, phi$_c$ .445).
Students tend to evaluate the work time quantity as normal or high. Only a minority of students estimate the time investment for the course as low or very low. This is not surprising because they have to adapt their learner job. They learn with tools that they are not used to. This doesn't seem to influence, at least for two of the three analyzed courses, the willingness to attend other courses with virtual supports. This is rather good news.
We don't have a clear explanation for the reasons of this absence of relation. Further exploration could be interesting. At least we can make the hypothesis that time investment is accepted by students when perceived as "a little more than normal" if their schedule isn't overcharged. This would explain the significant relation for the "Embryology" students. In fact, medicine first year students have a very charged course schedule which leaves them little time to get familiar (motivated and efficient) with new learning environments and tools. The curriculum schedules of the two other analyzed courses leave more time for exploration. This may facilitate the familiarization with new elearning tools and the associated new learning processes. A feeling of big work duration can have an impact on global perception of a course (Platteaux, 2003). But, it may also depend on another variable: the load of course or degree schedule. This is of course only an assumption which needs to be confirmed by further exploration.

3.4.8. Indications for time organization

We asked students if the indications (concerning time organization) were clear enough to allow them an efficient organization of their work schedule. As we can see in Figure 6, there are differences between courses concerning this point. The majority of "Antiquit@s" and "PsychoAdo" students found these indications clear enough. The "Embryology" students split in two equal groups.

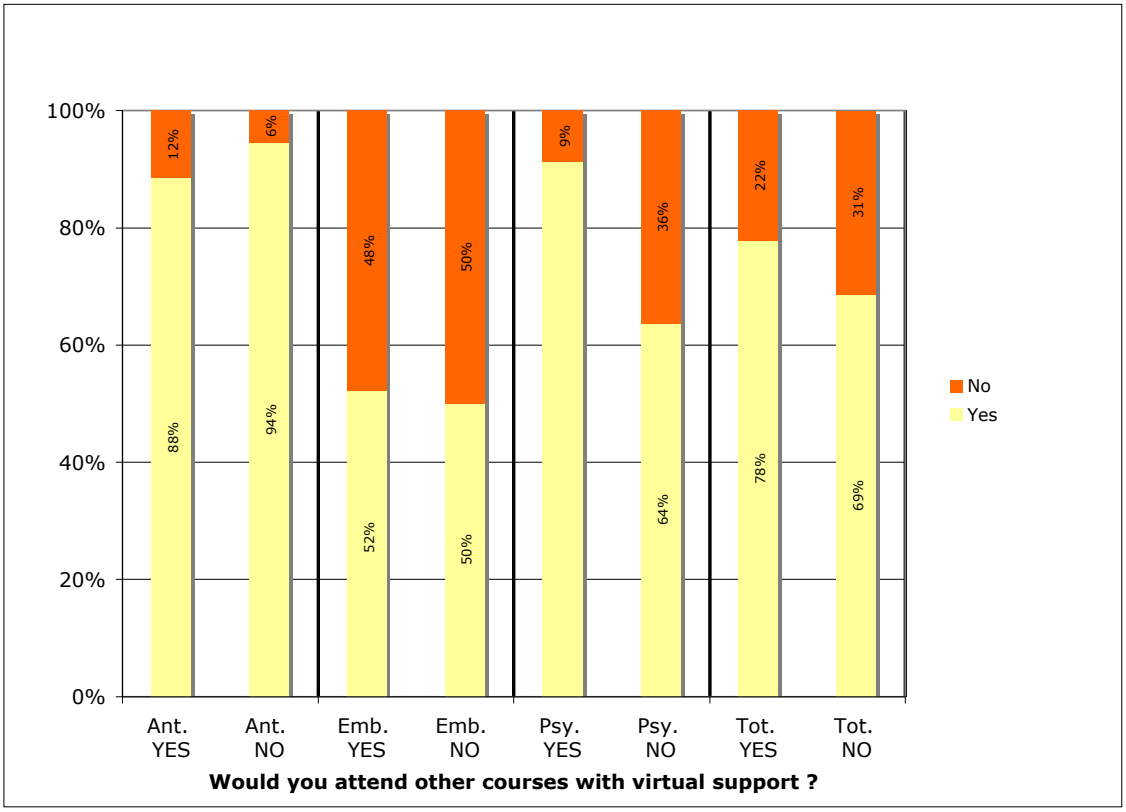

Figure 6: Students perceived clearness of time management indications. Distribution of the 2 groups: would (left columns) or wouldn't (right columns) take other courses with virtual supports

Crossing these results with the student's willingness to attend other courses with virtual supports, we find a statistically significant relation only for the "PsychoAdo" students (chi^2 3.920, 2 df, p .048, phi .339).

Our result confirms partially that time management can influence the acceptance of an elearning course situation (Herriot & al., 2004). But, even if the indications for time management are perceived differently by students of different courses, this perception doesn't seem to influence systematically their willingness to attend other hybrid courses.

3.5. Conclusion

We analyzed answers from first and second year students who attended three hybrid courses at the University of Fribourg. The courses are labeled as hybrid because they mix traditional and virtual resources and activities. In this exploratory analysis, we hypothesized

about possible reasons for students' willingness to attend other future courses with virtual supports.
As found by Gurtner and his colleagues (2003), in a learning situation, a tool acceptance is high when efficient for learning. Also, for the students, a success factor of elearning tools is identified as being their efficiency to prepare exams (Glatz, 2005). Our results show that students' willingness to choose further hybrid courses is significantly related to the quality and quantity of learning they perceive (compared to a "traditional" course).
Other course variables show a relation, but depending on courses. We find a relation between the willingness to attend other courses with virtual supports and:

- the ability to distinguish course objectives for the "Antiquit@s" course;
- the perceived usefulness of Website and E-Book contents also for the "Antiquit@s" course;
- the perceived clearness of indications concerning organization of time for the "Psychology of Adolescence" course.

No relation was found between the willingness and the perception of course elements' use, course elements' usefulness (except the one shown before), and evaluation of time load for the course.
Further researches should explore reasons influencing the building of students' willingness and motivation to attend hybrid courses (with virtual supports). We make the hypothesis that this willingness is building up with hybrid courses' experiences and is influenced, positively or negatively (Hahne & al., 2005), by them. This concerns both the attitude towards computers (Dewhurst, Macleod et Norris, 2000) and learning with them. Speaking of her elearning experiences, a student declared that every confrontation with a concrete situation of learning with ICT builds up her opinion concerning these tools (Mela, 2005).
As information and communication technologies are more and more present in higher education courses, it is interesting to identify factors motivating students in those hybrid courses, in order to further explore and improve the implementation of ICTs as a help for teaching and learning.

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Appendix

• Course elements • Perceived Use (PU)	• N Tot.	• Would take other courses with virtual supports. • (GA YES) • N GA YES	• UE > (% of GA YES)	• UE < (% of GA YES)	• Wouldn't take other courses with virtual supports. • (GA NO) • N. GA NO	• UE > (% of GA NO)	• UE < (% of GA NO)
• ANTIQUITAS							
• Website	• 40	• 23	• 70%	• 30%	• 17	• 71%	• 29%
• Forum	• 40	• 23	• 43%	• 57%	• 17	• 41%	• 59%
• Email Teacher	• 41	• 23	• 4%	• 96%	• 18	• 11%	• 89%
• Email Students	• 40	• 23	• 9%	• 91%	• 17	• 12%	• 88%
• EBook content	• 41	• 23	• 78%	• 22%	• 18	• 67%	• 33%
• EBook activities	• 41	• 23	• 61%	• 39%	• 18	• 61%	• 39%
• EMBRYOLOGY							
• Website	• 48	• 24	• 88%	• 13%	• 24	• 83%	• 17%
• Forum	• 47	• 24	• 13%	• 88%	• 23	• 4%	• 96%
• Chat	• 48	• 24	• 4%	• 96%	• 24	• 0%	• 100%
• Email Teacher	• 47	• 23	• 9%	• 91%	• 24	• 0%	• 100%
• Email Students	• 48	• 24	• 4%	• 96%	• 24	• 0%	• 100%
• Modules Theory	• 49	• 25	• 84%	• 16%	• 24	• 79%	• 21%
• Modules Quizz	• 48	• 24	• 75%	• 25%	• 24	• 58%	• 42%
• Modules Schemes	• 48	• 25	• 72%	• 28%	• 23	• 57%	• 43%

• Distance Exchange Zone	• 47	• 24	• 25%	• 75%	• 23	• 22%	• 78%	
• PSYCHO ADO								
• CDRom General	• 34	• 23	• 74%	• 26%	• 11	• 64%	• 36%	
• CD Challenge	• 34	• 23	• 87%	• 13%	• 11	• 82%	• 18%	
• CD Modules	• 34	• 23	• 52%	• 48%	• 11	• 55%	• 45%	
• Support Site	• 34	• 23	• 13%	• 87%	• 11	• 0%	• 100%	
• F2F Seminar	• 34	• 23	• 57%	• 43%	• 11	• 73%	• 27%	
• Email Teacher	• 33	• 22	• 0%	• 100%	• 11	• 0%	• 100%	
• Email Students	• 33	• 22	• 5%	• 95%	• 11	• 0%	• 100%	

Table 1: Crosstabs 2x2 Global acceptance (GA) – Perceived use of course elements (UE: > use or great use, < poor or no use)

Course elements		**Would** take other courses with virtual supports. (GA YES)			**Wouldn't** take other courses with virtual supports. (GA NO)		
Perceived Usefullness (PU)	N Tot.	N GA YES	UE > (% of GA YES)	UE < (% of GA YES)	N. GA NO	UE > (% of GA NO)	UE < (% of GA NO)
ANTIQUITAS							
Website	39	23	78%	22%	16	38%	62%
Forum	40	23	39%	61%	17	29%	71%
Email Teacher	36	19	84%	16%	17	65%	35%
Email Students	29	15	67%	33%	14	57%	43%
EBook content	39	23	78%	22%	16	44%	56%
EBook activities	39	23	61%	39%	16	38%	62%
EMBRYOLOGY							
Website	45	25	72%	28%	20	55%	45%
Forum	22	10	20%	80%	12	33%	67%
Chat	8	4	25%	75%	4	0%	100%
Email Teacher	18	10	40%	60%	8	75%	25%
Modules Theory	46	25	84%	16%	21	67%	33%
Modules Quizz	42	23	87%	13%	19	84%	16%
Modules Schemes	45	25	80%	20%	20	75%	25%
Distance Exchange Zone	35	20	45%	55%	15	47%	53%
PSYCHO ADO							
CDRom General	34	23	70%	30%	11	46%	54%
CD Challenge	33	22	73%	27%	11	46%	54%
CD Modules	33	23	57%	43%	10	50%	50%
Support Site	15	9	56%	44%	6	50%	50%
F2F Seminar	31	20	85%	15%	11	82%	18%
Email Teacher	3	2	0%	100%	1	0%	100%
Email Students	4	3	67%	33%	1	0%	100%

Table 2: Crosstabs 2x2 Global acceptance (GA) – Perceived usefullness of course elements (UE: > usefull or very use, < little or not usefull)

4. Get to know your customer - foundations of market research[6]

Christian Hohnbaum

4.1. Market Research

When a few years ago the bird flu epidemic suddenly made headlines, one Swiss Virtual Campus (SVC) project of the University of Basle was in very high demand. This happened although the project team had not actively advertised their course and had not looked for specific target customers. But the mere fact that one course module was dealing with the action mechanisms of anti-influenza medicines had the effect that the search engines showed the course on top of their lists. As a consequence many interesting and international contacts could be established for this project.
Based on the statement that “with market research you can get some kind of confirmation that there is a market for your project and product, and that a dissemination can be possible”, the project is an excellent example – which will probably go down in the annals of the SVC – but an example which is hardly applicable to other projects and products.
Neither is it the purpose of this contribution – and would not be possible within the framework of such a publication anyway – to delve into the systematic pattern of market analysis and the rules of marketing. This article intends to shed light on some basic aspects of market analysis by means of some tangible experiences and thus to facilitate your access to a complex subject.

4.1.1. Market Research Basics

Market research is the process of systematic gathering, recording and analyzing of data about customers, competitors and the market. Market research can help create a business plan, launch a new product or service, fine tune existing products and services, expand into new markets etc. It can be used to determine which portion of the population will purchase the product/service, based on variables like age, gender, location and income level. It can be found out what market characteristics your target market has. With market research, companies can learn more about current and potential customers (Wikipedia - http://en.wikipedia.org/wiki/Market_research).
Thus, market research is more than just a tool for simple market analysis. Since other authors of this publication already deal with business plans, etc., and the faculty of marketing in your universities can inform and counsel you in more detail and more decidedly regarding the subject of market research, this article will focus on the different aspects of “attracting attention” and several basic requirements.
Making use of several market research basics you may already derive a first guideline for your own activities:

[6] **The following documentation is an extract of the publication: Groehbiel, U., Hohnbaum, Ch. & Seufert, S. (2007). Dissemination of eLearning products and services. Experiences from the Swiss Virtual Campus. St. Gallen: University of St. Gallen, Swiss Centre for Innovations in Learning.**

What do I want to offer

a) Complete course, course module or a database belonging to the course?

b) Counselling service such as SME expertise or concept devising know-how?

c) …

Why do I want to offer a product?

a) To extend my own course by creation of new modules or by a partnership with another university?

b) To create more publicity for my product?

c) To gain means for myown development of the product or for the production of more courses?

d) ...

Whom would I like to approach?

a) Other universities?

b) Project networks?

c) Companies?

d) ...

What is the best way to reach my target group or how can I attract attention?

What efforts do I have to put in?

Be prepared for any reaction

The Do's and Don'ts

4.2. See and be seen – or let your good deeds be known

However good your product may be – you will hardly gain new prospective customers, if nobody knows that the product exists.
That the acquisition of target groups does not have to be so difficult becomes obvious by the fact that there is one target group which you do not have to gain actively, i.e. whose attention you do not have to draw to your product: They are your students. They use your product more or less voluntarily within the framework of the curriculum. But don't underestimate your students' role as a "push medium" for your product: the more thrilled they are about it, the more frequently they will talk about it. Since the present students in their further professional career could be your future "customers" and thus could change into the role of a "pull medium", their significance should never be underestimated, at least not within the framework of your marketing activities.
You definitely know other target groups as well: In the context of your teaching activities you are probably a member of several panels or associations, you participate in symposia and commissions. We will therefore omit an extensive overview of the different approaches of

market analysis to identify target groups, but instead will concentrate on how you can increase the publicity of your product within a target group you already know.
“Push” and “pull” are two more marketing tools that were already mentioned above. The “academic world of eLearning” offers a large variety of additional opportunities to draw the attention to oneself or to the product. See below for several proposals:

- Have interesting conversations with colleagues, experts, etc. as often as possible. In the same way as learning often takes place in an informal environment, prospective customers may also be gained in an informal way.
- Write a professional article and offer it to different media.
- Enter one of the various prize competitions with your product. Hand in a paper at one of the numerous conferences.
- Organise and hold your own symposium.
- Participate in well established symposia.
- Create your own flyer and distribute it as often as possible.
- Publish your own newsletter.
- ...

Always bear in mind that the clear and unmistakable profile of your product is a crucial criterion, independent of the chosen options.
Additional, mainly web-oriented possibilities:

- Choose an unmistakable and catchy URL for your product.
- Enter your product into search engines.
- Link your product with other websites.
- Post your product in an exchange platform (e.g. Swiss eHub).

Try to be as authentic and reliable with your activities as possible. Too casual an approach may soon change into a careless attitude. Never forget that prospective customers want to be thrilled and convinced. In the beginning, potential buyers will often find it difficult to decide according to professional competence, instead they decide on the principle of the “first impression”.

4.3. Your input is required

From experience we know that neither time nor funds are available in a sufficient quantity for marketing activities. And it is also true that the marketing of academic eLearning products is not necessarily a classical realm of the universities. While a good deal of university-internal mechanisms and procedures (including information centres) are now available for the marketing of print contents or for innovative technologies, eLearning products do not dispose of such mechanisms or procedures. But despite these drawbacks you should use any opportunities offered by your university:

- Use the services offered by your competence centre.

- Derive inputs from the procedures applying to print media marketing.
- Talk to your university's legal service.
- Invite the university management to get involved in the subject.
- ...

Even if with regard to the marketing of eLearning products many items still remain to be defined and fixed in detail, you nevertheless can get active. The way you present yourself and the information you provide is entirely up to you. You have already fulfilled some prerequisites since your project applications or introductory modules provide an extensive source of information.

Embed this existing information into a meaningful context and you are already well equipped for a market appearance or for a conversation with potential buyers.

- Create a product profile.
- Create a brief information about your product (e.g. in the form of a flyer).
- Provide access to trial modules or trial contents.
- Determine your targets and define the extent to which you are willing to make compromises.
- Get thorough information about the financial and legal aspects from your university before meeting prospective customers.
- Find out as much as possible about the options and interfaces of your technology basis to other technologies.
- Determine contact persons and make sure that they are regularly available.
- Think of answers to critical question before they are asked.

4.4. After the game is before the game

Your activities do not stop after you have gained a customer. The so-called "after sales management" has the purpose to satisfy potential customers to the greatest extent possible, to win them over and make them regular customers. In the context of this publication, it is most of all important that you are aware of this fact and that you take the appropriate measures already at the beginning of your activities. The following hints could be useful:

- Define a specific contact person.
- Define an internal communication loop which means that the prospective customer only deals with one contact – this will benefit the maintenance of good relations.
- Ensure access to further product contents, if required.
- Make sure that all enquiries are answered.
- Review from time to time whether the customer's (modified) requirements are still in accordance with your own targets (including the previously defined compromises).

To have a prospective customer is already a first success. However, prospective customers can do a lot more for you:

- They can act as ambassadors for your product.
- They can be named as reference for further contacts.
- They will help you in the review and modification of your procedures (for an internal analysis of the progress of the contact).
- They show you that your marketing efforts are rewarding.

4.5. Do's and Don'ts

Not everything that glitters is gold. It can be very sobering if your efforts are not immediately rewarded. But don't get discouraged and stick to your aims. Some useful hints:

- Do not loose sight of your objectives.
- Never try to gain a target group who is not interested in your product.
- Stay alert and be ready to adapt.
- Try to adapt the way you present yourself to latest developments.
- Listen to colleagues in whom you have confidence.
- Observe your competitors and their activities.
- Never make promises you cannot keep.
- Do not believe everything you are told (this includes the statements in this article: check them and broaden your knowledge).
- Do not take it for granted that all prospective customers want the same thing. Be flexible.

And please don't forget: advertise whenever and wherever. Good luck.

4.6. Literature

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5. Negotiation with corporate partners[7]

John Allen

What do Tertiary Institutions and Business have in common? Why should one develop eLearning materials for the other? On the surface they both have different target groups; one has students, the other employees. To look a little deeper the majority of students hopefully one day will become employees and some entrepreneurs. On the other hand, in this age of rapidly increasing change, lifelong learning being the mantra, employees need to also be students continually updating their knowledge and skills.

One of the serious considerations for academic institutions is that the content that is taught is applicable and used by business. So a partnership with business or businesses can be advantageous. Research is on the doorstep. Whilst this article mentions business, similar consideration can be applied to other institutions including international bodies and their agencies; professional associations and institutes.

Why should partnerships be formed? Tertiary Institutions are looking for money to help finance the development and/or maintenance of their eLearning products. The profile of business nowadays is that they do not have a lot of time to develop learning material and to continually update it. They depend on the time available by their Subject Matter Experts who are increasingly stretched to improve business performance. In this context most businesses are prepared to pay a reasonable amount for good, well maintained content.

eLearning has not historically been deployed or easily accepted in both tertiary institutions and business. However this is rapidly changing in business with more use of technology to deliver learning especially Just-in-Time learning and where induction and time to competence are starting to impact business more.

In marketing or selling, products and services should NOT be the focus. ‘We have this excellent learning course’. No. ‘We have this excellent learning course and the benefits are as follows’. Sell benefits and it helps to be passionate about the benefits – really believe in them. If one is to partner with business they need to know the benefits so here are a few things that business may require from an academic partner.

Hosting and tracking. eLearning content can either be hosted inside the business firewall or externally. Either way, usage needs to be tracked and recorded from billing, learning progress and history and statistical perspectives. The general rule of thumb is that if the content requires regular maintenance it is hosted outside the firewall. Where authorization for use by a Line Manager or Learning Department is required, normally a registration procedure needs to be provided. Data security is a major consideration when hosting externally.

Financial Considerations. Basically two methods exist. Pay-for-use or an Enterprise Contract wherein a fixed annual amount is paid irrespective of the number of users. The model chosen will depend on the subject matter and by the business preference.

Language. In global businesses which span many different countries and cultures, English, in the professional occupations, is more and more becoming the business language for meet-

[7] **The following documentation is an extract of the publication:** Groehbiel, U., Hohnbaum, Ch. & Seufert, S. (2007). Dissemination of eLearning products and services. Experiences from the Swiss Virtual Campus. St. Gallen: University of St. Gallen, Swiss Centre for Innovations in Learning.

ings, workshops, communication, networking, forums, etc. If learning material is to be shared it should be in English. This does not prevent translation into other languages depending upon the profile of the organization.
Content. Content profiles depend upon the subject. Basically they fall into the two categories of being fairly static or needing to be continually updated. If the concepts and material change regularly content needs to be regularly maintained and updated. In this case some form of versioning will be required to reflect that material has changed. Consider that not all of the content in an academic course needs to be used by a partner. For example commencement material could be included in a business curriculum e.g. Basic Accounting for Managers. Content needs to be 'stand alone'. If it is delivered in the academic institution as part of a blended learning approach then it most likely cannot be used by other parties unless they apply the same approach.
Localization. Business may need content to be localized in many different ways including inclusion of their ways of working, logos, graphics, etc. This service can be provided at a cost or permission granted for them to localize themselves. In the latter case the business will need to have or require the software or authoring tool used to create the original content.
If a partnership is entered into; cooperation, speed and commitment to delivery timeframes are important. Assurances will need to be provided and commitment demonstrated.
Some other recommendations include:

- Start partnerships sooner rather than later preferably in the design phase.
- Who to approach in business? The decision maker is normally the Head of Department. So if it is a finance course you have the best person to contact is the Chief Financial Officer (CFO). The Learning Departments will play a role and may be used to make contact and will at some stage be referred to by the Head of Department for advice.
- Use and approach Associations, Large Global Businesses are one market, but there are also needs within medium and small businesses. These can be more easily approached through Chambers of Commerce and Industry, Trade Institutions, NGO Associations. For those non-business related subjects there are the professional institutions. In this case take the finance course to the Finance Committee.
- Compile a good comprehensive Product profile listing the details and also including the benefits, remembering that the benefits change depending upon the audience.
- Advertise your products services and benefits wherever and whenever. Even to the students. Marketing is so important and always underestimated.
- Obtain links to your Home/Start-page on institutional or business websites.

Finally, whilst we have focused on partnering for content, consider offering consultancy services to nearby businesses. These services could include multimedia services, graphic design, pedagogical assessment, creation of knowledge tests, etc. There is a case for the provision of off-shore services, but near-shore services are proving more productive. To clarify, off-shore is where institutions contract services to say India. Near-shore is where someone is working nearby, either from home or from say a Competence Centre, who can call in regularly to receive instruction face-to-face.

6. Designing Activity-Based Learning Environments from a Student Perspective

Tobias Jenert & Thomas Sporer

6.1. Challenges in higher education

Starting at least 100 years ago research in the field of education has produced various approaches in which authentic experience is the source of practice-oriented ways of learning and teaching – pedagogic pragmatism and constructivism probably being the most important lines of development. Such approaches generally stress the importance of student activity, self-organisation of learning processes and problem-solving in authentic contexts to develop knowledge and skills that relate to an individual's concrete environment (Bransford, Brown & Cocking, 1999). However, traditional course settings in higher education still tend to rely on instruction and the reproduction of prefabricated knowledge, placing students in a quite passive role.

With the implementation of the Bologna Process, higher education currently faces diverse and sometimes contradicting challenges: While traditionally curricula were input-oriented and designed with respect to content, now the learning outcomes or competencies of the individual learner are becoming increasingly important (Welbers, 2007). At the same time higher education needs to align its educational goals with the demands of the employment market as most students consider their time at university a mere episode on their way towards a career in economic contexts (Müßig-Trapp & Willige, 2006). Both the individualisation and the practice orientation of learning in higher education demand didactic scenarios that are currently not very widespread at universities (cf. Hennecke, 2006).

6.2. Designing new learning environments

Although there are some good examples for a systematic introduction of innovations in learning and teaching it is hardly surprising that traditional, instruction-focused forms of teaching and learning still dominate higher education: 90 minute-cycles and semester-based courses often seem to impede didactic experimentation. The constant need for assessment that goes along with the Bologna Process seems to further limit the possibilities in introducing new didactic concepts: Most students are caught up in a tight schedule, filling modules with a predefined number of credit points. In combination with the classic "triathlon" of assessment methods – exams, presentations and theses – such an educational framework fosters the acquisition of canonical knowledge rather than the development of generic competencies (Reinmann, 2007). As a consequence students' motivation to engage in didactic "experiments" is limited to the degree to which they see a profit for their course of study (Biggs, 2003). There are initiatives to counterbalance such tendencies – like the self-study program at the University of St. Gallen (Euler & Wilbers, 2005). Not many institutions in higher education, however, have implemented organisation-wide strategies that take into account a genuine student perspective.

6.2.1. Understanding students' aims and motivations

As Biggs (2003) points out, successful teaching has to be aligned with the learners' abilities and expectations towards their education. To clarify the relation between a learner's predispositions and "good" teaching which results in a high level of engagement from the learner, Biggs distinguishes between two types of students: The first, academically oriented and driven by interest and curiosity is likely to show high levels of engagement in learning. Even in traditional settings such as lectures and seminars where rather a low amount of student activity is required, these students are highly committed to learning. Due to their intrinsic motivation to learn, they "virtually teach themselves with little help from [teachers]" (Biggs, 2003, 3). In contrast, the second type of student attends university to qualify for a profitable job rather than excel in academic contexts. For these students, abstract knowledge taught in traditional lecture-type settings has little relevance to their future occupation outside the scientific world. Motivation to learn stems from the need to pass exams rather than from interest in the subject matter. In learning situations that do not require a high amount of student activity, commitment to learning tends to stay low. This second type, however, can be driven to higher levels of engagement in learning when confronted with learning situations that demand activity and relate to practical situations. "Good teaching" that fosters student activity can narrow the gap between the two types of students outlined above as it "is getting most students to use higher cognitive level processes that the more academic students use spontaneously" (Biggs, 2003, 5).

Empirical studies show that the second, practice-oriented type of student exceeds the academic type by far: In its representative 2003 survey the HISBUS project found that only 11% of German students see themselves as the academically oriented "researcher" type while for a total of 64% practice orientation and brevity of study were more important than academic excellence (Willige, 2003). Another survey that inquired into German students' values and aims in life supports these findings: While scarcely half of the respondents see higher education as a time to freely develop their personalities, 77% feel that decisions made during this period essentially determine their future course of life (Müßig-Trapp & Willige, 2006). Since the motivation to actively engage in learning is strongly determined by the learners' goals and values (Anderman & Wolters, 2006), students' aims and motives that lead them to engage in university education have to be taken into account when designing educational frameworks.

6.2.2. Students' ideas for re-designing education

The German Centre for the Development of Higher Education (CHE) considers students' objectives a crucial factor for the efficiency of the current and future reorganisation of higher education. In an interdisciplinary workshop held by the CHE, students formulated criteria along which to improve teaching and learning environments. The participants worked out four main elements that, in their opinion, constitute a "framework for a successful study" (CHE, 2004):

- *Renewal of course structures:* Lectures should be designed with respect to different levels of previous knowledge displayed by the students. Feedback from the teacher as well as a broader contextualisation of knowledge acquired in a course is considered crucial for an improvement of learning. The implementation of various forms of collaborative learning as well as courses held en bloque could help intensify the learning process. To coun-

tervail the tendency of students seeing themselves as mere consumers in the course of learning, learners should take an active part when working on the subject matter covered in a specific course.

- *Demand oriented range of courses:* To more efficiently design the range of courses that are provided, students' interests and demands should be evaluated. Modularized study programs and the credit point system can provide more room for individual learning paths and the combination of interdisciplinary elements. Ideally students are given the opportunity to set thematic focuses that can be conducted over a longer period of time and combine theoretical and practical learning activities as well as interdisciplinary perspectives.
- *Practice oriented study programs:* The combination of academic theories with practical experiences can foster a problem-focused understanding of the sciences and of the period of study. This could support student motivation as practical consequences of abstract learning contents become comprehensible. Curricula should provide teaching and learning infrastructures that include practical elements such as project work, case studies and internships. To support students in acquiring practical experiences, extra-curricular and job-related engagement should be accredited and teachers from organisations outside of higher education should be involved.
- *Mentoring structures for students:* To enable an individual and flexible arrangement of the courses of study, students have to be offered constant consultancy concerning questions of study organisation. It is suggested to establish a mentoring network in which students help each other (self-)organise their learning activities. Such a mentoring system should be set up for every study course and be attended to by a professional advisor who can be visited at a "center for learning".

Considering these four aspects, the students' perspective largely coincides with what educational research has pointed out to be the main issues in education for more than 20 years (cf. Bransford, Brown & Cocking, 1999). In a nutshell, educational frameworks today have to regard (1) the restrictions of modularized study programs with tight schedules, (2) the growing demand for practice orientation and development of generic competencies, (3) the difficulties that arise from assessing non-traditional, more informal ways of learning as well as (4) students' needs and abilities in learning as a key issue for the quality of teaching and instruction. Below we describe different educational frameworks which try to meet these challenging demands: First, course designs that work with practice-oriented learning tasks, second, a co-curricular model were students learn in self-organised communities, and third, a new intermediary course design that incorporates elements of both, the curricular and the co-curricular models.

6.3. Approaches for introducing practice to learning

"Media and Communication" at Augsburg University is among the first German study programs genuinely designed along the bachelor/master model. Thus we can look back on six years of experience with this type of study structure. Continuous evaluations among undergraduate and graduate students show results similar to the aforementioned studies: Most students can be described as pragmatics that strive for a fast course of study and a high

level of practical orientation to prepare them for a job outside academic contexts and guarantee a high degree of employability. While the great majority of students clearly view their time at university as a form of vocational education, they make a point of also being academically qualified (Hofhues & Jenert, 2006). This indicates the challenge to build educational frameworks that offer a high degree of practical application while at the same time providing a profound theoretical background that distinguishes an academic education.

6.3.1. Examples within the traditional curriculum

At the Institute for Media and Educational Technology (imb) we have developed a set of courses that take into account these framing conditions: on the one hand they comply with traditional course structures and modes of assessment and on the other hand they provide practical experiences and foster self-organised forms of learning. All of these courses use ICT and combine different didactical methods with the aim to flexibly adopt learning to the students' individual aims and purposes. Every course offers basic information in the form of didactically edited learning materials. A broad range of learning tasks and different forms of assessment enables students to design their own learning paths according to their interests and previous knowledge in the field. Each student individually chooses the number of credit points and the respective workload they want to invest as well as different learning tasks and the assessment they want to engage in. The following three examples give a brief overview of designs realised and implemented over the last years:

- *Instructional Design:* This blended learning course offers a variety of learning tasks and assessment methods to adapt to the students' learning abilities. An instructional text provides basic information about the course topic. To gain a deeper understanding of the theories of instructional design, the logical structure of the information conveyed has to be visualised. In groups of two, students sketch concept maps that are then assessed and rewarded with two credits. Students who want to gather four more credits can either choose between a traditional written test covering the instructional text or an application task. A team of up to four students completes the application task. It covers typical applications of didactic theories and relates to educational problems in higher education that are well known to the students.
- *Qualitative Social Research*: This course is designed around two main stages of learning. In the first stage an instructional text provides knowledge about qualitative research methodology. Students then deepen their understanding by working on a fictional research project. In groups of two they take on the role of researchers and apply their freshly acquired knowledge to master staged problems of field research. A cover story contextualises the individual tasks and helps the students situate their work. This fictional application is then assessed and rewarded with four credits. In a second stage, students set out in teams of four to conduct small research projects of their own. This includes every step from formulating a scientific problem and collecting and interpreting data to finally presenting the results. While the first stage is obligatory for every student, stage two is optional and rewarded with four additional credits.
- *Media Pedagogy in Science and Practice:* This course is designed along four tasks that are linked by a cover story. The story encourages students to act as a student press agency covering university life. Each task addresses a pedagogical issue situated in real

life contexts. The mentioning of recent events and actual institutions at the University of Augsburg adds to the authenticity of the cover story. While mastering the tasks, the students have to produce media content relating to the real-life problem introduced in the cover story as well as pedagogical theories conveyed via a blended learning platform. During the course of learning the difficulty of the tasks gradually increases: On the one hand the problematic situations that have to be dealt with get more complex and instructions less concrete. On the other hand the media technology students have to deal with becomes more challenging moving from text-based offline formats to audio-visual online formats. The game-like character of student teams acting as competing press agencies adds an element of motivation that partly shifts the students' goals from getting good grades to presenting convincing press concepts.

In implementing and continuously developing these courses we have now established a design repeatedly tested on four generations of students in the study program Media and Communication. In summary, the combination of instructional elements, activating tasks and problem-based scenarios has proven to support engagement in learning and student motivation. The possibility to choose from different tasks and modes of assessment enables students to organise their learning activities according to their interest in the subject matter and to their specific learning abilities. Thus the learning environment adapts to different learning objectives and individual levels of academic orientation and previous knowledge.

6.3.2. Example of a co-curricular learning setting

The courses described above all provide flexible learning environments that allow learners to shape their own learning activities. For the most part, however, the problems that have to be solved have the character of simulations. Students act "as if" they where dealing with real world problems, but the solutions that are produced do not immediately relate to their current reality as learners at university. However, learning tends to be more effective if learners can situate abstract knowledge in concrete experience. Dewey (1938/1997) pointed out the importance of integrating what he called primary and secondary learning experiences. Secondary learning experiences are quite typical for formalised educational settings. Knowledge is transferred from teacher to learner often bearing little relation to the learner's individual experiences. In contrast, primary learning experiences stem from the learners practical interaction with the immediate environment. For Dewey, primary and secondary experiences both are vital parts of meaningful learning since testing the practical implications of theories in real life situations, knowledge acquired is filled with significance. In his view educational settings should aim at integrating theory and practice through authentic learning experiences: Learners have to be supported in building relations between the knowledge they acquire in formal educational settings and problematic situations they meet in their everyday life.
With the study program "Problem Solving Competencies" we have designed a co-curricular framework that enables students to learn in highly self-organised project groups. The problems solved are of immediate relevance to the students, e.g. improving tutoring structures or producing multi-media learning materials. By participating in the project groups students influence and co-create their learning environments at university applying and expanding knowledge acquired in their regular curriculum. The program uses electronic portfolios as a means to combine practical experiences and theoretical knowledge. Informal learning activities in project groups are accredited to the formal study only if students link their practical

experiences with theoretical knowledge (Sporer, Reinmann, Jenert & Hofhues, 2007). This seems to be a viable framework to meaningfully integrate theory and practice into a learning process.
In general, students participating in this optional study program show high levels of commitment and intrinsic motivation. However, so far less than ten percent of all students have participated. Most of these can be classified as the already academically interested “researcher” type (Willige, 2003). Although they show a high demand for more practical elements in academic education, the great majority of students prefer traditional formats of learning and assessment such as lectures and seminars and written tests, presentations and theses respectively. For these “pragmatics” performance goals – namely obtaining good grades at as modest an amount of work as possible – apparently are a greater motivational factor than interest or the mastery of practical tasks (Hidi & Harackiewicz, 2000). It seems to be a high motivational barrier to voluntarily engage in self-organised project work: The amount of work in the study program “Problem Solving Competencies” may easily exceed traditional forms of learning and profit remains vague. To broaden the scope of this co-curricular program and activate a greater number of “pragmatic” students in spite of this motivational dilemma, we have embedded a project-oriented learning scenario into traditional course structures and employed assessment forms that are more familiar and calculable to students.

6.4. Intermediary course scenario

To design a learning scenario that increases the participation of the more pragmatic students, it was necessary to add authenticity and provide primary learning experiences with immediate relation to the students’ current reality while staying within the formal curriculum. Therefore we have developed a course structure that enables students to actively shape and enhance their own learning environment. The problematic situations that are dealt with are not predefined through tasks or cover stories but are developed by the students in the course of learning.

6.4.1. Co-constructing a study fieldbook

In the seminar “Studentware: Knowledge management in student learning communities” first held in the summer term 2007, students are given the task to improve their own learning activities. They are prompted to apply theories about individual and organisational learning to their current situation as learners at university. This aims at situating abstract learning input by helping students transfer scientific theories to their everyday reality. Despite its project character the seminar stays within traditional course structures. It follows a planned schedule and offers a predefined number of credit points and working tasks. This allows students to easily judge the amount of work required to reach a desired outcome. The course starts with theoretical input from the teachers and a loose definition of the semester project. Students are then given the task to create a study fieldbook in which they link the seminar’s theoretical input to their everyday experiences as students. This is accomplished by producing materials such as learning stories, practice guides and literature reviews that support other students in their field of study.
This fieldbook is created by the students using a wiki system and serves three functions: First, students use it as a cognitive tool with which they realise collaborative construction

processes (Papert, 1991). Second, teachers use the fieldbook as a means of assessment, looking at the students' individual contributions. Third, the book itself serves as learning material produced by students for fellow students: The integration of theoretical knowledge and practical learning experiences can be used as a guideline by students and teachers who want to improve their own learning and teaching at university.

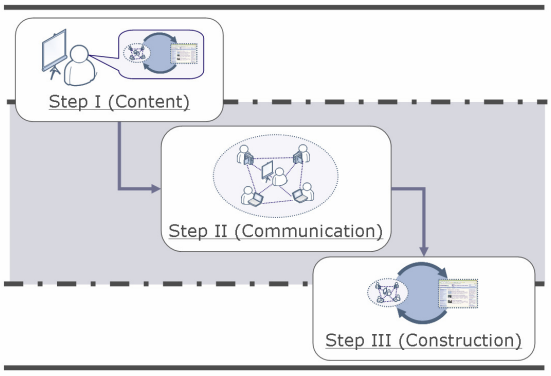

Figure 1: Intermediating theory and practice in the scenario of "Studentware"

Figure 1 illustrates how the collaborative construction of the fieldbook can support the learning process as theoretical input is meaningfully linked to practical experiences. The wiki is enriched successively by every generation of students that participates in the seminar. It becomes a collective construct containing the shared learning experiences of the students working on it. Students' expertise as learners is not only preserved but becomes a valuable source for fellow learners and teachers. Respectively, the role of the teacher changes from instructor to mentor during the seminar and the focus of assessment shifts from product to process.

6.4.2. Scaffolding theory into reflected practice

The course provides scaffolding as task complexity and the demand for students to self-organise their working processes gradually increases. The seminar is structured into three steps that lead students from the more familiar learning context of curricular organisation into the more unfamiliar fields of project work and self-organised learning activities accordingly. Following Kerres and de Witt (2003), the didactic arrangement can be described with three components: content, communication and construction. The structure of the course guides students from processing prefabricated knowledge as individual learners in step one, to discussing the goals and contents of the fieldbook within a self-organised learning community in step two and finally to participate in a community of practice that collaboratively creates a project wiki in step three:

- *Step I:* The first step focuses on content and is input-oriented. In groups of four or five the students prepare presentations to one of the course's four content blocks , which are selected by the teachers. Up to this point the course has the characteristic of a traditional seminar. The content delivered in step I has the form of abstract knowledge that is connected to students' everyday experiences through examples. Besides theoretical input they learn how to record and didactically edit audiovisual learning materials. The presentations and following discussions are recorded using audio/video technology and serve

as content backup later in the course of learning. This introduces elements of practice as students produce their own learning materials for the first time.

- *Step II:* This step focuses on communication and brings in elements of self-organisation. Students compose scientific articles from their presentations. In order to form one homogenous fieldbook they have to align their topics, identify overlaps, draw links between thematic units and build a coherent theoretical framework in which to embed their articles team work ist. One of the challenges in this step is to make the connection between their own experiences as learners and the previously provided abstract knowledge. Therefore it is necessary to select and interpret theoretical input in a way that it can be applied to problematic situations complying with students' everyday experiences at university. While teachers influence the produced content by giving feedback on the articles, they gradually retreat from the students' learning process.
- *Step III:* This step focuses on the collaborative production of the fieldbook and is largely self-organised by the students. In the production process the students actualise their work done during the semester. In this stage the teachers take on the role of mentors that students can turn to in case of technical problems or the like. This last step has an important function for the students: The fieldbook serves as a materialised record of their learning efforts within the course (Papert, 1991). Students experience a process in which they autonomously develop a tangible product that relates to their environment at the university. The use of the wiki system enables teachers to trace back the input of the individual students during the production of the fieldbook.

In the course of the seminar, students not only have to work on a problem but must also jointly define their tasks and objectives. What brings the group of learners together is the shared goal to produce a fieldbook as well as the need to learn from each other's experiences. Since they can choose to leave the seminar after each step, each student decides for himself to which degree he wants to engage in this learning community. Those whose interest in the subject matter stays marginal can participate in tasks that require rather low commitment and leave the seminar after level one. These students stay at the periphery of the learning community, whereas learners who are intrinsically motivated can commit themselves to the project and engage in a self-organised community of practice (Lave & Wenger, 1991).

Every step in the creation of the fieldbook is assessed separately and rewarded with two credit points. Students can calculate their workload and plan their engagement in the studentware project. Assessment focuses on the learning products as well as on the communication and collaboration processes: The learning products, i.e. the presentations, the articles and the interlinked wiki are assessed according to their respective quality. Assessment criteria are the content and rhetoric style (presentation), transfer of theories to practical problems (article), and usefulness of references between the thematic units of the resulting hypertext (wiki). Individual engagement in the self-organised communication and collaboration processes can be traced looking at the entries in the online communication platform that serves as project management tool[8] as well as the editing histories of the wiki pages. Despite the possibilities new web technologies offer, the assessment of communication and collaboration

[8] Here we use a social software tool, see: www.begleitstudium-problemloesekompetenz.de

processes still poses a challenge that has to be further worked on. “Soft” criteria such as social competencies and individual commitment remain hard to transfer to credits and grades.

6.5. Conclusion

As we outlined above, students articulate a growing demand for practice orientation as well as for individualisation of study structures. Answering this demand while at the same time maintaining high academic standards calls for a new understanding of teaching and learning in higher education. Learning infrastructures have to be more flexible and embrace the idea of active learners. Therefore it is necessary to design new frameworks of learning and assessment that successfully integrate elements of theory and practice as well as enable learners to actively shape their learning processes. Considering these framing conditions, educational designers are in the difficult situation of moving between two worlds: On the one hand they have to respond to changing motivations of the learners who are for the most part concerned about their own competitiveness on the labour market. On the other hand there are great fears in the academic world that educational goals are being completely subordinated to economic criteria. Educational design has to move between these two sources of influence and find ways to integrate both academic and non-academic interests.
In this article we have described didactic settings that try to maintain academic standards while at the same time aiming at practice-orientation. Our experiences with curricular as well as extra-curricular learning arrangements have led to the experimental course concept “Studentware” which puts great emphasis on students’ motivations and objectives in learning. The didactic concept behind the fieldbook draws on the ideas of pedagogic pragmatism and sets out to enable students to learn meaningfully by gaining and integrating primary and secondary learning experiences. While in traditional course settings students quite often act as individual learners, this concept leads them to act more and more as a community of practice. Students situate their learning, moving in three steps from secondary learning experiences based on content to primary learning experiences based on construction. Producing their articles, students have to communicate their actual experiences as learners and how they could profit from the theoretical input they received at the beginning of the seminar. The collaborative construction of an artifact like the fieldbook finally facilitates this integrative reflection.

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7. Timeline-Based Personal Learning Environments

Steffi Lämmle & Sabine Rathmayer

7.1. Abstract

The role of social networks within the World Wide Web has undoubtedly gained great importance, for the younger generations it can even be referred to as “part of their life”. The software market in this area is getting larger every month and serves diverse groups of interest and age. Facebook[9], StudiVZ[10], Xing[11], and MySpace[12] are only major examples for many more to find. Not only the manifold means of communication but more than else the creation of new identities, the possibility of sharing ideas and joining groups of interest are responsible for their fascination and success.
Transferring this enthusiasm into learning portals is an idea pursued for quite a while already. Variable approaches to create personal learning spaces for teachers and students have been proposed. Graham Attwell (2007) even refers to the personal learning environment as the “Future of eLearning“ (Attwell, 2007).
Another rather emerging idea concludes in timeline-based portals. These offer their users the possibility to place their experiences within the global context of world history, to associate them with certain locations, and to find people who have been at the same place and time. The concept of ordinary social networks is extended by space and time.
In this paper we propose an idea to combine timeline-based portals and personal learning environments to introduce the concept and prototype of a timeline-based learning environment for University students and teachers. Technische Universität München already implements a modular learning management portal ZePeLin based on the Microsoft Office Sharepoint Server (MOSS) 2007 (Rathmayer, Gergintchev & Lämmle, 2007). ZePeLin provides the basis for the design and development of our timeline-based learning environment. Existing functionalities of our concept in MOSS 2007 as well as future extensions will be presented.

7.2. Personal Learning Environments

Personal Learning Environments (PLEs) are often referred to as the future of eLearning because existing course-based learning environments or learning management systems do not support individual learning in a proper and thorough way. Yet, characteristics and attributes of these personal learning environments are neither clearly described nor defined. Mark van Harmelen (2006) of the University of Manchester defines a PLE as “a single user’s e-learning system that allows collaboration with other users and teachers” (van Harmelen, 2006). Scott Wilson (2005) on the other hand provides another definition of a PLE: “A PLE is a type of e-learning system that is structured on a model of e-learning itself rather than a model of the institution” (Wilson, 2005). Graham Attwell (2007) states that a PLE is not a software system

[9] http://www.facebook.com/
[10] http://www.studivz.net/
[11] http://www.xing.com/
[12] http://www.myspace.com

but “a new approach to using technologies for learning“ (Attwell, 2007). Taking into account these varying definitions of well-respected scientists, it will become clear that a PLE is the idea of a personal working space for learners which can have different shapes in its explicit implementation.

7.2.1. Background

Humans develop rather diverse strategies to gather and sum up information and knowledge. Regarding to Claudia Bremer (2000) the following types of learners exist: “Divergierer” prefer specific experience and reflected observation, “Assimilierer” show reflected observation and abstract naming, “Konvergierer” define themselves through abstract naming and active experimentation, whereas “Akkomodierer” can be recognized by active experimentation and specific experience (Bremer, 2000). Furthermore Richard Felder and Linda Silverman state the following learning styles: sensory and intuitive perception, visual and auditory input, inductive and deductive organization, active and reflective processing, sequential and global understanding (Felder & Silverman, 1988). Since even complex course-based learning management systems can per course only provide a single view to the content this diversity of learner types and learning styles cannot be fulfilled. The author of a virtual learning course defines the form and style of the learning content as well as the learning mode. Content itself can be downloaded by the learners and stored in their local file system according to their preferences. In general there is no support for modification or restructuring of the content according to their personal needs.

The idea of a personal learning environment emerged from learners being individuals and also because of the increasing importance of Life Long Learning. Human beings learn throughout their life, study and go through different development phases. They learn in different institutions, at work as well as at home. The process of Life Long Learning which starts at kindergarden age and continues in varying institutions of study doesn’t even stop in the retirement phase. A lot of information and knowledge that has been acquired will be wasted within time since there is no location where it can be collected, structured, and stored. Graham Attwell (2007) proposes the solution in personal learning environments: „PLEs are based on the idea that learning will take place in different contexts and situations and will not be provided by a single learning provider.” (Attwell, 2007). PLEs comprising private portfolios, a collection of different documents, ideas, notices, and results can be used during a person’s lifetime. All personal learning achievements and contents are structured and outlined.

7.2.2. Functionalities

Some of the most important functionalities of a Personal Learning Environment are the aggregation of services and modules as ePortfolios, chats, bulletin boards, email-clients, personal contacts, editors, blogs, rss-feeds, and more on the personal site of each user. The role of ePortfolios is outstanding in this context since portfolios, similar to their original relevance in arts and architecture, describe or keep record of a collection of exemplary workings and documents. In the digital age these portfolios often consist of digital and multimedia artifacts as demonstrations, workings, and projects. This is where the notion ePortfolio is used. Since there is a great variety in the composition of content for the ePortfolio, there are different applications for such a collection. Depending on the weighting of particular factors and intended use the following ePortfolios can be distinguished: *job application portfolios* will con-

tain material important for career matters such as certificates, assessments (ratings), references from school and career history. Additionally, they can include workings which provide information about practical skills of the author. The results of these workings or such who are still in progress will be found in the *working portfolio*. They often are used for a limited time or according to a specific learning content. The motivation behind the *working portfolio* is the documentation of the author's accomplishments as well as the reflection of finished work. Besides this reflection process the *working portfolio* can also be used for personal strategies or monitoring of the learning process. In addition teachers can give sophisticated personal consulting to each single author. The feedbacks to these collections lead to a systematic planning and structuring of the teaching in general.
Specific parts of the *working portfolio* can be regarded as *evaluation portfolio*. It contains the evaluation of achievements whose requirements have been defined in advance. Based on those, evaluation or grading is possible. The requirements can also contain specific working methods such as research of information or composition of papers. The *development portfolio* aims at documenting an evolution for a longer period. Content in this case should show examples of the learning process and more important the self-reflection of the learner's progresses.
In order to support the different learning and ePortfolio types as well as to attain a large community, the adaptability of personal learning environments is crucial. The user of each individual learning environment should be able to provide it with modules according to his/her specific needs and preferences. The developers of popular web applications like Google[13] and Pageflakes[14] have already recognized the advantage of personalizable and modular sites and offer corresponding versions of their applications. With AJAX technology (Asynchronous JavaScript and XML) where HTTP requests within a HTML-page can be performed without reloading the whole page it is possible to exchange different elements on web-pages via drag&drop. iGoolge allows to choose so-called gadgets (Sudoku-games, citations, clocks, calendars, and many more) from a list and display them anywhere on the page. On the Pageflakes.com Website, respectively, so-called flakes are provided which can be selected and included. Both web-applications support the concept of modular and personalizable websites and offer the user the personal configuration of his site. According to these ideas a personal learning environment can be designed and implemented.

7.3. Timeline Portals

Existing social networks are continuously developing. New portals are using existing concepts, extend them with new ideas, or develop new ones. These new portals can be of great interest for the areas of eLearning. Timeline-based portals can be regarded as an evolutionary extension to social networks. They extend the context of portals giving them relevance in the dimensions of time and place. This paper shows a new eLearning concept based on a composition of personal learning environments and timeline-based portals.

[13] http://www.google.de
[14] http://www.pageflakes.com

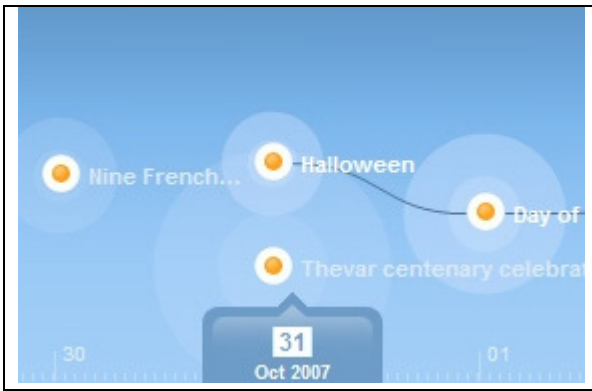
7.3.1. Development

With the rise of Web 2.0, more creative applications and technologies such as AJAX and RSS as well as the end users´ demographic change from content consumers to content producers and numerous social network sites such as StudiVZ, Lokalisten and Xing have evolved. These sites offer users opportunities to exchange ideas and information about specific topics. Many networks are tailored to a specific user group to ensure the focus on one topic. XING offers businessmen and women the opportunity to create new contacts and post job offers. StudiVZ is targeted towards students of German universities while Lokalisten pursues to link people from a specific city to foster mutual activities. These portals provide the ability to set up links between specific users and search for certain properties based on the user's profile. The continually growing membership of these portals is an indicator for their popularity. Existing users predominantly recruit new users since most portals offer invitation functionality based upon emails. Through this the number of users of most social network sites increases exponentially within a short time. The popularity of these portals does not, according to Graham Attwell (2007), result from the simple appeal of communication but from „...the ability to create, to share ideas, to join groups, to publish - to create their own identities which constitute the power and the attraction of the Internet for young people" (Attwell, 2007). Timeline-based portals have adopted, enhanced and extended the opportunities to create something new, share ideas and join groups. Three students of the TUM participated in an idea competition at Oxford University. They won and received an unusual startup investment for their efforts: a blank cheque noted in the amount payable "Whatever it takes" ("Winners of Idea Idol Announced", 2007). Miomi[15], the portal which these students are developing, is still in a beta phase. Other portals such as Xtimeline[16], Dandelife[17] have similar concepts of a timeline-based portal. Their user base grows constantly.

7.3.2. Functionalities

Timeline-based portals offer the same basic functionality as social networks, e.g. creation of personal profiles and exchange of ideas and information. According to Vanda Lehel (2007) "social software platforms usually provide services for interpersonal and group communication and additionally support metadata management, information search, publication and sharing, subscription, commenting and collaborative classification in social contexts based on the various underlying interpersonal networks" (Lehel, 2007). In addition, timeline-based portals offer more important dimensions: place and time. Each contribution is tagged with a timestamp and linked either to a personal or a global timeline. Systems feature personal timelines for each user holding private information and events for easy tracking. If desired, each entry can be published and will appear on a global timeline accessible by all portal users. This way different users` experiences are linked time-wise. Graphical timelines are displayed and can be easily navigated. Each posting can be amended with geographical data. This facilitates contacts between users who visited the same place during the same period of time. A map display provides a concise overview of events.

[15] http://beta.miomi.com/
[16] http://www.xtimeline.com/
[17] http://dandelife.com/



Timeline

Places

Figure 1: Depiction of Timeline and Places in Miomi

Source: http://www.miomi.com

Timeline-Based Personal Learning Environments

A concept for combining personal learning environments and timeline-based web platforms is presented in this paper. Some of the functionalities introduced in the previous chapters are highlighted and combined into an integrative concept. The idea of timeline-based personal learning environments is based on the transfer of the fascination of social networks to the area of eLearning. This offers a new opportunity to structure learning contents and navigate between them. We suggest using Microsoft Office Sharepoint Server for implementation, whose integrated concept of personal sites (My Sites) can be used as a basis for PLEs.

7.3.3. Concept

We completely adopted the principle of graphical timelines for developing a concept of time-line-based personal learning environments. Every personal learning environment is provided with a private timeline, where events can be recorded. Contrary to timeline-based portals those registered events are not of general nature but refer to learned knowledge, information of learning success, results of exams, learning content and written thesis. The information and documents are provided with a timestamp and registered on the user's private timeline. Similarly the possibility of automatically assigning results of exams and corrected works to the timeline could be imaginable. In contrast to timeline-based portals timeline-based PLEs will not only allow single events but will also be extended by the option of adding complete learning phases, as courses or lectures, stretched across a certain period of time. The user's private timeline gives a chronological overview of his/her learning success and knowledge. By navigating the timeline the user can access all learning content. As the timeline only fills a small area of the complete browser window, the standard content of a PLE could be left unaffected. As a result the timeline offers additional opportunities of navigation but does not change the familiar structure of the user's personal learning site.

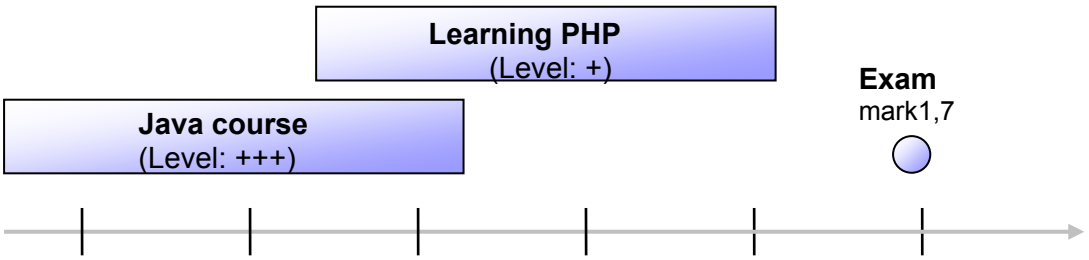


Figure 2: Private Learning Timeline

We suggest extending the concept of timeline-based PLEs with the ability to publish private events to the global timeline. Defining a level of complexity for new entries as a self-assessment and guideline for other users is regarded as reasonable. Furthermore all entries are assigned to an already existing or newly created category. Entries can be categorized according to their field in science or learning and can thereby be arranged on the global timeline; for example the private entry “Java class” with the complexity level “+++” (= very high) could be inserted into the category “programming languages” on the global timeline. The idea of categorizing entries is equivalent to the principle of assigning moments to places in the timeline portal Miomi.

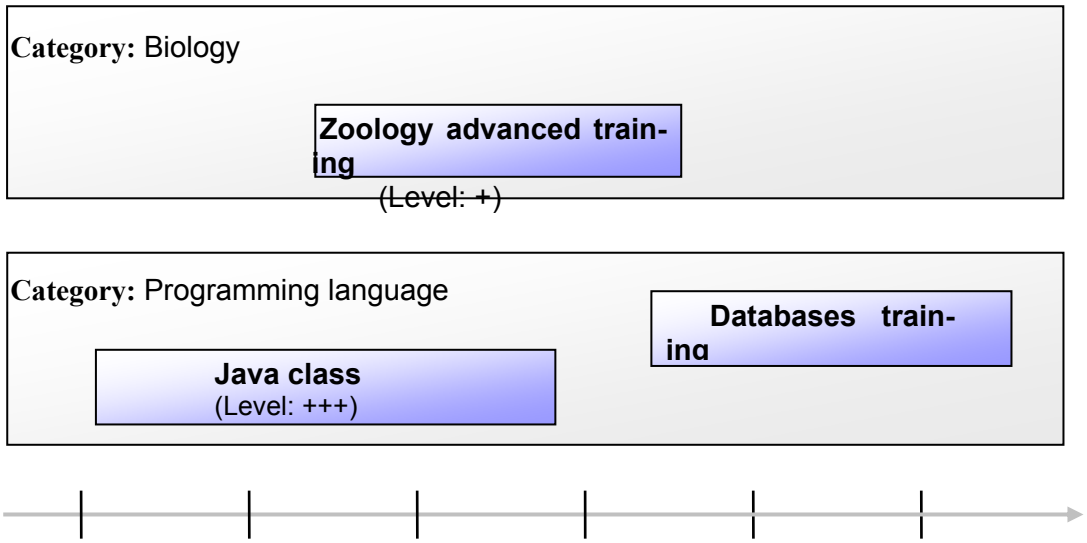


Figure 3: Global Learning Timeline

Classification by categories enables users to search for users with similar or complementary knowledge or skills. Having found an adequate colleague users would be allowed to contact him for help or support and build learning groups. A timeline-based personal learning environment offers the advantage of grouping and structuring documents and information chronologically. Thus every user can retrace his learning history and communicate his knowledge to other learners. The timeline reveals actuality of knowledge in a certain area. A time period can be defined after which the learner will be proposed to refresh his/her knowledge in a certain field of learning. The global timeline offers the opportunity to gain an overview of the whole knowledge existing at a university or other learning institutions.

7.3.4. Design Based on Microsoft Office Sharepoint Server 2007

The Microsoft Office Sharepoint Server (MOSS) 2007 will be used for the planed implementation of the timeline-based learning environment. The concept of personal sites for every user in MOSS 2007 called My Site provides the basic functionalities of a PLE: contacts to other users, blogs, guestbooks, ePortfolios… External data and application can be integrated by programming so called webparts. A webpart is a user interface component used to personalize sites in Sharepoint. A Sharepoint website consists of several placeholders. Webparts play the role of components which can be placed into these placeholders and be programmed to query and present data.
Similar to social networks colleagues can be added automatically by MOSS or manually by providing a name and searching for a specific contact. Colleagues are added or suggested based on data provided by the user directory. Once you have added some fellow students or other colleagues there is a webpart which tracks all changes in the colleagues´ public entries you are interested in, e.g. new blog entries, new documents …. Furthermore the My Site offers the opportunity to write a blog whose entries can be commented by other users. Sharepoint document libraries can be used as ePortfolio to store important and relevant learning documents on a private site. Every blog entry and every new document placed in the ePortfolio on the My Site will be connected automatically to the personal timeline. Moreover the user will be able to add new entries by clicking on a certain date in his personal timeline which is enrichment for the user's personal knowledge space. Entries can be marked as private or public on the timeline. By changing entries from private to global they will be copied to the global timeline on a special site accessible to all users.
The timeline will be realized by implementing two webparts, one for the private timeline and the other for the global timeline. The personal timeline will be placed on the users´ My Site showing the users´ entries in a chronological order. The global timeline will be placed on a global site and can be accessed by all users. MS Silverlight[18] and AJAX[19] will be the technologies used for implementation.

7.4. Conclusion and Outlook

The timeline-based personalized learning environment is derived from the underlying idea of personal learning environments and the advantages of timeline-based portals. By chronologically outlining learning goals, the user gains new perspectives on what he/she has achieved and enables him or her to put entries into a global context with the learning experiences of other users. By the use of the timeline the exchange of knowledge can be improved since a user can determine his or her progress. Users with similar or complementary knowledge can easily and quickly form study groups. Future work will be based on a concept to link learning timelines and personalized learning goals with courses and other academic activities, which can be provided in the global learning environment.

[18] http://silverlight.net/
[19] http://asp.net/ajax/

7.5. Literature

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8. Corporate eLearning Acceptance: A Literature Review, a Map and a Tentative eLearning Readiness Index

Chiara Succi & Lorenzo Cantoni

8.1. Abstract

This research aims at describing the conditions of eLearning acceptance, understanding the role of context and communication factors and providing a set of parameters to be considered when an eLearning activity is planned and proposed to eLearners. A blend of qualitative and quantitative methods has been chosen to achieve the research goals and build an eLearning Acceptance Index.
A first list of key factors has been identified through a comprehensive analysis of the literature on the acceptance issue; theories and models are presented focusing on phases, components and variables of the acceptance process and highlighting the importance of contextual factors. A general framework of analysis for the implementation of eLearning activities in organisations is built and presented in the Map of eLearning Acceptance (MeLA).
The second part of the research zooms on MeLA considering only organizational context variables that affect the preparation phase of the eLearning acceptance process. The list of variables obtained in the literature review has been refined, assessed and organized through nine case studies and two surveys.
The main research output is a step forward in the comprehension and solution of the problem of eLearning acceptance and dropout. In particular, the Map of eLearning Acceptance and the eLearning Acceptance Index offer two original tools to be further researched by eLearning researchers and to enter the eLearning practitioners' toolbox.

8.2. Introduction

ELearning[20] is considered by organizations as a new training possibility and as an opportunity to save time and money (Bates 1999). Nevertheless, quite often, poor quality learning experiences (Cantoni and Succi 2002) and a high percentage of losses are observed (Sloman 2002). According to statistics, often employees don't start eLearning activities (even if compulsory) and high dropout rates are registered (Jun 2005). Martinez (2003) defines dropout as the "Achilles heel" of eLearning while Frankola (2001) defines high dropout rates as eLearning's embarrassing secret and "taboo".
Dropouts have economic and educational implications. A need for research to determine predictors of attrition in online education is of particular importance because governmental funding to institutions is often based on attendance (Parker 1995). Also in the private sector, training budgets and investments are often allocated in accordance with course completion.

[20] n this article, 'eLearning' is understood according to the following definition: "the use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services as well as remote exchanges and collaboration" (CEC 2001: 2), hence encompassing also so-called "blended" learning experiences; for a discussion of it, see (Cantoni & Tardini 2006: 176-182 and Cantoni, Botturi and Succi 2007: 23-37).

Secondly, high dropout rates have a negative impact onto online education, reducing its effectiveness when compared to face-to-face education.
Organisations' dropout rates range from 20 to 50 percent for online learners. In general, administrators of eLearning courses agree that dropouts rates are at least 10 to 20 percentage points higher than in their face-to-face counterparts (Frankola 2001). Again Lynch (2001) reports an experience with eLearning courses in a small university where learners' dropout rates were as high as 35% to 50%, compared to 14% for the same curricula in face-to-face classrooms.
Being a learner in an online course is really different from being a learner in a face-to-face course. Due to the fact that learners have been part of a classroom setting for years, they expect the same type of learning experiences and patterns (Inan 2004). They are not equipped to bear full responsibility for their own learning because their previous educational experiences have not prepared them for this setting (Martinez 2003). Several factors influence the persistence in an eLearning course and there is a relative lack of sound, rigorous models specifically focused on learners' acceptance and satisfaction with eLearning.
To address this problem the Masie Center and ASTD launched the "Learning Technology Acceptance Study" (2001). Its goal was to better understand the key barriers and enablers to learning technology acceptance and use, and to understand the importance of the context surrounding eLearning experiences rather than considering merely the technology itself. Only start rates in eLearning courses were considered in this study, because completion rates (non dropout rates) are so much low and give little information about learners' acceptance motivation. The study revealed that organizations could influence learner acceptance as well as satisfaction by addressing aspects of the eLearning context since its very beginning.
Thus, in order to have a better comprehension of the dropout issue, it is necessary to focus on the whole acceptance process (Succi and Cantoni 2006).
The main issues addressed by this article are:

1) How is the eLearning acceptance process structured?

2) Which are the main enabling context factors affecting the acceptance of an eLearning experience in an organisation?

3) Which are the main actions/steps organizations can do in order to foster eLearning acceptance?
The following paragraphs deal with those issues as follows: paragraph 2 offers a literature review, which presents factors influencing the acceptance of an eLearning experience, the following paragraph (3) outlines a general map of eLearning Acceptance (MeLA), while paragraph 4 focuses onto organisation/context variables, proposing a tentative eLearning Readiness Index.

8.3. Literature Review

The issue investigated can be referred to as the eLearning acceptance problem (ASTD and Masie Center 2001; Masie 2002). So far, three main approaches to eLearning acceptance are found in the literature.
Innovation acceptance theories applied to every type of innovation, and also to eLearning.

Technology acceptance research carried out originally to predict technology user acceptance and extended to eLearning.
Learner acceptance studies developed to understand learners' choices in higher and distance education as well as in eLearning.

In figure 1 these approaches are graphically represented.

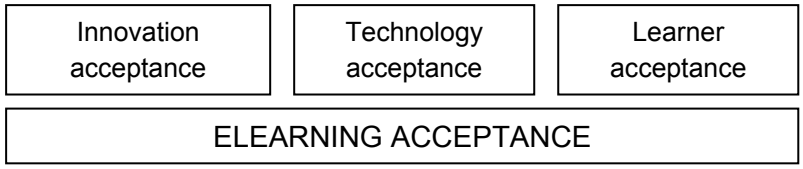

Figure 1: Different approaches to the eLearning acceptance issue.

a) Innovation Acceptance
Innovation Diffusion Theory (IDT) explores and helps to explain the adoption or rejection of an innovation; in particular, Everett Rogers (1995) defines steps and outlines variables of the innovation's adoption process.
Surry and Farquhar (1996) have applied IDT to eLearning with a strong emphasis on contextual factors affecting the process. Many studies describing the adoption process in educational contexts can highlight the eLearning acceptance process (Levine 2001), and some of them are considered in this article.
An 'innovation' is an idea, practice, or object that is perceived as new by an individual or other unit of adoption (Rogers 1995). The perceived newness of the idea for the individual influences his/her reaction to it and thus its diffusion. Rogers (1995) defines diffusion as the process by which an innovation is communicated through certain channels over time among the members of a social system. The Innovation Decision Process theory defines it as the process through which an individual moves from 1) first knowledge of an innovation, to 2) forming an attitude toward the innovation, to 3) a decision to adopt or reject, to 4) implementation of the new idea, up to 5) confirmation of this decision. The process is influenced by prior conditions, individual characteristics and innovation perceived attributes, such as relative advantage, compatibility, complexity, trialability and observability.
The study of IDT has been considered potentially valuable to the field of instructional technology for three reasons (Surry and Farquhar 1996; Fuller 2000). First, most instructional technologists do not understand why their products are, or are not, adopted. Second, instructional technology is inherently an innovation-based discipline. Third, the study of diffusion theory could lead to the development of a systematic model of adoption and diffusion.
Considering "instructional technology diffusion theories" in their complexity (Surry and Farquhar 1997), which show diffusion goals and philosophical views, this research fits into the "adopter approach" area, aiming to study, at a micro level, eLearning acceptance conditions. According to Surry and Farquhar (1997) it can be described as a research area "focused on the needs and opinions of potential adopters and characteristics of the adoption context". Strong emphasis is given to context factors that have to be included in the instructional technology acceptance analysis (Burkman 1987; Stockdill and Morehouse 1992; Ely 1999).
Concerning the process, Levine (2001) reviewed several significant researches in the areas of acceptance, adoption, and use of innovations in order to identify levels/stages of acceptance applicable to eLearning implementation. Six models, including the one by Rogers de-

scribed above, were investigated: Stages of Concern (Hall and Hord 1987); Stages of Change (Fossum 1989); Teacher's Stages of Instructional Evolution Using Technology (Dwyer, Ringstaff and Sandholtz 1989); Stages of Learning/Adoption of the Internet and WWW (Sherry et al. 2000); Stages for Learning to Use Technology (Russell 1996).
Technology is a particular category of innovation, which shares several characteristics with it; its peculiar features have been examined, among others, by the Technology Acceptance Model.

b) Technology Acceptance

The Technology Acceptance Model (TAM) is an information systems theory developed to predict the acceptance of a technology. Its development in the last decades shows a methodical reflection on the acceptance process, and its application to the eLearning field presents relevant variables, which are to be taken into consideration.
The model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it. It is based on the same theoretical beliefs-attitude-intention-behaviour causal relationship initially established by TRA (Fishbein and Ajzen 1975). However, TAM states that two very specific beliefs, perceived ease of use (EOU) and perceived usefulness (U) directly influence a person's attitudes about the use of the technology system (Davis, Bagozzi and Warshaw 1989). Much of the subsequent research has tested, revised and extended (Szajna 1996; Veiga, Floyd and Dechant 2001) the TAM, and, whereas some research has been done to model the determinants of perceived EOU (Venkatesh and Davis 2000), the determinants of perceived U have been relatively overlooked.
In an effort to combine competing theories into a single unified theory, Venkatesh et al. (2003) proposed a composite model based on eight of the most used models and combinations of those models. The resulting product, the Unified Theory of Acceptance and Use of Technology (UTAUT), theorizes that four constructs are direct determinants of user acceptance and usage behaviour (Dunn 2004: 470): 1) performance expectancy, 2) effort expectancy, 3) social influence and 4) facilitating conditions.
Venkatesh et al. (2003) suggest future research should attempt to: "test additional boundary conditions of the model in an attempt to provide an even richer understanding of technology adoption and usage behaviour".
There are applications and extensions of TAM to eLearning experiences (Gao 2005; Wagner and Flannery 2004). Most of them propose an integration of the model introducing external variables as antecedents of perceived U and perceived EOU. Authors notice the rapid diffusion of eLearning systems both in educational institutions and companies and recognise the need for further investigations on their acceptance and use. Originally, eLearning problems were related to technology, and issues such as access, connection, internet familiarity and lack of independent learning were included. As technology advanced, the problems shifted towards the learner's side and her/his acceptance and satisfaction (Saadé and Bahli 2005; Wolski and Jackson 1999).
Investigating eLearning only as an innovative technological asset fails to consider all the factors which come into play and cannot fully explain its results. Issues such as eLearning acceptance and retention need to be further investigated and supported by more comprehensive models (Keller and Cernerud 2002; Bürg and Mandl 2005).

c) Learner Acceptance

Helpful support comes from the higher and distance education research tradition, which has been studying variables affecting education acceptance and persistence. In particular, Vincent Tinto's model (Tinto 1975) and its application to eLearning are relevant to this research. Acceptance and persistence are strongly connected, since it has been demonstrated that the reasons for student dropouts are mainly grounded in the acceptance phase. There is an extensive literature on educational programs persistence, usually referred as the "non-dropout issue", gathered in the last fifty years of experiences in distance education and in the higher education sector. It has been claimed that no area of research in distance education has received more attention than learner persistence (Garrison 1987). The decision to persist or not to persist in distance education is a complex process involving a number of interrelated factors and variables peculiar to the individual's context (Morgan and Tam 1999).
Even if widely criticised, Tinto's Student Integration Model (SIM) (Tinto 1975) remains the most influential model of dropout for tertiary education (McCubbin 2003). It explains persistence and attrition through student-institution "fit" by looking at student, institutional, and environmental variables and specific areas such as the social integration of students into campus life. The theory explains the persistence/withdrawal process, which depends on learner's commitment: how well s/he becomes involved in the social and academic processes of the institution. The individual may be committed to the goal of achieving a degree and/or doing so at that institution, described as 'goal commitment' and 'institutional commitment' respectively. A lack of goal commitment would lead to discontinuation of studies whilst a lack of institutional commitment would lead to a withdrawal from that institution. The model has been applied in research on attrition in full time education, but it has also been largely applied to and/or extended in studies on professional training, distance education and eLearning (Rovai 2003; Sweet 1986; Rekkedal and Qvist-Eriksen 2003).
Many authors, especially those involved in the eLearning dropout research discussion, tried to identify the main variables affecting eLearning acceptance within organisations. Those variables are focused on a variety of different aspects concerning eLearner characteristics and experiences, contents, technology assets and organisational environment.

8.4. Map of eLearning Acceptance

Moving from this overview of authors with such different backgrounds and approaches, an integrated and comprehensive definition of acceptance can be proposed. It emerges in the literature that acceptance has not a unique definition and that people could refer to the "acceptance" concept with different terms such as use (Davis 1989), adoption (Rogers 1995), or persistence (Tinto 1975). TAM describes technology acceptance as "users' decision about how and when they will use technology" (Davis 1989), while IDT definition of adoption is "a decision to make full use of an innovation as the best course of action available" (Rogers 1995). However, we understand that for eLearning, as a learning experience and not only as a technological innovation, a more complete and wider definition has to be found. Something relevant, in fact, is added by the definition of "learning acceptance" referred to as persistence: "the act of continuing toward an educational goal" (Martinez 2003). It implies the temporal dimension typical of a process and the presence of a goal to be achieved, which goes beyond the mere idea of use or adoption commonly implied by innovation and technology.

A common definition of acceptance is “the positive answer to an offer”. One can, for instance, “accept a contract”, or one can “accept a marriage proposal”. In both cases one needs to know well the person s/he is interacting with and the object or the situation s/he is facing. To make the “acceptance” effective, an explicit action is required as a signature or – in the case of marriage – the utterance of “yes”. These actions belong to a particular set of verbal acts called commissive (Austin 1962), which imply a commitment by “who accepts” and presuppose a commitment by “who offers”.
In fact, while action/start is what makes acceptance effective, and takes place in a point in time, the components of knowledge and commitment run in parallel, and grow together up to the decision (during the *preparation phase*), supporting it also after the decision/start moment (*persistence phase*). In many cases – that of eLearning not excluded – knowledge and commitment grow also afterwards, offering a deeper understanding of eLearning through a direct experience of it, and ensuring a continuous commitment until the learning goal is reached.
According to the literature and to this linguistic analysis (Rigotti and Cigada 2004) of the term “acceptance”, the main phases of the process, the categories of variables affecting it and two important components can be identified and outlined as in Figure 2.

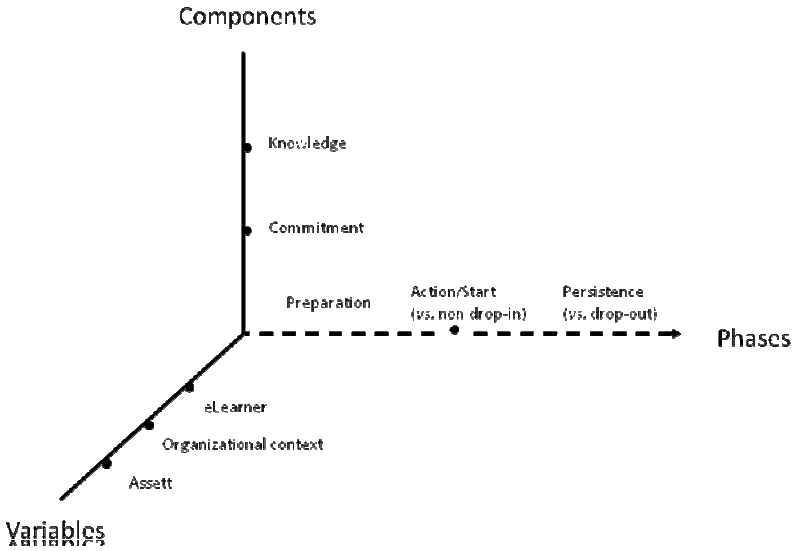

Figure 2: The Map of eLearning Acceptance (MeLa).

Let us now present each of them.

Three phases
Process’ stages and steps found in the literature can be gathered in three macro-phases:

- *Preparation*: potential eLearners get information about the eLearning activity; they are invited or requested to participate; they learn what eLearning means or remember some previous experiences; they shape their expectations about contents and instructions; they speak about this with colleagues etc.
- *Start*: eLearners physically enter the online course (in the case of a blended course this could follow a starting presence session). Here they face all the main technical problems

that can occur; they can ask for help (technical support), experience the new environment, adapt previous expectations etc.

- *Persistence*: the eLearners' persistence in the course depends mainly on how they judge the experience they are having. It is a continuous cost/benefit decision based on many factors. A healthy commitment, grounded in the *preparation* phase, will lead the eLearners to the end of the course.

Three types of variables
A set of variables and key determinants are usually listed by authors who have studied innovation, technology and learning acceptance. It is possible to organize them in three general macro-areas of families:

- *eLearner*: this category includes all eLearner characteristics, from age up to learning style. Several studies have been conducted to identify aptitudes, attitudes and skills of a good eLearner.
- *Organizational context*: the context around the eLearning experience can strongly influence the acceptance process. The type of support provided to eLearners, the relevance of the activity for the job, physical conditions, internal sponsoring, involvement and motivation, have been mainly considered.
- *Asset*: instructional design studies focus on the quality of content, on the method or on the proper mix of different methods (blended learning). Moreover, technological tools need to comply with some criteria, such as usability, velocity, reliability and so on, which can affect the acceptance process.

Two main components
Moreover there are two important components that constantly interact in the process:

- *Knowledge*: it starts forming at the very beginning of the acceptance process where information and communication flows allow learners to build opinions and expectations about eLearning activities, and grow on the basis of direct experience.
- *Commitmen*t: motivation and involvement of eLearners start when they have received enough information to express a judgment about activities. It can grow/diminish all over the process being substantial in the decision of persisting or dropping out of an eLearning experience.

8.5. Towards an eLearning Readiness Index

From this point on the research focuses on the *preparation phase* and the *organizational context variable*, dealing with both *knowledge* and *commitment components*, as highlighted in Figure 3.

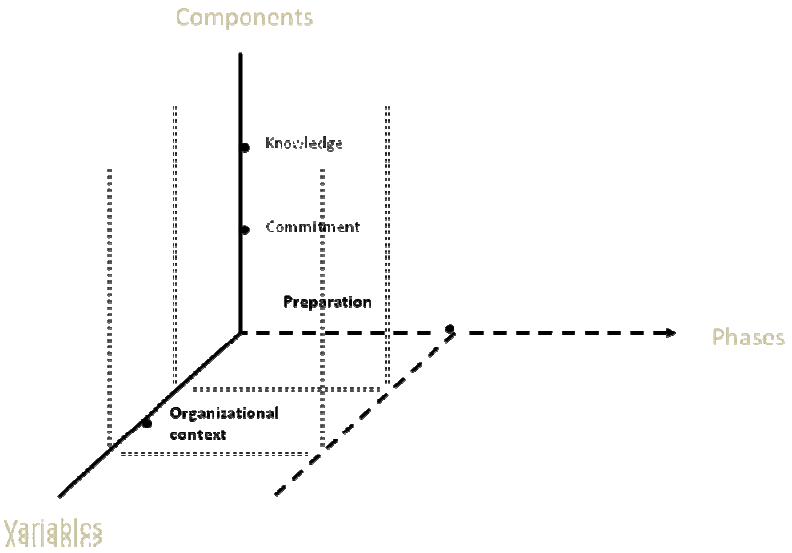

Figure 3: The scope area of the research in order to build an eLearning Readiness index.

This focus can yield to a corporate eLearning Readiness Index and is of particular interest if one takes the viewpoint of a company, thus trying to identify how eLearning acceptance can be fostered trough a suitable organization of the context. In fact, from a CLO (chief learning officer) viewpoint, individual variables can be addressed only in the selection of target groups, while assets are managed mainly by instructional designers (see, on this aspect, all the literature on eLearning quality, Botturi *et al.* 2007; Ehlers, 2004).
Nine case studies and two surveys have been conducted in order to outline an eLearning Readiness Index.
Four steps have been followed during the research to build the index:

- *Selection and refining*: important factors have been selected and refined from the literature and explorative case studies;
- *Operationalization and clustering*: factors have been described and clustered based on interviews conducted with learning officers during case studies;
- *Assessment*: a survey has been done in order to assess the presence of selected variables and to verify the completeness of the first list and to integrate/further refine it;
- *Ranking*: a second survey has been delivered to a different sample group in order to rank the pound factors.

Main findings were obtained through the integration of the ex-post rationalization analysis and results of case studies. It was possible to compare the list of variables identified in the literature review with actual eLearning experiences in companies. The starting list of enabling factors was substantially confirmed by case studies, which helped in clustering, combining, merging and refining it, as it is shown in Table 1.

First list of enabling factors (# 42)	References	Description	Selection and merge of enabling factors after case studies, as used in the first survey (# 16)	Selection and merge of enabling factors of the second survey (# 17)
Communication behaviour	Rogers 1995	Different communication channels are used to promote eLearning activities among eLearners.	Communication behaviour	Communication behaviour
Marketing	ASTD & Masie 2001	Internal sponsoring activities.		
Norms of the social systems	Rogers 1995	Specific norms are created to facilitate the introduction of eLearning.		
Peer communication	Fuller 2000; Rogers 1995	Peer communication helps eLearners to understand eLearning.		Peer Communication
Social influence	Venkatesh *et al.* 2003	Peers affect opinions and expectations about eLearning.		
Social integration	Tinto 1975; Inan 2004	ELearners experiment a social environment as in a classroom context.		
Subjective norm	Venkatesh and Davis 2000	Opinions and involvement of supervisors influence eLearner decisions.		
Corporate Motivation	Frankola 2001	Level of motivation of the organization in supporting eLearners' efforts.	Corporate Motivation	Corporate Motivation
Engagement	Collis and Pals 2000	ELearners are offered good reasons to attend eLearning activities.		
Managerial oversight	Frankola 2001; ASTD and Masie 2001	Involvement of the management helps the learning department to promote eLearning.		

First list of enabling factors (# 42)	References	Description	Selection and merge of enabling factors after case studies, as used in the first survey (# 16)	Selection and merge of enabling factors of the second survey (# 17)
Performance Review	ASTD & Masie 2001	Perception of being monitored enhances motivation to complete an eLearning activity.		
Support	Prendergast 2003	A support system encourages eLearners in starting an eLearning activity.		Support
Culture	Veiga *et al.* 2001	ELearning acceptance is influenced by specific cultural beliefs or tradition of a company.	Culture	Culture
External system	Bajtelsmit 1988	External environment influences eLearners experiences.		
Image	Venkatesh and Davis 2000	Audience of eLearning activities creates an image of eLearning within the organization.		
Perceived Compatibility	Rogers 1995	How eLearning is perceived as being compatible with organization's processes, practices and values.		
Effort expectancy	Venkatesh *et al.* 2003	ELearning activities do not seem to require too much time and energy.	Expectations	Expectations & experience
Expectations	Inan 2004; Frankola 2001	Expectations influence the level of acceptance of eLearning.		
Performance expectancy	Venkatesh *et al.* 2003	ELearning activities do not seem to require new complex skills on the side of eLearners.		

First list of enabling factors (# 42)	References	Description	Selection and merge of enabling factors after case studies, as used in the first survey (# 16)	Selection and merge of enabling factors of the second survey (# 17)
Experience	Szajna 1996; Venkatesh and Davis 2000; Venkatesh *et al.* 2003	Previous eLearning experiences affect acceptance of further eLearning activities.	Experience	
Goal Commitment	Tinto 1975	Learners know and understand goals of the organization.	Goal Commitment	Goal Commitment
Incentives	Wolski and Jackson 1999	Learning departments associate incentive systems to eLearning activities.	Incentives	Incentives
Rewards	Frankola 2001; Ely 1999	Forms of reward encourage eLearners in the intention of completing the course.		
Institutional Commitment	Tinto 1975, Ely 1999	ELearners are committed with institutional goals.	Institutional Commitment	Institutional Commitment
Perceived Observability	Rogers 1995	ELearning activities are observable by eLearners.	Perceived Observability	Perceived Observability
Perceived Trialability	Rogers 1995	ELearning tools can be tried in advance, on a limited base, by eLearners.		
Dissatisfaction with the status quo	Ely 1999	The level of dissatisfaction with the current situation.	Perceived Relative advantage	Perceived Relative advantage
Felt needs/problems	Rogers 1995	ELearning activities meet needs and problems felt by eLearners.		
Perceived Relative advantage	Rogers 1995	ELearners can compare eLearning with previous training solutions and see that there is an added value in it.		

First list of enabling factors (# 42)	References	Description	Selection and merge of enabling factors after case studies, as used in the first survey (# 16)	Selection and merge of enabling factors of the second survey (# 17)
Job relevance	Venkatesh and Davis 2000	ELearning activities are perceived as strongly related to job activities.	Perceived Usefulness	Perceived Usefulness
Output quality	Venkatesh and Davis 2000	ELearners perceive a quality impact onto their job due to eLearning activities.		
Perceived Usefulness	Davis *et al.* 1989	Perception of the usefulness of eLearning activities.		
Result demonstrability	Venkatesh and Davis 2000	ELearners perceive they can demonstrate results once they complete the course.		
Place	ASTD & Masie 2001	Creation of adequate physical conditions helps eLearners in attending an eLearning activity.	Place	Place
Blended solution	Oblender 2002	A mix of teaching/learning solutions encourages eLearners with different learning styles and different learning experiences.	Preparation	Preparation
Preparation	Prendergast, 2003; Arsham 2002; Lynch 2001; ASTD and Masie 2001	ELearners are prepared and introduced to eLearning activities.		
Facilitating conditions	Venkatesh *et al.* 2003	Environmental conditions facilitate eLearning activities.	Time	Time
Time	Rekkedal 1972; Frankola 2001; Ely 1999	Allocation of time helps eLearners in attending eLearning activities.		
Perceived Complexity	Rogers 1995	ELearning activities do not seem to require new complex skills.	Training	Training

First list of enabling factors (# 42)	References	Description	Selection and merge of enabling factors after case studies, as used in the first survey (# 16)	Selection and merge of enabling factors of the second survey (# 17)
Training	Wolski and Jackson 1999	Skills to become an eLearner are taught.		
Target choice	Masie 2002	Clear indication of the target publics.	Voluntariness	Voluntariness
Voluntariness	Venkatesh and Davis 2000; Venkatesh *et al.* 2003; ASTD and Masie 2001	Level of voluntariness is clearly stated.		

Table 1: List of enabling factors as found in the literature, and merged/refined for the first and the second survey.

Once a first – more manageable – list of 16 enabling factors has been compiled as described above, two subsequent surveys have been designed and done in order to (a) check if the involved community of learning managers found it relevant / complete based on their actual experience of eLearning activities in their companies and (b) to rank the final list according to the importance of its factors.

Surveys

The first questionnaire was built in collaboration with the Masie Center (www.masie.com) and delivered in December 2005 to learning managers of a set of companies (n. 144) chosen among its Learning Consortium according to the following parameters: (a) to be users/clients of eLearning courses (companies whose business is developing eLearning were excluded) and (b) to have an extensive experience in eLearning. The Learning Consortium is a professional network that counts more than 200 members, most of them *Fortune 500* companies. Associated companies come from many different fields (business services, manufacturing, petrochemicals, food and beverage, government, etc.). 42% (61 out of 144) answered and 95% of the answerers provided useful comments and suggestions to refine the list and to better focus the actions required to meet each single parameter.

In fact, 15 out of 16 parameters were declared present in their companies by more than 50% of respondents, and only the “Experience” one did not reach that threshold: that is why it has been combined with “Expectations”. Comments by respondents suggested introducing “Support” and “Peer communication” as separate parameters, thus ending with a final list of 17 parameters.

This final list has been used for the second survey, aimed to rank parameters according to their relevance and impact onto eLearning acceptance, hence offering a first tentative corporate eLearning Acceptance Index. Also the second questionnaire was compiled only by learning managers. The sample has been constituted by the 55 primary contacts of the Learning Consortium who left their data for a follow-up, 12 learning managers met during the case studies, plus other 139 learning managers of US and European companies; the Survey

run online from June to December 2006 and got 54 valid responses, ranking the 17 parameters along a 5-grades Likert scale.
Results led to the final ranked list of seventeen enabling factors of the corporate eLearning Readiness index, as shown in Table 2.

#	Enabling factor	Entailed actions	Mean value	Standard Deviation
1.	Perceived Usefulness	to build a connection between the eLearning activity and the learner's job	4.48	0.69
2.	Corporate Motivation	to enlist managers in supporting and involving in eLearning activities	4.33	0.91
3.	Support	to provide technical and content support during the eLearning activity	4.28	0.90
4.	Goal Commitment	to specify the behavioral/performance goals of the eLearning activity	4.22	0.79
5.	Preparation	to specify details of the eLearning activity (start date, due date, content, objectives, outputs, requirements, assignments, evaluation procedures, etc.)	4.11	0.86
6.	Institutional Commitment	to specify the organization's business goals for the eLearning activity	4.09	0.90
7.	Culture	to align eLearning activities with other training activities and with the organization's values, processes and practices	4.09	0.98
8.	Communication Behaviour	to use communication/internal marketing channels to promote the eLearning activity (direct communication, intranet, posters, newsletters, sponsoring activities, etc.)	3.92	0.94
9.	Voluntariness	to specify a target audience and/or the degree to which the activity is compulsory or voluntary	3.89	1.02
10.	Time	to set specific time restrictions/deadlines for the eLearning activity	3.63	1.00
11.	Peer Communication	to place "champions" in the different locations to support activities	3.45	1.10
12.	Training	to prepare/train eLearners about relevant issues and skills in order to attend successfully an eLearning experience (i.e. time management, self-directed learning, etc.)	3.44	1.09
13.	Perceived Relative Advantage	to clarify the advantage(s) of eLearning (as compared with other training solutions)	3.24	1.23
14.	Incentives	to create incentives and/or a recognition system for eLearning results	3.19	1.10
15.	Experience & Expectations	to track eLearners' expectations and/or their previous experiences with eLearning	3.17	1.18
16.	Perceived Observability	to provide eLearners with the opportunity to try technologies/tools before actually starting the eLearning activity	3.15	1.22

#	Enabling factor	Entailed actions	Mean value	Standard Deviation
17.	Place	to set guidelines for the physical environment where eLearning takes place (e.g., space, noise, interruptions, etc.)	2.81	1.12

Table 2: eLearning Readiness Index.

8.6. Conclusions

This research has helped in making a step forward in the comprehension of the problem of innovations and eLearning acceptance; in particular, the Map of eLearning Acceptance (MeLA) and the corporate eLearning Acceptance Index offer two original tools to be further researched by eLearning researchers and to enter the eLearning practitioners' toolbox. Together with offering some tentative answers, this study has opened up many new research paths, which require to be further investigated. In particular, the cultural issue seems to require further research, in order to find out if the tentative corporate eLearning Readiness Index has to be "localized" for different types of companies – in different business and geographical areas, as well as of different sizes.

8.7. Literature

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9. Management of User Generated Content-Communities: Towards Incentive Systems for Corporate Knowledge Sharing and Learning

Jan vom Brocke

9.1. Introduction

Information technology offers a promising potential for knowledge sharing and learning in business. In the recent past, especially web 2.0 has been attracting the attention as a means for the dissemination of information and knowledge in large communities. As a constituting part of its development, the concept of User Generated Cnowledge (UGC) has come of particular importance. The idea behind this is to actively involve users in the design and the organisation of content.

UGC refers to independently produce content by making use of the internet for an undetermined audience without charging them directly (Stöckl et al. 2008). Open Source software development is seen to be a related field, since clear similarities can be observed between voluntary production and free distribution of both software and content. While in the past, there had been a separation between author of content and its user, users now have the opportunity become author at the same time. With respect to the productivity as well as the quality of learning content, this change of perspectives can lead to more advantages. Wikipedia just to mention one, is a prime example for the enormous potential that can be realised by many.

That said, experience with UGC so far also shows that technology as such is not enough for the creation of such an amount of out-put. The successful implementation of technology requires a great deal more management which, among other, also takes account of questions of the creation of incentives: How, as one of the key questions, can users be motivated to both present content and to offer their time for working for the community?

In order to address these questions the remainder of this paper is structured as follows: first a framework is presented structuring the fields of action for managing UGC-communities. The framework explains that incentive setting is needed in order to raise the motivation needed to efficiently apply UGC-communities in practice. Hence, a closer look at the proper design of such an incentive system is taken. Against the background of incentive theory essential design principles of an incentive system for UGC-communities are presented. Finally, a conclusion is drawn and an outline to further research is given.

9.2. Fields of Managing UGC-Communities

9.2.1. A Conceptional Framework

Infrastructures for UGC have to be designed according to specific needs of the community. That said, certain fields of action which are relevant for designing the infrastructure can be distinguished. A description of these fields within a framework can serve as a guideline for

the implementation of specific infrastructures. In order to derive relevant fields of action for designing a UGC infrastructure, a framework describing relevant aspects for the implementation of design processes in information systems science (vom Brocke 2003) can be applied. Fig. 1 presents an overview of this framework along with the fields of action for building an infrastructure for UGC.

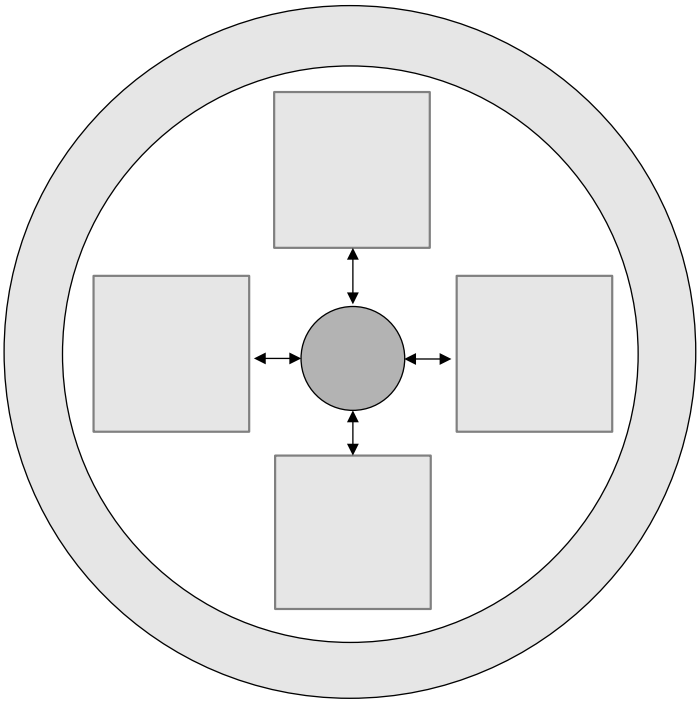

Fig. 1. Framework for the Design of UGC-Communities

The framework emphasises the fact that the implementation of an infrastructure for UGC is an interdisciplinary task. The study, therefore, calls for contributions from various perspectives that have to be integrated according to specific requirements and opportunities. The model particularly shows that apart from technological aspects of UGC, contributions in the fields of semantics, methods and organisation.
Against the background of this framework, three fields of action can be identified for the design of an infrastructure for reference modelling:

- *Technological Factor:* The technical infrastructure sets the basis for an UGC-Community. The internet technology, in particular, is a promising means for contributing to the community from different places of the world and at different times. Typical functionalities comprise the up- and download of files from a shared directory as well as wiki-webs for the collaborative editing of documents on the web in multiple versions (see Grob et al. 2006).
- *Semantic Factor:* The design of a UGC-Community is driven by the semantics of the contents generated and shared. Consider for example communities for sharing comedy as opposed to those sharing content related to certain fields of research. In addition, common sense is needed among members of a community regarding basic terms and structures of the domain. This calls for techniques in structuring and annotating content such

as keywords, taxonomy, thesaurus, conceptional models, and ontologies (see Daconta et al.2003).

- *Organisational Factor:* The UGC-Community needs to be aligned with the specific organisational field of application. The design should reflect for example if a regionally distributed, loosely coupled community is targeted or if, instead, the UGC-Environment should support an inhouse-corporate solution. In addition, the profile of the users is relevant, as to their demographic but also cultural and educational background. Also further interested parties should be taken into account, for example business associations, scientific communities, and shareholders.
- *Methodological Factor:* According to technology, semantics and organisation, rules have to be established for co-ordinating the work within the UGC-Community. These rules may for example comprise review procedures in order to assure a certain quality level within the community. One technique commonly used, for example, are staging mechanisms, according to which content has to pass multiple quality checks of certain working groups before being published for the entire community. Another just emerging field, to be further analysed later in this article is the problem of incentive setting. Also, in regard to incentives, rules are needed that add to the methodological factor of UGC-design.

According to the model, the fields of action described above must be designed in consideration of specific context situations. These situations are characterised by certain requirements and opportunities which direct the settings in the fields. In order to meet the needs adequately, various interdependencies between settings in different fields must be taken into account. Technological conditions for instance either work as an enabler or as a restriction for both organisational as well as technical settings. Thus, the design follows a balanced manner, aiming at a so-called ‘fit of design‘.

In this paper, the impact of the organisational aspect for making use of UGC-environments is particularly highlighted. For that purpose, a closer look at both the technological aspect (as widely spread in literature) and the organisational aspect (as a new field to the work on UGC) will be presented in the following.

9.2.2. A Software-Oriented Perspective - Web 2.0

Although the phenomenon of Web 2.0 may be characterised by social effects rather than by technical innovations, its origins clearly stem from a software-oriented and thus technological perspective. These origins will be briefly described in order to then further elude organisational issues of building UGC-Communities.

Around the year 2000, web 2.0 platforms emerged and revolutionised the internet (O’Reilly, 2005; Sester et al., 2006; McAfee 2005). The term web 2.0 describes new interactive applications on the internet (O'Reilly, 2005). Its applications are often associated with “social software”. While traditional software focuses on productivity and process support, web 2.0 applications focus on the linking of individuals and groups. Social software is based on different services for establishing networks and supporting distribution of information within the network (e.g. e-mail, instant messaging, SMS, or blogs).

Hippner & Wilde (2005) define five characteristics of social software. (1) The focus of social software lies on individuals or groups. (2) Social software relies on self organisation of the participants. (3) Each individual contributes voluntarily. (4) The role of actors changes from an information consumer to an information provider. (5) The linkage of information is of cru-

cial importance, not the information of individuals. Internet forums, wikis, web logs, instant messaging, RSS, pod casts and social bookmarking are tools of social software (O'Reilly, 2005; Bächle, 2006).
Web 2.0-driven social software comprises a couple of innovative technological approaches, which in particular are key elements of virtual community infrastructures. Virtual communities allow members to share knowledge, experiences, opinions, and ideas with each other. Community members could even be integrated in the value added process of a company e.g. by generating and discussing innovations of products (Lattemann; Robra-Bissantz, 2005). Furthermore, virtual communities provide means for enhancing the quality and efficiency of a customer relationship management (CRM). If customers can be successfully incited to participate in a virtual community, there is a significant chance that they become more loyal to the company, its products and services (Lattemann; Stieglitz, 2007).

9.2.3. An Organisational Perspective – Incentive Setting

Research shows that members of virtual communities are usually driven by a complex portfolio of altruistic, intrinsic and extrinsic motivations. This includes motives such as the joy of creating content or following specific values (Shah, 2004), or extrinsic aspects such as gaining reputation in the community or signalling knowledge to companies to increase career chances (Lerner; Tirole, 2002). These different kinds of motivation can be stimulated by a range of incentives, rules and regulations which are implemented in a governance system. Such a governance system has to consider all important drivers in order to increase voluntary and valuable contributions of community members.
While implementing a virtual community, context specific characteristics have to be considered. In social oriented communities such as communities in the health sector (Leimeister; Krcmar, 2006), social aspects such as identity (Haring, 2002), values and ideologies (Raymond, 1999) and affiliation (Haring, 2002; Raymond, 1999) are of importance. In rather expert-oriented communities such as communities for financial markets, motivation for participation is far more driven by the need for topical information (Raymond, 1999; Shah, 2004), the joy and the desire to create and improve (Goldman; Gabriel, 2005) as well as training, learning and career concerns (Lakhani; von Hippel, 2003; Lerner; Tirole, 2002; Raymond, 1999). Because of the different nature of virtual communities, their implementation and their management are no easy tasks.
In addition, different relations between users forming a UGC-community may be considered more closely. As to transaction cost theory (Coase 1937; Picot 1982; Wiliamson 1991 particularly market-and enterprise-structures can be differentiated. Whereas markets prices for transactions are a key figure that are negotiated on an individual level, in enterprise structures long termed negotiations are characteristic setting a frame for cooperation/ coordination on the basis of principal agency-relations (Sydow 1992). In real-life situations, structures falling into the continuum between both stereotypical structures can be observed. These structures are referred to as hybrid structures (Wiliamson 1991; Sydow 1992; Klein 1995). In particular virtual networks fall into this category characterised by a loosely connection of partners that flexibly cooperate on certain tasks, such as the generation of content in a certain field of interest.
Motivated by a couple of colourrful examples, like wikipeda and youtube, there are great expections to make use of the UGC-phenomenon for the corporation of purposes for knowl-

edge sharing and learning. However, the difference between a more or less private use (in highly loosely coupled relations) and a professional use aiming at certain corporate goals should not be neglected. One of the most striking of these differences may be its incentive setting: How to motivate employees, share knowledge and spend time on doing so? In other words: how to align corporate and individual interests. These challenges call for action in the field of methodological design of the UGC Community that are further analysed in the following chapter.

9.3. Incentive Setting as Key Challenge for Building UGC-Communities in Practice

9.3.1. Relating UGC-Activities to Performance Based Budgeting

With this paper, the main stream of argumentation includes the discussion of a key factor for making use of UGC-environments for the corporation of knowledge, sharing and learning lies in the problem of incentive setting. Hence, in this chapter, a closer analysis of the various factors influencing incentive settings in this field will be analysed. Research in the field of incentive systems shows that financial incentives are one of the core elements in theses systems.

Hence, in the following, it will be examined how to relate action in an UGC environment to performance-based budgeting systems (Ziegele 2001). Performance-based budgeting systems offer the potential to establish an incentive orientation within the organisation in order to generate motives matching the institution's strategic objectives at decentralized level (Ziegele 1998).

Doing so, the various factors driving the individual context situation of a company have to be considered. Hence, the study does not aim at providing one list of general measures. On the contrary, the objective is rather to discuss guidelines (as a starting point of a methodology), enabling companies to individually adjust the measurement and budgeting system.

9.3.2. Theoretical Background of Incentive Setting Processes

Previous studies on the design of incentive systems are discussed in organisational psychology placing a focus on either behaviouristic motivation theories (Weinert 1998, von Rosenstiel 2003) or the equitiy theory by ADAMS (Adams 1963). In order to explain competitive indication systems, both, goal and VIE-theory can be applied. LOCKE's goal theory serves as a means to analyse the influence of goals on the motivation of individuals (Locke 1968). Objective target serving as an impulse such as financial incentives both increase motivation and support performance on a local level. The significant core of the goal theory is that exactly formulated and challenging objective targets have a stronger effect on motivation rather than vaguely formulated and easily reached ones (Locke et al. 1981). On top of that, a successfully reached goal might also cause an objective, transparent, and quick feedback about the level of the goal reached (Locke et al. 1981).

In line with the goal theory, VROOM's VIE-theory likewise analyses the influence of goals on the motivation of individuals (Vroom 1964). At the same time, however, Vroom differentiates between organisational goals and individual needs of locally organised units.

In concordance with its core statements, the theory's acronym results from three constructs:

- *Valence:* corresponds to the anticipated value of a result achieved by the individual's action. It is calculated by the individual's future valuation of the expected benefit when the goal is achieved.
- *Instrumentality:* specifies the relation between organisational and individual target objectives which can either be conflicting or identical.
- *Expectation:* is based on the consideration that individual achievement motivation is dependent on the kind of subjective belief in the effectiveness of personal action.

An adaptation of the VIE-approach is proposed by PORTER and LAWLER. It is based on an empirical study in which they consider further constructs and feed-back loops in their analysis (cf. chart 1, cf. also Porter and Lawler 1968).

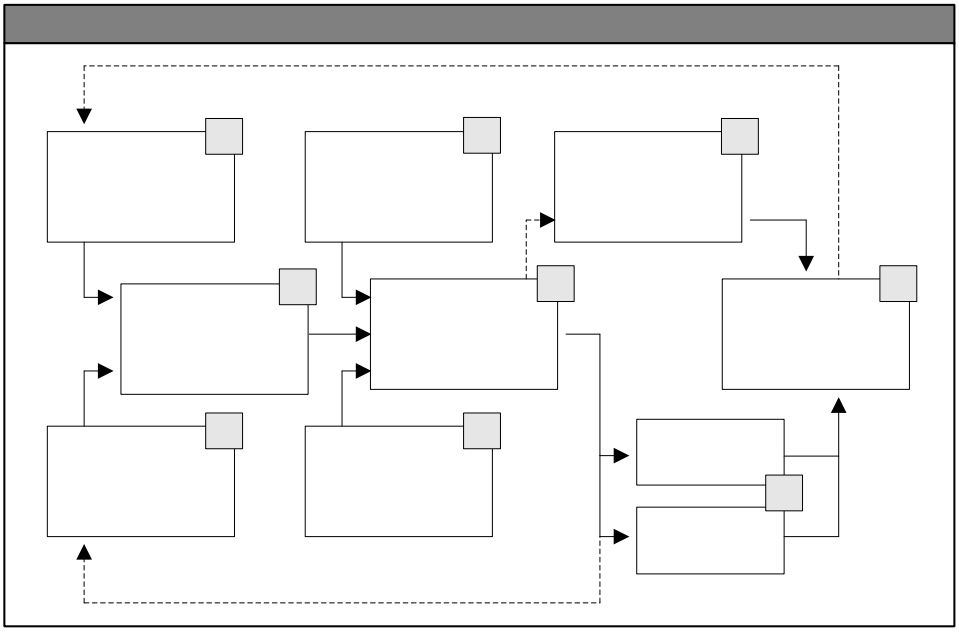

Fig. 2: Theoretical Model about the impact of incentives

In Fig. 2, both, valence (1) and expectation (2) correspond to the constructs depicted the VIE-theory. Serving the adaptation of the theory, the following aspects are named: dedication (3), individual capacity (4), role perception (5), result of the goal realised (6), degree of justice (7), award (8), and satisfaction (9) of the agent. Dedication corresponds to the energy an individual invests. This aspect lies in the core of the approach, its effectiveness being relative to the individual capacity and the role perception in the realised result. An agent brings in an exceptional out-put in those fields in which, on the basis of his or her role perception, he or she expects the highest award. The result of the action determines the individually perceived degree of justice in relation to the award. These aspects are derived from both extrinsic as well as intrinsic sources. Both aspects, award and justice, influence the degree of the agent's satisfaction. As a result, it also influences the valence of future tasks.
Both, goal and adapted VIE-theory display the opportunity to support the motivation of local decision makers by regulating the goals of the organisation according to individual needs. Therefore, appropriate incentives are needed revealing high valences to the local decision maker. Against this background, Incentive-receivers need to be able to build expectations

about the interdependencies of dedication and action, and results and awards. These statements derived from the theories serve as a basis in the following section in order to derive a design recommendation for the development of measurement systems for incentive setting to contribute to a UGC-Environment for corporate knowledge sharing and learning.

9.3.3. Findings for Incentive Setting in UGC-Communities

For the budgeting processes in the field of UGC initiatives, indicators are used which help specify the allocation of funds or special payments related to the salary of employees. These payments arise from the individual goals that are reached. Successfully reached goals are evaluated by indicators. The indicators are represented by means of performance figures which show facts in a comprised form that have been quantitatively calculated (vom Brocke et al. 2008). In this, absolute and relative figures are differentiated from one another: absolute figures give direct evidence about the degree of complexity in a specific case. Relative figures, instead, derive from the combination of certain figures (Behrens; Hoffjahn 2004).

- Ratio Figures: reveal the relation between a partial quantity and a complete quantity (i.e. the number of employees contributing to a UGC-environment)
- Relation Figures: express the relation between two different kinds of figures which are linked by a thematic strand they represent (i.e. the relation between revisions of articles posted on a UGC-environment and the number of process re-design initiatives in a business area)
- Index Figures: represent the relation of similar figures in various points in time (i.e. the number of registered users of an UGC-environment at two different periods).

An organisation of several figures in either a mathematical and hierarchical or in a logical context is called a performance measurement system (vom Brocke 2008). An indication and performance measurement system is compatible to incentives only in case the incentive receiver expects a financial advantage and if he or she acts in a way that the incentives generate an advantage to the incentive giver at the same time (Laux 1999). According to the motivation theories depicted above, the figures selected for the measurement of UGC-activities have to meet the following requirements in order to ensure incentive compatibility.

Instrumentality

Here, the term instrumentality refers to the relation between organisational and individual scopes. The indicators employed here are meant to adequately reflect the strategic goals of the incentive setter (Ziegele 2004) and to impede opportunistic behaviour of the incentive receiver.

If a company for instance follows the scope of increasing the integration of UGC environments, figures like “Number of Registrations” or “Number of Postings” in a business area could be used for an allocation of financial means. A department striving for the maximisation of an individual budget sum, however, could exploit these measures on just the basis of this figure. It could for example load up material that might be of little relevance. Due to the conflicting scopes of both university and department, the degree of integration needs to be captured by yet another figure, i.e. a figure comprising the quality of postings measured for example by means of hit rates.

Performance Orientation

For setting proper incentives, the measurement system requires a performance oriented construction, or more specifically, the relation between performance level and its compensation needs to stand in appropriate relation to one another (Winter 1996).

In a measurement system in the field of UGC, the specific heterogeneity of the departments and employees involved needs to be considered. Differences in performance for example between the various departments need to be integrated in the allocation model via the employment of appropriate weighting factors. For example, the quality of the business area has a strong impact on the adequate quantities of using a UGC-environment, take for example “outgoing invoices” and “project management”. Apparently, factors like the degree of routine and the intensity of knowledge required in an area have a significant influence. These differences have to be considered in the budgeting process in order to produce fair results and thus set meaningful incentives.

Transparency

An indication system needs to guarantee transparency about financial allocations, in specific, the inherent principles of budgeting, and risks need to be as transparent and comprehensible as possible (Becker 1990). Transparency is one of the preconditions for both creating motivation by aid of an indication system and for the creation of expectations by local agents. Against this background, an measurement system for incentive setting in the field of UGC-activities should focus on a few indicators, clearly indicating the major objective of the company in knowledge sharing and learning (Ziegele 2004). The use of a multitude of weighting factors increases for example the complexity and at the same time decreases the comprehensibility of the indication system. Both, transparency and comprehensibility are required in order to ensure the legitimisation of the allocation model, resp. for the allocation of financial funds.

Justice

Transparency of a measurement system is an important prerequisite for justice perceived by decision makers concerning the financial allocation of funds. An indication system is perceived as just if the agents feel that compensation seems appropriate with relation to their work and the other incentive receivers (Winter 1986).
For the implementation of an incentive system supporting the contribution to UGC-Environments vicious circles need to be prevented (Ziegele 2001). Vicious circles touch on the problem that some departments or employees are not used to knowledge sharing and learning the same way than others are. In this situation, there is the danger of awarding those being already active and potentially demotivating (or excluding) the others. This is particularly relevant, as those being hesitant to knowledge sharing and learning are should particularly addressed by the initiative in order to disseminate the UGC-idea throughout the company. For that reason, apart from ratio and relation figures, also index figures should be applied in order to grasp the individual progress of departments or employees within a certain time span.

Manipulation control

The indication system requires a design that impedes the manipulation of incentive receivers. A company can, for instance, grasp the figure “duration of use” of an UGC-environment by

analysing log files. Against this background, for example time-out-mechanisms are needed along with other measures preventing the manipulation of usage times tracked on the system. Another example is the exclusion of staff members of a certain department from an online-evaluation in which data is gathered about the quality of the content generated by this department.

9.4. Conclusion

There is no doubt that User Generated Content-Environments offer great potential for knowledge sharing and learning in a company. Examples like Wikipedia and YouTube inspire the expectations raised, particularly from an information technology perspective. However, this paper argues not to underestimate the effort of making use of these phenomenae for corporate purposes.

Against the background of a theoretical framework depicting relevant fields of action when designing an UGC-Environment, special emphasis was put on the organisational aspect. Here, in particular, incentive setting was identified as one of the key challenges to raise the potentials. The paper therefore analysed findings in the field of the design of incentive systems as known from corporate management theory. As a first result, principles for the adequate design of incentive systems for intensifying the use of UGC-Environments have been derived. These principles particularly indicate how to align corporate and individual objectives.

Future research will concentrate on a further operationalisation of these findings. The vision is to provide a set of typical measures that may be reused and adapted in different areas of application. This work will make use of findings in the field of reference modelling. From a methodological perspective empirical work will be required. Hence, we are very open for co-operations with companies currently interested in introducing UGC-Environments in order to study their cases.

9.5. Literature

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10. Open Educational Resources: Recommendations and Exemplary Tutorials

Graham Attwell, Guntram Geser, Wolf Hilzensauer & Sandra Schaffert

10.1. Definition and Background

There has been much attention paid to Open Educational Resources (OER) in recent years, for example through the extensive media coverage of the Massachusetts Institute of Technology's Open Courseware initiative, the work of the increasing number of organisations promoting Creative Commons licenses, and the success of Open Source Software applications such as Moodle in the education sector.

An authoritative definition of Open Educational Resources (OER) has not yet been agreed. However, the UNESCO-IIEP Forum formed a consensus that OER include Open Course Content, Open Source development tools and Open Standards and licensing tools. (cf. International Institute for Educational Planning/UNESCO, 2001)

Stephen Downes writes that "there is a great deal of debate extant concerning the definition of 'open' resources" (Downes 2007, p. 299). Geser (2007) argues that experts who understand OER as a means of leveraging educational practices and outcomes will define OER based on the following core attributes (see also figure 1):

- "that access to open content (including metadata) is provided free of charge for educational institutions, content services, and the end-users such as teachers, students and lifelong learners;
- that the content is liberally licensed for re-use in educational activities, free from restrictions to modify, combine and repurpose the content; consequently, that the content should ideally be designed for easy re-use in that open content standards and formats are being employed;
- that for educational systems and tools software is used for which the source code is available (i.e. Open Source software) and that there are open Application Programming Interfaces (open APIs) and authorisations to re-use Web-based services as well as resources." (Geser 2007, p.20).

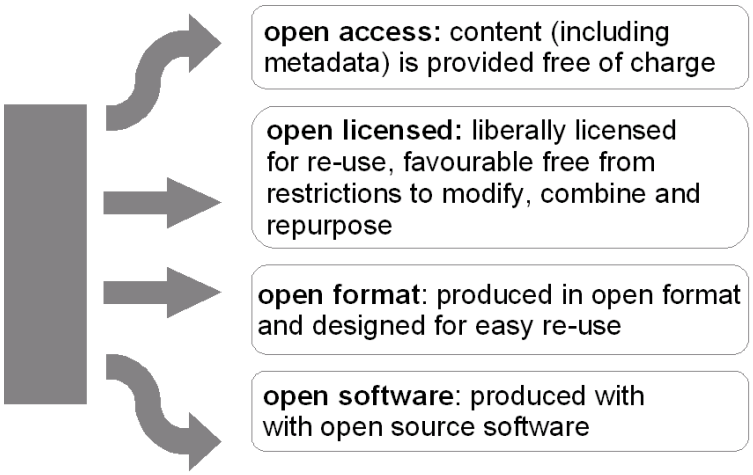

Figure 1: The meaning of “open” in “Open Educational Resources”, based on Geser 2007, p. 20

In reality educational resource repositories are often not fully compliant with such demanding principles Readers should be aware that "open" resources or interesting projects referred to in this paper, whilst adhering to the spirit of the current Open Access movement, may not fully meet the criteria outlined above.

OER may form a key element in policies aimed at leveraging education and lifelong learning for developing a knowledge society and economy (Geser, 2007). Despite considerable investment in technology enhanced teaching and learning, there is little evidence of profound changes in educational practice. In particular, the idea that the use of ICT would promote student-centred and collaborative approaches to teaching and learning has not been fulfilled. Instead there would appear to be a growing mismatch between institutional approaches to teaching and learning and strategies and practices of knowledge development and implementation in the world of work.. In addition, There is also a growing gap between institutional practice and the way young people are using technology to communicate and for ”creative activities, writing and posting of the internet, mixing and constructing multimedia and developing their own content” (Lenhart and Madden, 2005).

In the last few years, there have been a number of high profile international initiatives promoting OER and the use of Open Source Software tools for learning. The OECD have published a study (2007) about OER based on the results of an international survey, and the William and Flora Hewlett Foundation have undertaken a review of the OER movement (Atkins, Brown, & Hammond 2007). The European Commission has also funded a number of projects focused on open educational content and Open Source tools including the OLCOS and Bazaar projects.

The OLCOS project aims at promoting OER through a number of different activities including the development of a roadmap to assist policy and decision makers in the further development and use of OER (www.olcos.org). In addition to policy recommendations the project has produced a series of online tutorials for practitioners on the creation, re-use and sharing of OER.

The project has emphasised that in order utilise OER in developing lifelong learning and a knowledge economy it is crucial to promote innovation and change in educational practice. In particular, OLCOS warns that simply incorporating OER within a model of teacher-centred knowledge transfer will have little effect in equipping teachers, students and workers with the

competences, knowledge and skills to participate successfully in the knowledge economy and society.
Therefore the OLCOS project focuses on open educational practices based on a competency-focused, constructivist paradigm of learning and promotes a creative and collaborative engagement of learners with digital content, tools and services in the learning process.

10.2. Selected Recommendations for Stakeholders

The OLCOS Roadmap supports a transformation in educational practice to bring learning processes and their outcomes closer to learner needs to participate s in the knowledge society. The Roadmap (Geser 2007) explores possible pathways towards enhanced production, sharing and use of OER and proposes 25 recommendations for a range of different stakeholders including educational policy makers, funding bodies and individual teachers and students. Among the recommendations that address open educational practices and social software based tools and services are the following:

- "Boards, directors and supervisors of educational institutions are advised to scrutinise whether educational institutions employ innovative approaches beyond classical teacher-centred knowledge transfer. For example, they should ask educational institutions about what amount of teachers' work concentrates on coaching students in identifying real world problems, clarifying study approaches, assessing the relevance of information and observations, and critically discussing study results.
- Teachers should change their role from dispensers of knowledge to facilitators of open educational practices that emphasise learners' own activities in developing competences, knowledge and skills. Therefore, an educational culture and mindset must be fostered that builds on sharing of resources for, and experiences from, open educational practices. For teachers, this would for example include sharing within a community of practice experiences, lessons learned and suggestions on how to better foster the development of students' as well as their own competences and skills. This would be part of a new understanding of teachers' professional work that includes a permanent questioning, evaluation and improvement of educational practices and resources.
- As facilitators of open learning practices and processes, teachers should favour learning designs that make use of tools and services for collaborative learning and sharing of ideas, experiences and study results. Teachers should be aware that there is available a new generation of easy-to-use tools and services (e.g. Weblogs, Wikis, RSS-based content provision, etc.). They should experiment with such tools and services that allow for setting up an information environment that they and their students can manage themselves.
- Also e-learning implementers at educational institutions are asked to support open educational practices. Such practices do not require large, centrally managed systems. Rather, groups of teachers and students will benefit from e-learning implementers' technical advice and support in selecting, setting up and using appropriate low-barrier tools."

The roadmap invites students to challenge teachers to use Web-logs to share ideas, observations and commented links to useful study material or to use a Wiki for a collaborative

study project or to subscribe to RSS-feeds to a project with relevant and regularly updated "real world" information. It also recommends students develop an e-portfolio to document and reflect on their progress and work, and to allow access their work through an open access repository under an open content license.

10.3. OLCOS Tutorials for OER

The OLCOS project has developed a series of online tutorials for practitioners (Córcoles, Ferran Ferrer, Kalz, Minguillón, Naust-Schulz & Schaffert, 2007). These tutorials provide information and guidance on how to plan, search, produce/re-use, share and publish open educational content in e-learning. In addition, an OLCOS collection has been built that presents and provides links to many online resources and repositories. In accordance with the ideas of OER, the tutorials were collaboratively developed and are open, free. They were developed using the WikiEducator platform WikiEducator (2007) is a community project working "towards a free version of the education curriculum by 2015."
The tutorials offer practical assignments in developing OER. They have been tested and evaluated in national workshops and are available in English, German and Spanish. Users of the tutorials firstly are introduced to basic definitions and to the overall planning of didactical, technical and legal issues in content development. The tutorials show how the goal of OER and open practices can be realised in practice.
The top-level topics of the tutorials are as follows:

- Find and evaluate existing Open Content
- Create Open Content with Open Source tools
- Publish and share the content
- Technical considerations and planning
- Legal/licensing considerations and planning

10.4. An exemplary OER: The MOSEP Tutorials

The MOSEP ("More self esteem with my ePortfolio!" (www.mosep.org), co-financed by the EU Leonardo da Vinci programme , has adopted the OER principles and recommendations described above . MOSEP promotes the use of e-portfolios to strengthen the self-esteem and the self learning competence of young learners. Within this project, tutorials are designed to support teachers in implementing e-portfolios. The tutorials comprise of five modules each containing different „sessions" with practical guidelines, additional web resources and assignments and are available in five languages (English, German, Polish, Lithuanian, Bulgarian).
The MOSEP tutorials comply with the OLCOS' definition of "openness" in several respects. They are available free of charge, openly licensed under the Creative Commons attribution license, and produced in an open Wiki format which makes it easy to re-use the content. In addition to these aspects of "openness", the MOSEP tutorials focus on the didactical process of e-portfolio work and are platform independent. They provide practical guidelines, best practice examples and practical assignments, which guide teachers through the e-portfolio

process, but they are not limited to any particular e-portfolio software. Last, but not least, the e-portfolio method promotes open, self organised and directed learning, hence, the MOSEP tutorials are direct facilitators of open learning practices and processes.
We believe all publicly funded research and education should support Open Access and OER models. The OLCOS roadmap provides recommendations for implementing such as approach and the OLCOS and MOSEP tutorials provide practical support.

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11. TeachLight – an Editor for IMS Learning Design Teaching Scenarios

Steffi Lämmle, Sabine Rathmayer & Christos Toutountzidis

11.1. Introduction

At Technische Universität München, a new modular and flexible Learning and Knowledge Management Portal – ZePeLin[21] – is developed based on the Microsoft Office Sharepoint Server (MOSS) 2007. Its modular concept and the clear structure of its components simplify the construction and management of eLearning courses at universities. All course sites are built from predefined templates which then can be adapted and redesigned by the course-administrators (teachers or tutors) according to their needs and preferences and up to their personal skills. To further support the course administrators in the design and creation of course sites from the beginning, we present our editor TeachLight, a new structured concept for the simple implementation of university course scenarios. Course administrators will be provided with a tool, which enables them to graphically design and build the structure of the course before it is actually created. In order to guarantee the standard conformance of the editor we chose the IMS Learning Design standard as the implementation basis. In the following chapters we will describe basic learning processes supported in the ZePeLin portal and their transformation into IMS Learning Design as well as the implementation of the graphical editor using Microsoft's new presentation technology "Silverlight".

11.2. Concept

The editor was developed based on an analysis of academic teaching scenarios at universities. The Diploma Thesis „Analyse und Optimierung von plattformunterstützten Prozessabläufen der Lehre der TUM"(Nuber, 2007) identifies platform-based processes in teaching at TUM. Carmen Nuber (2007) divides a typical lecture into the modules preparation, lecture, exercise, exam and postprocess (Nuber, 2007). These academic teaching processes were mapped to the IMS Learning Design and depicted graphically.

11.2.1. Mapping of Academic Teaching Processes to the IMS Learning Design

„The objective of the IMS Learning Design specification is to provide a containment framework of elements that can describe any design of a teaching-learning process in a formal way"(IMS, 2003). It aims at the establishment of the Learning Design as a global standard for learning and teaching scenarios. This is the reason why the IMS LD was chosen to implement the editor TeachLight. In the following the most important components of IMS LD are described and the mapping of the teaching modules to the Learning Design components is explained.

[21] http://www.zepelin.org

Activities - Every Learning Design consists of several activities used to model teaching and learning processes. Regarding the teaching modules an activity represents one part of a lecturer's work, such as uploading learning material, looking for rooms, defining appointments, and more.
Activity Structures - Clustered activities are called activity-structures. Quite often activities aren't independent of each other, as particular dependencies exist. Hence activities are grouped and can be considered as units. Complete modules of the teaching process e.g. preparation or lecture are mapped to activity-structures, as dependencies exist between the lecturer's activities. The modules preparation, lecture, exercise, exam and postprocess can be defined as activity-structures.
Roles – Persons taking part in the teaching/learning process can by identified by roles assigned to them. Roles determine which activity can be carried out by which person. Roles can be divided into two categories, learners and staff.
Environments – Environments serve as a container for learning materials and services and define the learning/teaching environment.
Resources – Resources can be represented by several contents such as lecture scripts, exercises and links to literature. In the context of this solution presentation item elements of activity-structures are used to define resources.
Act – Every Learning Design play consists of several acts. Following a logic sequence of events these acts have to be performed in a sequential order. Every user takes the part assigned to him and carries out the corresponding activities. Every teaching module represents a group of coherent activities, can be executed as a single block (activity structure), and is assigned to a single act.
Play - A play element describes a teaching/learning process supported by activities. Activities and activity structures are encapsulated in act elements, which are combined in play elements.

11.2.2. Mapping of Learning Design Elements to Graphical Objects

To implement the editor TeachLight the IMS Learning Design elements described above are mapped to graphical elements and provided with logic.
Activities – An activity represents the smallest possible action and can not be divided into smaller units. Therefore an activity element is visualized as a block (e.g. rectangle, ellipse).

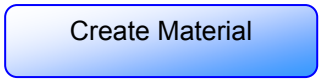

Figure 4: Activity

Activity structure – Activity structures are depicted as affiliated activities. Thus the dependency between these elements is visualized.

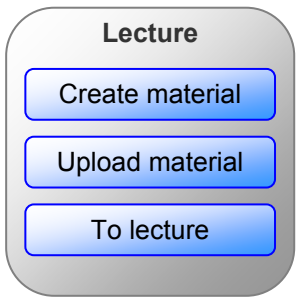

Figure 5: Activity structure

Act – Every act symbolizes the execution of an activity structure in a certain role. Therefore the graphical representation corresponds to the one of the activity-structure.
Play – A play element interprets a sequence of acts. This concept can be depicted graphically by combining graphical elements used to draw activity structures. Arrows or lines are conceivable for drawing connections between two elements

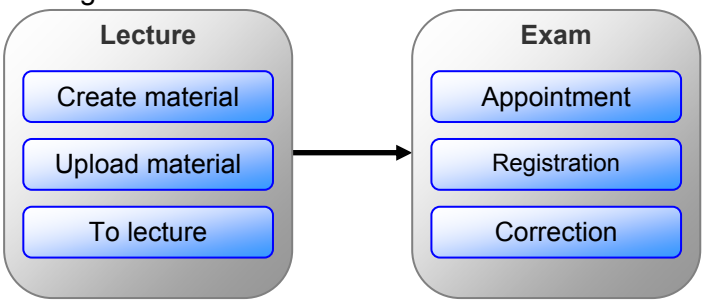

Figure 6: Play

The mapping of platform supported learning processes to learning design elements enables the export of virtual teaching processes built with the help of the editor TeachLight into the standard conform Learning Design format.

11.3. Design

The interface of the course editor consists mainly of three parts, namely the information panel, the activity panel and the design panel. The activity panel contains a list of available course activities. These can be used via drag and drop for the composition of a course. The design panel is used for visualization of the actual learning process. Lecturers can graphically compose the structure of their courses by adding activity structures to the panel. The sequence of the activities is specified by drawing connections between the individual structures. The information panel is used to display details about the various activities of the designed course. It also allows the modification of this information. In order to keep the interface clearly laid-out and easy to use, the information panel displays details only about the currently selected activity.

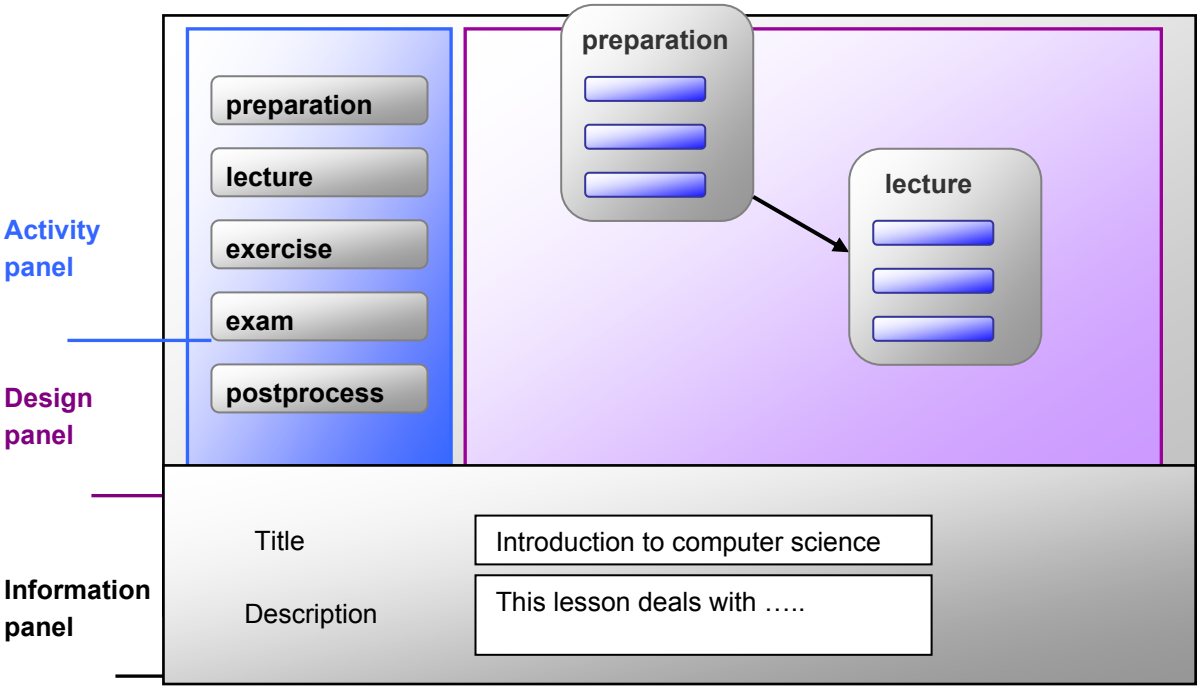

Figure 7: Graphical interface of the course editor

The graphical editor is used to design the structure of a complete lecture/course an easy way. Since it is based on the Learning Design it includes standard pedagogical elements and structures.

11.4. Implementation

For the implementation of the graphical user interface the presentation technology developed by Microsoft Corporation, Silverlight (version 1.0) has been used. Silverlight can be regarded as a light version of WPF (Windows Presentation Foundation) for the usage within a web context. It uses XAML[22](Extensible Application Markup Language) for the description of the graphical user interface and allows the separation of application and presentation logic.
After the graphical creation of the complete lecture/course, the XML description of the graphically generated elements is used for the subsequent processing. One possibility is the transformation into a standard IMS LD package which can be imported into any application which supports the standard. Compared to other IMS LD editors our solution provides a simple tool to create standard IMS LD courses for universities.
The target system of the course editor is the ZePeLin portal, which is based on the Microsoft Office SharePoint Server 2007. MOSS 2007 as the technical basis offers features to create new websites based on templates and workflows, which consist of different elements (Web Parts) containing arbitrary information. Course sites are designed by using Web Parts for distributing material, displaying news, exchanging information, announcing appointments, and more. For the ZePeLin scenario the second transformation possibility is more important.

[22] http://msdn2.microsoft.com/en-us/library/ms752059.aspx

The above described XAML descriptions are used to automatically generate ZePeLin course sites which contain Web Parts according to the elements of the graphical editor. Additionally, the data that has been entered by the user in the information panel of the editor is provided in the Web Parts of the course site. For example, appointments that have been added to the lecture activity are displayed in the corresponding course calendar.

11.5. Conclusion

The course editor described in this solution presents a first prototype for the visual development of platform supported learning processes using a standard compatible format. The results can be transformed into an IMS Learning Design package or a full-fledged course site. Additional information can still be added to the course site afterwards. Currently the set of available activities, structures, and connections is limited to very fundamental modules. This set will be expanded in the context of future projects in order to offer more flexibility.

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12. A new learning model to support autonomous learning at the Language Center of the University of Lausanne.

Céline Restrepo Zea & Nadia Spang Bovey

12.1. A new learning model to support autonomous learning at the Language Center of the University of Lausanne.

Establishing habits to support lifelong learning practices is particularly important in the study of foreign languages. New models of learning in this field need to integrate the development of skills in autonomous learning, such as diagnosis of strengths and weaknesses, identifying learning objectives, self-evaluating of needs and progress, as well as the difficult task of documenting one's abilities. E-learning technologies can be called upon to ease the process of discovering and meeting the requirements of these lifelong learning strategies, as well as other more specific cognitive tools, as shown in a large scale experiment conducted at the University of Lausanne. The model presented here rests on the availability of a Personal Learning Environment (PLE), designed to support students in their preparation for autonomy. It is currently used by more than 1300 learners divided in about 30 groups of students learning English, German, Italian, French and Spanish.

The direction of the Language Center of the University of Lausanne has always been very much concerned about how enhancing learners' autonomy and valuing their knowledge. With this in mind, it undertook the elaboration of a European Language Portfolio (ELP) for Higher Education which was edited by the European Language Council in 2002. Henceforth, the decision was taken to use this new tool as a central element for all courses at the Language Center. This choice has implied many changes that are affecting all aspects and areas of the Center, as can be seen in the below diagram (figure 1).

As far as teachers are concerned, new competences and visions are to be acquired, so that they be able to pass on to students their recent awareness of the benefits and issues for learners to take on their own learning process. A reflection on their own practice and role had also to be undertaken, for teachers to become students’ mentors and help them on their journey towards autonomous learning.

Administratively, it meant describing all the modules, course programs, material and attestations in terms of levels and goals fitting to the ELP. Pedagogically, it required developing the concept of autonomous learning, valuating the intercultural competence, enhancing plurilingualism, and defining the learning objectives in terms of capacities and level to reach according to the CEFR (Common European Framework of Reference for Languages). This has led to the definition of new evaluation criteria based on the usage of the ELP.

Finally, the integration of the ELP has forced students to change their attitude towards language learning. This has been realised through the refining of their understanding of the various skills constituting a successfull learning experience, such as defining personal learning objectives, keeping a learning journal, and using standardised reference lists to evaluate their strengths and weaknesses. Consequently, students are offered a computer-based PLE

in addition to free language courses. This environment is meant to help them build the knowledge and skills necessary to establish a successful lifelong practice of learning in autonomy, in a progressive way and under the guidance of an online tutor.
In order to document and monitor their progress, students and tutors are working with an electronic version of the European Language Portfolio's Learning Journal, which has become a compulsory item of the system. The digital version of the Learning Journal is a block developed for the Moodle learning environment used at the University of Lausanne. More adaptable than the paper version, it is an integrated ingredient of a learning scenario. Each journal entry can be checked and commented by the tutor, students being alerted by email when such comments are published. Entries can be easily modified or deleted. These facilities constitute a real benefit for both teachers, who can keep track, encourage and advice the students very effectively and students, who are better guided until they are totally acquainted with the logic and use of it. In this logic of providing tools for helping students managing their learning, an electronic vocabulary has also been developed as a block for Moodle and will be available for use from February on.
As far as the traditional language laboratory is concerned, its use has also been rethought and reorganised with autonomy in mind. Thus, all the material put at disposal of students in the multimedia room has been described in terms of language activities and classified by competences, themes, grammatical structures and types of activity. Nowadays, the database is accessed via a web interface directly from the personal learning environment and references more than 10'000 activities with immediate access to the digital material. That way, once they have assessed their goal, students can find by themselves activities fitting their needs and interests, as well as their learning preferences.
The new learning model was gradually implemented over a period of several years. It reached its maturity this year and is allowed some time of running before an in-depth evaluation, which is of course on the Centre research agenda. Clearly, a success factor of the model will be the engagement of the teaching staff in the promotion of both the legitimacy of autonomous learning and of the personal learning environment. It has to be understood that lifelong learning is not an immediate concern neither of the students nor of the teachers. In this respect, the innovative aspect of the model lies not only in the technology but also – and maybe predominantly – in the transformation of the learning and teaching representations and practices.

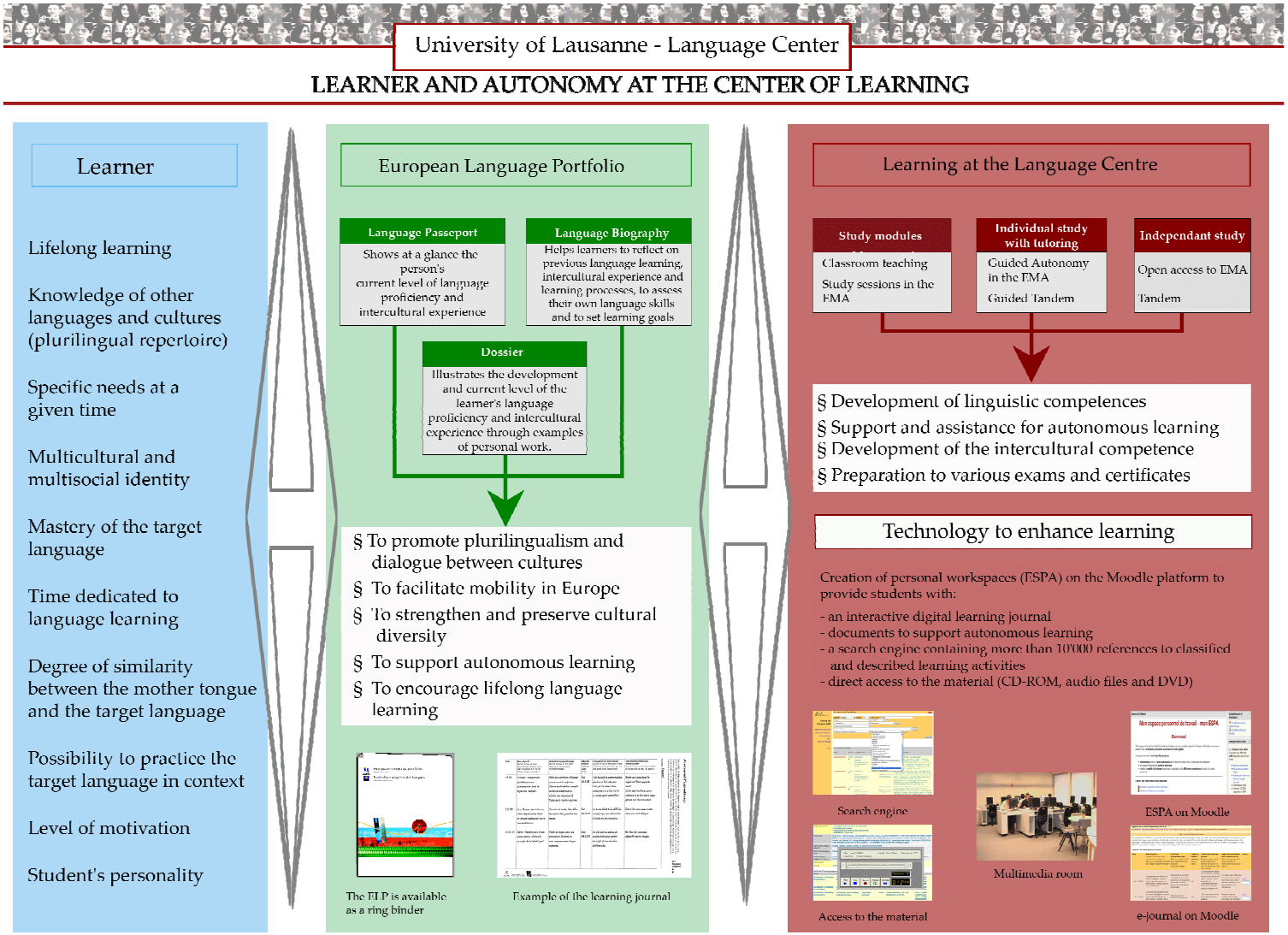

Figure 1: Learning Model of the Language Center of the University of Lausanne

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13. Working with the case study method online - An MBA student's experience

Uwe Spangler

13.1. The background

IE Business School (IE) is a Spanish private institution of graduate business education, founded in 1973. IE Business School has some 35,000 alumni in 85 countries, produces over 1600 master graduates per year and has a main urban campus in Madrid and offices in ten countries.
In 2006 a new MBA programme started, called the Global MBA, with an integrally online implementation. The methodology is a mixture of asynchronous forums and synchronous video-conferences with the case method as the pedagogical model. The duration of the whole programme is 18 months.
This paper will show the connection between interactive learning content and the way it is implemented following the case study method in an online MBA programme. With this example the mixture of online content, synchronous and asynchronous communication and the overall didactical structure will be discussed.

13.2. Learning content- the case study

A case study is normally a paper based "snap-shot" of a company in a specific moment, with a specific problem. These practical exercises have to be solved first individually, than in small group discussions before trying to solve the problem with the help of the professor in a class discussion.

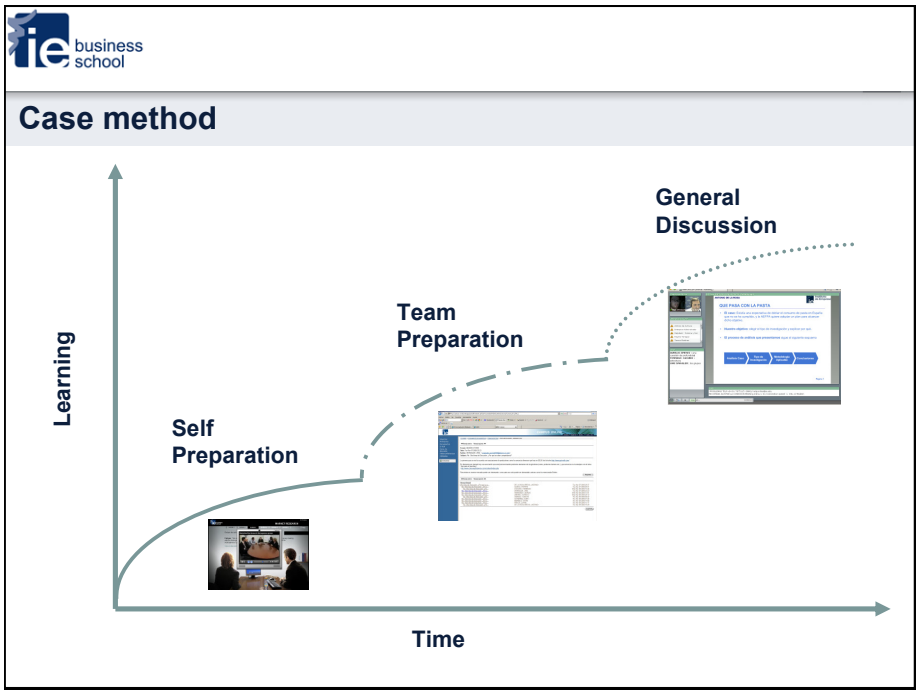

Figure 1: Case Method (Source: Adapted from Mauffette-Leenders, L; Erskine, J.A.; and Leenders, M.R. (1997) Learning with cases. Richard Ivey School of Business. London, Ontario.)

Business Education has a strong emphasis to augment this experience based learning arrangement by introducing other, new learning materials such as simulations (on- and offline) and games into the classroom. Innovation is critical to stay on top of the “vanguard“ of business education. IE Business School has a strong focus on developing interactive case studies and technical notes. Today about 8% of all educational documentation is deployed in an interactive online way.

Figure 2: Interactive Simulation of Market Research. source: http://multimedia.ie.edu

The range of the interactive documentation goes from multimedia questionnaires, to interactive cases, tutorials, simulations, games and interactive graphs. The documentation as the "learning content" is not technically standardised, but stands out for its versatile didactical usage in online, face to face or blended learning arrangements.
These resources are 100% tailor made and are produced in-house by the E-Learning Department of IE Business School.

13.3. The methodology- didactical structure of an online MBA programme

The E-Learning discussion has been dominated by the "content vs. context polemic" for a long time. Today a shift can be observed towards the real importance of the learning process. IE Business School has true hands-on experience in this subject with more than seven years experience developing interactive case studies for use in face to face classes, virtual sessions and blended arrangements. As project manager in the team developing interactive documentation and at the same time as an online learner in a virtual MBA program I have a special focus on the reflections of online content and its use in virtual learning arrangements (processes) in a day by day learning practice. The didactical approach of the professor and the learning objectives are the starting point of all conceptual processes to produce interactive documentation. The question: "How to implement the case?" is always underlying in this process.
On the other hand there are some important tools and facilities which are offered to the learner to improve the learning process, the importance of the social structures of a full online program and the differences with face to face arrangements. The Global MBA programme consists of 4 sessions per week (in 2 different subjects), where 2 sessions are asynchronous forums and 2 sessions synchronous video-conferences. Basically there are two different pedagogical approaches: Content orientated classes to obtain basic knowledge to be able to actuate (for example the role of market research in Marketing, launching a new product) and on the other side case studies, where students have to present their analyses, proposition and conclusions of the cases and the classmates from other teams have to discuss them. (For example the criteria and set up of a market research study with the objective to launch a new commercial campaign). Both session typologies are possible in both didactical ways. But the tendency is that videoconferences are used as a wrap up of the weekly case discussion and the lecturing of academic knowledge. This set up of the learning arrangement, depends above all on the professor's choice.
The approach of IE Business School is to offer the same content, basic didactical structure and professors in the online programmes as in the face to face programmes. This means a strong weight on quality online learning.
Online documentation is also facilitated to face to face programmes as well as to blended and full virtual arrangements. Versatility is one of the main criteria when producing learning documentation. That means that most interactive material also has its paper résumé and adapts perfectly to different individual learning styles and learning situations of the students. Our latest research efforts are directed to augment this versatility of documentation and include also audio cases, videos, podcasts and short animations in mobile formats (mp3/mpeg4 etc.) for the students.

IE Business School has a strong accent on the international character of the MBA program, with participants from all over the world. The methodology is also focused on building virtual teams, as team learning is a very important part of the experience. Every case has to follow the case study methodology and students are obliged to communicate in group as part of the assessment is the team performance.
Students obtain soft skill competencies like building and working in virtual teams. Most of the teachers and students admit that the learning experience is quite different in many aspects. But unlike a general opinion that online learning is a boring, isolated way to learn only for recluses, the new experience shows that it is quite the opposite. Participation (a very important part of an MBA programme and of its assessment) seems to be more effective. Discussions of business cases are more profound, the dynamics of face to face social interactions change and therefore the students train new competencies. And the most exciting phenomenon: Students seem to get to know each other almost better than in face to face programmes. In addition, in high quality online programmes, every student has a chance to an equal time slot of participation in the forums. Another interesting aspect about this innovative way of teaching is that for the upcoming generations, socially connected and used to web 2.0 applications, these tools and the way of learning will be taken for granted.

13.4. Conclusion

After the graduation of the first programmes with this new approach, the graduated students of this online MBA programme have shown that the didactical structure of online learning has several advantages for executive education. Globalised students want to use the same technologies as they use in day by day communication in their learning processes.
The students/professors ratio has to be as high as, or even higher than, in face to face surroundings. Asynchronous communication tools are one of the axes to provide high individualised feedback, as professor's time, a scare resource, is flattened in the asynchronous sessions. This also implicates a highly motivated and involved profile of professors. The in-house production of versatile interactive documentation has helped in this sense to change also the professor's view on virtual learning arrangements, as the authors of the interactive cases are involved from the beginning of the concept process in the production, implementation and evaluation of the documentation. They are therefore the most important "change-actor" and are living the idea of virtual learning in different learning setups.
From MBA students point of view interactive documentation helps to augment the learning experience in an innovative way. In internal surveys of all materials, students are asked if they would like to receive more interactive learning documentation. The result of this survey states that, on average, all students would like to have more interactive documentation (average rate: 8 out of 10), because they offer real added "didactical" value" for them.

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14. Learning Pacemaker - A Step by Step Guide Through Online Case Studies

Arnold Wyrsch, Jacques P. Bersier & Peter Fritzsche

14.1. Report of Project

"Learning Pacemaker" is an authoring tool for the development of online case studies. The students are guided step by step through the case studies and in every step they are supported in gathering the information necessary to proceed. In an online learning dialogue with the system an a tutor, they learn to evaluate their work. A demonstration's version of a case study can be found on:

- http://hefrweb02.eif.ch/LearningPacemaker/Demo/index.htm,
- http://www.learning-pacemaker.ch/learning_pacemaker_de.jsp

14.1.1. Introduction

E-learning and self-study are two important concepts of pedagogic innovation within Institutes of Higher Education.
Supervised self-study is gaining ever-greater importance in respect of the Bologna reform process (Landwehr 2006:9), and a critical approach to the concept of self-study according to Forneck (Forneck 2007:20) and others, has been incorporated into the Learning Pacemaker. Case studies are suitable to use with complex and multi-dimensional learning content (Gruber, Mandl and Renkl, 2000:148; Fritzsche, 2003:12; Langosch, 1993:33; Landwehr, 2004:199; Roll, 2003:124). They require that the student solves concrete cases closely related to real-world practice by means of a combination of pedagogic theory and individual decision-making and practical ability, and allow the coherent experiencing of the educational content through theory, practical application and exchange of experience. The case studies are based on the problem-solving approach (Polya,1949; Dewey (n.d.)).

14.1.2. The Learning Pacemaker

"Learning Pacemaker" has been developed in the frame work of the Swiss development program 'Swiss Virtual Campus' (SVC) and is linked to the "Finite Element Transfer" (FET) project, which received the 'European Academic Software Award 2004' (EASA 2004). The project has an interdisciplinary approach and is aimed at the development of case studies for incorporation in supervised self-study courses via the medium of ICT in a variety of disciplines. Participants of the project are from Higher Education Schools in the fields of Education, Technology/Science and Engineering, Sociology and the Competence Centre for eLearning Services.

The eCSSS project has three aspects of development:
Pedagogic development of the case-study method for eLearning (interdisciplinary).

- Development of the eLearning workplace 'Learning Pacemaker', in which students can examine case studies and other process-oriented learning approaches.

- Development of a Learning Pacemaker authoring tool to enable the easy construction of case-studies.

The case studies are based on a case portfolio. The problem-solving follows the problem-solving cycle by means of chapters, steps and questions:

1. Chapter
   - Step 1.1
   - Step 1.2
   - …..
2. Chapter
   - Step 2.1
   - Step 2.2
   - …..
3. ……..
4. ……..
5. Chapter

The students are informed about the significance of the steps (motivation) and about the demands and linking possibilities of relevant pre-knowledge. Theoretical background and relevant information about the case is made available to them, supported through links to further reference sources and a glossary, while sample answers suggest possible solutions. This allows the students to work out their solution and to start the so called "learning dialogue" by presenting it to the server. As direct system feedback, students receive a model answer, in comparison of their own suggestion which enables self-assessment and evaluation of their own efforts. Tutor feedback on students' answers and self-assessment is given at a later date, as well as a group discussion of the experience gained through the problem-solving activity itself and the problem-solving abilities required.

- The ability of the students to reflect their activities is enhanced at three levels: Self-assessment through comparison of student's own and the model answer.
- Reflection on the decision-making and implementation ability in the learning phases after each chapter.
- Reflection on the approach to problem solving and learning at the end of the case study.

Employment of meta-cognition is important (cf. Kybruz-Graber et al., 2000:264), as it stems from a lower level of learning experience such as true/false and is essential for the processing of personal experience, for the linking of theoretical concepts and concrete experience, and for dealing with complexity. The case studies reflect the levels of Deutro-learning, based on Bateson's learning hierarchy (cf. Meier Rey, 1994:40), levels which allow, amongst other things, the transfer of focused learning. The self-assessment and meta-reflection, coupled with the model answer and tutor feedback, recognize the mutuality of standard content, individual evaluation and formal ability (cf. Forneck, 2007:43) and lead to the establishing of autonomous learning (Forneck, 2007:49).

14.1.3. Students' Learning Environment

In order to transform a complex learning environment into an eLearning environment, a new concept was developed and incorporated into the 'Learning Pacemaker'. The concept is based on the following fundamental constructs:

- The problem-solving process and it's parallel learning process are clearly structured in single steps.
- Each stage of learning is supported by important elements of basic knowledge and application either directly or via links.
- The learning steps fuse in a learning dialogue between students, system and tutor, the latter cognizant of the complex structure of learning in case studies and facilitating by reflective means the development of decision-making capability and the ability to act appropriately.
- This environment enables the students to develop their ability to find information and solve problems independently.
- The learning process is documented; this both enables the tutor to provide focused support and provides concrete evidence for the evaluation of learning outcomes.
- The students are periodically required to reflect on their actions and learning.

The learning environment permits the students to make the connection between problem solving and reflection within a given framework and to alter and adjust solutions. Further options of ICT-oriented knowledge management such as group discussions are employed. The students' workplaces are compatible with and appropriate for the complex and demanding tasks required, and thus support autonomous learning.

14.2. Application of "Learning Pacemaker" Case Studies

This case study concept has been implemented and tested in projects in various disciplines. Since 2003 the "Learning Pacemaker" concept is used in "FE-Transfer", a course for the application of the Finite Element Analysis in engineering (www.fe-transfer.ch). In 2008 it will be a part of the courses for the "Master in Applied Computational Mechanics" from the "European School of Computer Aided Engineering Technologies" (www.esocaet.com).
At different Swiss Universities of Applied Sciences, Learning Pacemaker" is used in the regular courses (www.learning-pacemaker.ch).

14.2.1. Advantages for Students and Tutors

The evaluation of the feed back of the students leaded to the following conclusions:

- The students perceive the case studies as providing a well-structured, but simultaneously complex and open learning environment, offering an optimal supervised course of self study.
- All the cases are practice-based or have been developed in consultation with partners from industry/practitioners in the field. The clear practical orientation of the course increased significantly the students’ motivation.

- By means of the Learning Dialogue, each student is directly challenged to learning. (Quote from one student: 'There's no lying back and listening.')
- Students are able to work at their own pace according to their individual needs.
- The meta-cognition effects for the students are a coherent background knowledge as well as decision-making and implementation/practical abilities.
- Learning can be significantly increased through self-assessment. Complementary factors can be discovered and aspects relating to extra dimensions of the learning and problem-solving systems identified and tackled.

14.2.2. General considerations

With a more focused consideration of the e-work place of the students, an important dimension in the development of eLearning has been strengthened. Attention is not focused solely on the perspective of 'eTeaching', but on eLearning from the perspective of the student, and efforts are made to ensure that the students are able to take as much responsibility as possible for their own learning.

A case study gives the students access to a course content, providing them with a clear and coherent approach to individual issues arising from a face-to-face learning context or from the literature. A danger of face-to-face teaching is that the clear focus on individual aspects might lead to an over-emphasis on the issue and thus to erroneous over-generalization, despite the fact that tutors attempt to reduce the danger by means of practical illustration within a concrete situation. The real-world relevance of specific, complex situations can be experienced at a deeper level by means of case studies (cf. Seifried and Klüber, 2006:5).

As tutors, teachers participate in an exceptionally well-documented, and thus transparent, learning process for each student, permitting an evaluation of learning style and a focused approach based on individual needs. (This aspect is discussed further in the Evaluation phase of the project.) In this way, the challenge of Seifried and Klüber are not only to vary interaction patterns or methodological approaches in student-centered lessons, but to 'regard the teaching-learning process holistically and place the student at the centre of the pedagogic impulse' (Seifried and Klüber, 2006:18) is achieved.

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