Perspectives at the E-University: Innovative Learning and Teaching Scenarios at the University of Duisburg-Essen

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Abstract

The aim of this paper is to present the perspectives of the E-University Duisburg-Essen on the background of the "Bologna Process" and related strategies, geared towards the creation of the European Higher Education Area by 2010 with free mobility of students and a high degree of interoperability of universities.
Improvements in eLearning will support the Bologna objectives, since it will become a core component in most courses and curricula. In the last 10 years, a lot of eLearning projects have been launched, each with a different approach to sustainable integration into university structures. To anchor eLearning in university daily life, the University Duisburg-Essen decided on an integral strategy to foster the development of processes leading towards "the university of the global digital age" (or E-University).
This presentation will focus on two projects which will be realized in 2008-09 by the central service units – the University Library and the Center for Information and Media services – where the authors are located.

Keywords: eCompetence, eLearning, Bologna Process, Europe, Learning Resource Centre, Information Commons, PC-Hall, Online Exam, Strategy

Bologna meets Europe – the European Higher Education Area

Since the Bologna Declaration was signed by 29 countries in 1999, European universities are in a process of creating a European Higher Education Area by 2010 through better access, quality, competitiveness and attractiveness. The most important aspects include the existence of a higher education structure based on three cycles, the adoption or general implementation of the European Credit Transfer and Accumulation System (ECTS), the introduction of the Diploma Supplement, the incentives offered for the implementation of the aspects just mentioned, the establishment of a national qualification framework and joint/double degrees as well as the development of measures for quality assurance[1].
Most German Universities have transformed their courses of study to comply with ECTS and are striving to ensure their competitiveness in university rankings by steadily ameliorating their quality in different fields e.g. student life cycle, stable and innovative services etc.
Two of the neuralgic points in the day-to-day operation of universities on the road to 2010 are the increasing requirements to offer support, spaces and technologies for informal studies and self-organized learning teams by students on the one hand, and on the other ways and means to help lecturers to shoulder the increased workload in relation to exams. On both issues new projects are under development at the University of Duisburg-Essen.

[1] Information Bologna-Process: http://www.eurydice.org/portal/page/portal/Eurydice

The Changing Roles of Lecturers and Students

In the present paradigm shift the role of teachers and learners are changing. Teachers have to become more and more learning facilitators and moderators, and students have to assume more individual responsibility for their own learning. While even in traditional learning units, teachers can include students´ self-study phases and group work by offering special tasks fostering cooperative exchange, these methods are more accentuated in blended learning arrangements. Teachers have to structure topics for discussion in the class room or in virtual rooms e.g. online, usually using a learning management system. Teachers have to take on a variety of roles e.g. being a content expert, moderator or facilitator and a motivator to engage students´ activities and, last not least, to be a permanent contact person to support students in their learning. The trainer´s engagement is required during the whole course or even in between courses. He or she is able to fulfil this requirement, using new media and technologies. As shown in different studies[2], teachers working in the class room and in virtual rooms are much more involved in the beginning of a course than while it is running or even at its the end. This is due to the stimulation of students´ self-organizing competencies in blended learning. In this form of learning, the learning biography and the actual learning arrangements work towards a creative permutation and development of a wide range of competencies. In addition to formal learning, students profit from informal learning situations in daily life, at work, at home and throughout society.

Informal learning can be characterized as follows:

1. It does not take place in special educational establishments apart from normal life and professional practice,
2. It has no curriculum and is not professionally organized,
3. It is not planned in a pedagogically conscious, systematic manner according to subjects, test and qualification,
4. It is not unrealistic stockpile-learning, but is experienced directly in its “natural” function as a tool for living and survival[3].

Jay Cross (2006) pointed out that formal trainings and workshops account only for 10-20% of what people learn at work. He compares formal learning, to riding a bus where the driver decides where the bus is going. The passengers on their part are just along for the ride. Informal learning is at the opposite end of the learning spectrum. “Informal learning is the unofficial, unscheduled, impromptu way most people learn to do their jobs. Informal learning is like riding a bicycle: the rider chooses the destination and the route. The cyclist can take a detour at a moment’s notice to admire the scenery or help a fellow rider”.[4]

Informal studies are often experienced as good practice in addition to formal offerings at the university. Often, students come together and discuss and work on different topics in self-organized learning teams at the University Library. Therefore, the Library becomes an interesting place – a so-called information commons – to bring together students’ ideas and the resources of the university, necessary for the scientific work progress (e.g. digital work places, information resources, support).

[2] Petschenka, A. (2005)
[3] Definition of Informal Learning: http://en.wikipedia.org/wiki/Informal_learning
[4] Cross, Jay: http://informl.com/2006/05/20/what-is-informal-learning/

New media and technologies enable learning environments accessible independently of time and place, which permits to overcome the limitations of traditional learning environments and to support scientific work in many new, often more efficient ways. To acquire competencies in using digital technologies is, therefore, particularly necessary and decidedly beneficial in terms of competitive advantages for the subsequent working life.
Currently, most of the student´s life cycle is being organized digitally in a system of campus management. Blended-Learning arrangements, the provision of digital resources and technologies accompanied by effective support services are the core pillars of the e-strategy[5] at the University of Duisburg-Essen.

Fig. 1: Self-organized learning team by students at the Library Duisburg-Essen

As an increasing part in university studies will be taken up by informal and self-organized learning processes by students, the university has to offer support, spaces and technologies for informal studies and self-managed learning teams. The realisation of a pertinent project is discussed in the following section.

Information Commons at the University Library

To support students in their learning, the University Library of Duisburg-Essen[6] decided to establish a Learning Resource Centre or Information Commons. This project is currently in its planning phase.
The centre is essentially conceived as a public open space equipped with mobile furniture and all the infrastructure and technology necessary to support the information and learning needs of the college community in one location. With qualified student advisors as immediate contact, learning teams are supported in using technologies such as e-learning platforms, electronic information repositories or to request qualified advice or coaching from staff members of the library or the Centre for Information and Media Services.

[5] eStrategy at the University of Duisburg-Essen: http://ikm.uni-due.de/strategie
[6] University Library of Duisburg-Essen: http://www.ub.uni-due.de/english/estart.shtml

The concept is fairly new to German universities[7] although it is already quite common in British and American Libraries. The Butler Library[8] defines the term “Information Commons” as an innovative concept which has been adopted by many academic libraries. The main purpose of the concept is to bring together the technology and expertise necessary to support the information needs of the college community. “The Information Commons incorporates library services, computer technology and assistance, and media production services, allowing students to pursue the entire research process from beginning to end in one supportive environment”[9].

Another example is provided by the University of Warwick[10]. Here, different Grids are brought together under one roof. The website of the library offers these Grids for different services. The concept of the “Teaching Grid”[11] is similar to the concept of the “E-Competence Agency”[12] at Duisburg-Essen, which has been presented at the E-Leader conference in 2007 in Prague[13]. Both, the Teaching Grid and the E-Competence Agency are working closely with the Library and other units providing digital technology and media services. Another interesting Grid is called the “Learning Grid”[14]. Similar to the concept of the Butler Library, the Learning Grid allows students and teachers to have all digital services located in one location.
The most important question is what makes a space successful and innovative. The University of Warwick considered Planning and Designing Technology-Rich Learning Spaces[15] and summarized the key elements:

1. The Learning Grid allows students to be creative, to experiment with new and different study methods, to apply a range of resources to support their learning experiences and to seek constructive advice and guidance on a range of related issues.
2. The range of individual and collaborative work areas and the availability of mobile screens, whiteboards and OHPs allow a large degree of flexibility in the space. Students are able to easily manipulate their environment in order to cater for their own individual learning needs.
3. The consumption of cold food and hot and cold drinks is allowed in the space as is the use of mobile phones (while the main library on campus does not allow any of this).

The guidance offered relies on the concept of “Student Advisors” – students advising students on all the innovative aspects concerning personal, technological and infrastructure services.
The Learning Grid is staffed by two permanent full time members of staff and 17 student advisors with a service model to ensure users' needs are met helpfully and purposefully. All student advisors are current students or recent graduates of the University.

[7] Realization or conceptualisation at German University Libraries: HU Berlin, LMU Munic, Oldenburg
[8] Butler Library: http://www.buffalostate.edu/library/
[9] Butler Library, Definition Information Commons: http://www.buffalostate.edu/library/ic/information.asp
[10] University of Warwick, Library Services: http://www2.warwick.ac.uk/services/library/
[11] University of Warwick, the Teaching Grid: http://www2.warwick.ac.uk/services/library/teachinggrid/teaching/
[12] E-Competence Agency, University Duisburg-Essen: http://www.uni-due.de/e-competence/en
[13] Published Article at the E-Leader Conference 2007: http://www.g-casa.com/E_LEader_Prague_Program.htm
[14] University of Warwick, Library - the Learning Grid: http://www2.warwick.ac.uk/services/library/grid/
[15] University of Warwick, Success Factors of the Learning Grid: http://www.jiscinfonet.ac.uk/infokits/learning-space-design/more/case-studies/warwick/success

The University Library at Duisburg-Essen decided to realize a similar Learning Resource Centre and proposed this successfully as one of the strategic projects in the information and media sector of the university for 2008.

The project of Duisburg-Essen is in part based on ideas of the DINI[16] task forces "E-Competencies" and "Public PC working places". The members of both task forces, meeting once or twice a year, are experts in their fields and come from different German universities. Jointly, these task forces elaborated important aspects for future Learning Centres, namely the need to consider simultaneously pedagogical, organisational and technical aspects in planning and implementing these projects. The initiation of a students´ idea competition[17] to conceptualize and visualize "future trend learning spaces in universities" is another common project in 2008.

Elaborating on the ideas of the Anglo-Saxon universities and the DINI discussion, the project developers at the University of Duisburg-Essen defined the following list of considerations for their own Information Commons:

- The overriding idea informing the whole project is a vision of innovative spaces for individual students and student groups to organize their scientific learning/working process efficiently in all its stages from scientific research, to the realization and presentation of their projects, from seminar paper up to their dissertations. Learning spaces have to be flexible arrangements mediating media-supported with interpersonal learning, individual and group work, self-learning and tutoring.

This requires:

- offering a choice of different spaces from "silent" work places to a variety of group working areas, flexible arrangements in and between working spaces; ergonomic and aesthetic furniture
- providing technical infrastructure such as broadband Internet access, hard- and software, notebook workplaces, technical services and easy access (single-sign-on) for computers, notebooks and mobile devices
- availability of a wide range of analoguous and digital information services and technologies
- offering e-competence and technical support through help-desks, student advisors and professional e-competence, media and information management consultants and coaches.

The realization of learning spaces should be directed towards the customer needs and wishes – according to the motto "One face to the Customer", which the University of Duisburg-Essen adopted for all its information, media and communication services. In terms of the Information Commons this means, to involve students already in the planning phase to shape the project as much in accordance with their wishes and perceptions as possible.

[16] DINI – Deutsche Initiative für Netzwerkinformation e.V.: http://www.dini.de/
[17] DINI, student´s idea competition: http://www.dini.de/

From the "Pen and Paper"- to Online Exams

One of the consequences of the Bologna Process is the increasing workload for lecturers because of the amount of written examinations, the storage of their results etc. To ease this workload digitally based solutions have to be introduced to replace "pen and paper"-exams with more efficient methods.

In a real modern scenario, students would be able to pass their oral exam by videoconferencing or written exams through online tests. While such settings are used already in a limited way (e.g. learning management system Moodle[18] and others), they raise a number of legal issues. Particularly online tests involve the need to ensure the authenticity of the student taking the exam and the control over conditions under which the exam is done. Consequently, there is a growing demand for specifically equipped rooms, where online exams can be taken under secure and controlled conditions. At the University of Duisburg-Essen this demand had manifested in various ways: lecturers, especially those having to deal with great numbers of students have asked for such possibilities and the PC rooms are booked by professors for exams, which are often organized without sufficient attention to the legal issues involved. When toying with the idea of applying for funds for the establishment of a professional online exam center, a quick survey was launched by the Center of University Development where more than 25% responded in favour of online exam facilities. As a result, the Center for Information and Media Services is presently building an Online Exam Centre with almost 200 places[19]. The project, which costs almost half a million EUR, involving not only the purchase of equipment and furniture but also major building works, is financed partly by funds from student fees, which were introduced last year in most German universities and partly by a project approved by the German Research Foundation[20]. At present, a small showroom demonstrates the possibilities of the Centre to interested lecturer and the professional examination software, which was acquired after an evaluation in 2007, LPLUS[21], is being introduced and adapted to the requirements of the university, also with participation of professors who will later use the centre for their exams.

It is expected to start work at the center at the end of the winter semester 2008/9. It will be the first center of this kind in Northrhine Westfalia.

Fig. 2: Furniture in the online exam center at the University of Duisburg-Essen

[18] Learning Management System Moodle: http://www.moodle.org

[19] If not used for exams, the facility will be available as a "PC Hall" for studies and learning by students.

[20] http://www.dfg.de

[21] LPLUS GmbH, company for innovative solutions for the management of examinations: http://www.lplus.de/ (English version)

Summary and Conclusions

In this paper, we presented two projects concretely taking on board two key problems brought about by the overall change processes linked to the European policies like Bologna on the one hand and the pervading effects of information technology on higher education on the other. Both projects, however, form part of a much wider strategic vision of the E-University by which the University of Duisburg-Essen takes position to meet these challenges by actively shaping and re-orienting its practice. To keep or gain leadership, the European institutions of Higher Education have to improve continuously in terms of research, learning and the organisation and services underpinning them. E-Learning is one of the keys in the field of competitiveness and attractiveness on the market. German Universities especially still have to increase and extend the development of eLearning and its sustainable integration, so that eLearning will become a normal part of university practice, complementing and sometimes replacing traditional teaching methods.

Especially quality offerings in eLearning are vital for the future of adult education and education in general, particularly for fostering those key qualifications essential for work in the 21nd century. To work consistently towards the E-University in this sense it is necessary to act strategically by developing adequate sustainable projects of constant innovation and productive change. This cannot be achieved by spectacular singular efforts but only in an integrated institutional effort under intelligent leadership.

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