Blended Learning in Academic Teaching Present State and Opportunities at the Heinrich-Heine-University Duesseldorf

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Abstract: Blended learning is increasingly becoming an important topic in Germany. For this reason, we present the current situation at German universities by the example of the Heinrich-Heine-University Duesseldorf. In this study we show different ways to provide blended learning platforms and their advantages and disadvantages. By closer examination of the given projects and inquiries of their administration, we have found many innovative approaches and we give future prospects of the possibilities of those blended learning approaches.

Keywords: Blended Learning, University, Germany, Collaborative Learning, Web 2.0

Introduction

"With the emergence of Internet technologies, there has been an explosion of non-traditional learning opportunities during the past few years" [10]. The further development and simplification of these new technologies force universities to offer more innovative and elaborated blended learning methods while simultaneously giving them a chance to do so. In the following study we look at the current state of blended learning at German universities by the example of the Heinrich-Heine-University Duesseldorf (HHU). For a common base the necessary concepts are defined first and then an overview of the available tools is given. Then we present selected examples, by which we show the different methods, possibilities and requirements of blended learning platforms.

1. PresentState and Definition of Terms

In the following segment we take a closer look at our definition of blended learning and the most common tools.

1.1 Blended Learning

A pure eLearning approach has not been adopted sufficiently at German universities. [11] suspect the reasons for this is in the lack of acceptance of both learners and teachers. Also the high financial and human effort and the fact that some learning contents are not suitable for eLearning could be reasons.
Because of those reasons the trend at schools and universities changes to "blended learning". Blended or hybrid learning is based on the mixing of eLearning and traditional classroom learning [4].
Blended learning is often defined differently. To avoid confusion and misunderstanding we define blended learning in this paper as follows:
- The online course must not stand alone. The online courses need to reference to a classroom course.
- Some kind of multimedia must be involved (videos, pictures, animations).

- There must be an interaction between the student and the online course.

1.2 Current State at German Universities

There are a lot of programs who support the use of blended learning systems in higher education institutions. In Germany we find many ways to implement blended learning projects [3]. A substantial amount of blended learning projects at German universities arose in the 1990s. Because of the spread of computers and the internet, the start-up from many advancement training programs took this development [9].

The use of new media in university life will be a quality assurance or, ideally, increase the quality of teaching. Since the introduction of Bachelor and Master Courses in Germany, the learner has a more rigid schedule. Through the use of blended learning, students will be able to take parts of their learning stuff outside of the classroom. The student can access his or her own courses from any location at any time [15].

2. Blended Learning Tools

For our further work, it is important to identify the different methods of blended learning used at the HHU. In this section we explain the possibilities of the methods. We can identify two different groups of blended learning: Self-paced learning and collaborative learning [2].

2.1 Self-paced Learning Tools

In self-paced learning scenarios the student learns independently and without communication with other students or the teacher. At the HHU the following self-paced learning methods are used:

- Lecture recordings
- Online tests
- Video glossaries
- Problem-based learning courses

Lecture recordings allow the students to watch (missed) lectures whenever they want. In addition, more complex content can be repeated, for example to prepare for an exam. It is a cost and time efficient way of online learning [13]. With online tests, the knowledge of the students will be intensified, in addition to the identification of knowledge gaps and problems. These tests can be realized either as multiple choice, gap text, or free-text questions. It is important that the students receive feedback after the test and are able to see their progress [14]. To deepen the knowledge, video glossaries can be used. Those glossaries show selected topics with animations or filmed scenes. After students have acquired these basics, they must also be able to apply this in a problem-oriented way. Here it is important to find concrete and realistic examples.

2.2 Collaborative Learning Tools

Collaborative learning allows the student to exchange with fellow learners or teachers. At the HHU the following collaborative learning methods are used:

- Online forums
- Weblogs

- Wikis
- Social networks
- Social bookmarking

Most of those collaborative learning scenarios are based on Web 2.0 services. In online forums the students can discuss about the content taught in class and ask questions. Each participant can answer the questions. The complete discussion can be viewed at any time from any place. The public inquiry can be compared to a question in the classroom [14]. It is also conceivable that the students create their own tasks that need to be solved by their fellow students. Blogs are often used as diaries for the private sector, but also gain importance in eLearning. Blogs, which are used for teaching and learning, are called Edublogs [1]. Edublogs are suitable for presenting points of view or research progress and results [12]. The comment feature allows all participants to discuss on blog content. Wikis can especially be used for collaborative content creation. There is room for discussion and anyone can to link and embed a variety of sources [16]. With social networking services (e.g. Facebook) students have the opportunity to create a network of friends and fellow students. It can be used as a platform for problems or ideas. Moreover, such a network is useful for course marketing. Social bookmarking services are applications where students can store bookmarks. These bookmarks can be tagged, which will help other students to search for relevant documents. This is particularly important in the preparation of homework and exams.

3. Study at the HHU Duesseldorf

In the following segment we will introduce our study at the HHU by showing our approach and list the most significant examples.

3.1 Heinrich-Heine-University Duesseldorf (HHU)

As we are going to have a closer look at the HHU Duesseldorf, a brief introduction of the institution should be presented at this point.

Initially the university was founded as the Medical Academy Duesseldorf in the year 1907. Its tasks were the training of medical interns, training in specialized subjects, educational courses, and the promotion of practical medicine. The academy had no rector constitution and could not train students, however this changed in the year 1935 as the academy received the right to award doctorates. The name Heinrich-Heine-University was given to it as recently as 1988, after 23 years of dispute over its' name, by the Senate [5]. Today it consists of five faculties: The faculty of arts, mathematics and natural sciences, the medical faculty, the faculty of economics, and the faculty of law. During the summer term of 2010 15,482 students attended the university. 5,570 of these attended the Faculty of Arts, 4,909 Mathematics and Natural Sciences, 2,719 the Medical Faculty, 1,289 the Faculty of Law and 819 the Faculty of Economics [6]. In 2008, 2,294 people worked at the HHU, 1,475 of those were scientific staff [8].

3.2 HeinEcomp

A project that should be mentioned, as it plays a vital role in eLearning and blended learning at the HHU, is "HeinEcomp". It is a project to promote eLearning and eTeaching and it is funded by North Rhine-Westphalia's Ministry of Innovation, Science, Research and Technology (MIWFT)[7].Its goals are to intensify the use of eLearning and blended learning

in academic teaching and to create the necessary basis for this, as well as the training of students and teachers and the development of learning platforms. To reach these goals HeinEcomp supports many eLearning projects per term financially and organizes a great number of eLearning-courses for teachers. Furthermore, they maintain monthly network-meetings for everyone interested in eLearning [6].

3.3 Method

For our study we screened the extensive offer of blended learning platforms of the HHU and picked out the most significant examples. These examples were examined in detail by using the systems and looking at the context they are applied in. In addition, we conducted interviews with the administration staff of the platforms, to get further information. This information ranged from user behavior or the size and maintenance of the system to the specific content. Overall, six employees from different platforms were interviewed in July 2010. The interviews were conducted mostly by e-mail. It is in the nature of non-standardized expert interviews that the results are mainly qualitative and do not include much quantitative data.

3.4 Significant Examples

After intensive screening we identified the following examples from the extensive offer of blended learning platforms of the HHU as the most significant ones.

3.4.1 English Morphosyntax goes Web 2.0

The project "English Morphosyntax goes Web 2.0" came up from the idea to provide as many as possible teaching materials for the students. Additional incentive for the implementation of the project was HeineComp, which finally supported the construction of the platform financially and with technical knowhow. The basis for the blended learning platform are the Web 2.0 services www.blogger.com (blog service), www.slideshare.net (presentation service), and www.zshare.net (video-hosting service). English Morphosyntax goes Web 2.0 was built in the fall semester of 2009 to 2010 and currently contains records of meetings, lectures and other course related material, such as presentations. In addition, students have the opportunity to post comments. Basically, the learning platform of the Department of English Language and Linguistics is freely accessible to everyone at the HHU and not just the students of the relevant subject area.

3.4.2 E-DaF

The next learning platform we look at is E-DaF. DaF (Deutsch alsFremdsprache = German as a foreign language) are courses that teach students German and trains teachers of German. The E-DaF is interesting for foreign students and German students as well. The tasks are divided into reading comprehension, grammar, listening comprehension, and text production. The tasks are marked with different colors that represent the difficulty of the assorted tasks and are supplemented with audio and video files. The platform was created by members of the university language center and can be used by everyone on the internet. The exercises are not only studied and discussed at home but also in the classroom.

3.4.3 InfoCenter

The platform InfoCenter was created by the staff of the department of Information Science and is open to every student of information science. Students from different areas of the department helped to build the courses. The goal was to unite as many different methods as possible to a suitable learning platform, so that every student could choose his favourite tool for working outside the class. Time and location-independent communication between the students is ensured through various collaborative services. First, there is a Facebook group where students can exchange information about current events or problems. Second, there is a wiki where information about important topics can be collected. In a blog, students can write about current research or experiences (for example internships). To facilitate the literature search, the social bookmarking service Bibsonomy is used. As on many other learning platforms the standard blended learning platform ILIAS (http://www.ilias.de) is used. Here, the students can check their knowledge with multiple-choice tests with immediate feedback.

A special feature of this learning platform is the interactive lecture videos. The filmed lecture is supplemented with additional information and an interactive table of contents. These functions are integrated into a Flash video and allow the students to look exactly at the topic that they are interested in. Furthermore, additional information such as full texts is available via links.

3.4.4 Toxicon

The blended learning platform Toxicon was built in order to fill the lack of knowledge networking within a newly established, interdisciplinary degree program, so that the understanding of the toxicology could be improved in the Masters Course. The platform is in use since June 2010 and is only accessible for students of HHU. The current version comprises a wiki, which includes images and texts. It serves as a knowledge store and also expands the content of teaching. An enlargement of the wiki to podcasts and videos is planned. Toxicon works with ILIAS.Internet-based teaching materials can be created and published. Next, there is the possibility to create virtual communication and cooperation between group systems. ILIAS also offers the opportunity to integrate test systems, such as online exams.

3.4.5 Casus

Casus is a standard blended learning platform used by 15 faculties around Germany. At the HHU it is used by the Medical Faculty to accompany and complement special courses. With over 1,200 case studies implemented, Casus follows the cognitive constructivist approach of eLearning to procure strategies to solving problems. The system is in regular use at the HHU since 2005 and contains at the moment 40 case studies in 10 different courses. Cases can be created by the lecturers of courses themselves, if they do not want to use an existing one. This takes about 20-40 hours per case. The administration of the whole system takes around 10-20 hours of additional work of data processing a week for the administrators. The system is capable of handling texts, hyperlinks, graphics, photos, videos, and seven types of question/answer-elements and only students can access those parts of the system they take courses in. The only way of communication is from the tutor to the students (via email to one or all of them) and in the form of a commentary function from students and tutors. No other collaborative elements are incorporated.

3.4.6 KreuzMich

Finally we will take a look at KreuzMich, a web-based blended learning platform of the Medical Faculty that has some special characteristics which distinct it from all of the other examples we chose for this study. First of all it is the only platform that is not maintained by the institute or the HHU, but by the students themselves. That means an alternating group of students was and is responsible for setting up the platform and feeding it with new information without getting any funding at all. Secondly it is the only platform that contains content from most of the courses of the institute, not only from some or one of them. This is owed to the fact that a great part of the exams, including the state examination, for earning your medical degree are in form of multiple choice tests. KreuzMich constantly collects relevant questions for all exams and offers the possibility to solve them online. The students, which have to be students of the Medical Faculty to use it, instantly get feedback whether they answer a question correctly or not and their total progress is recorded. This was the base for the system that has been around since the end of the 90s and has become a great success. According to the current administrators around 90% of the medical students at the HHU use it exclusively to learn for the exams. Since June 2008 there have been 7,8 Mil. answered questions in the system. During examination periods there are up to 100 answered questions per minute. Since it has become such a great success, the maintaining team started to expand the function volume of the platform by incorporating different social tools. For example the collaborative writing of more elaborated answers to questions as a kind of wiki-entry (including a history and a possibility to discuss it in form of comments) , the possibility of sharing links to questions with friends or doing the online exams in collaboration. From all the examples above KreuzMich is the most cared for platform we have seen, as the workforce working on it is not depending on funding, but on people having fun working on it and with it.

3.5 Interpretation and Discussion

Some of the platforms used are freely available, while others are only for the students of the respective disciplines. The blended learning offered at the HHU is very up to date and constantly evolving. The offers include conventional eLearning methods, such as multiple choice tests and collaborative services, wikis, blogs and social networks. Most of the offers use multimedia content. Most systems are maintained by a small number of administrators that are joined a growing number of teachers adding or adapting content for their courses. Almost all platforms support collaborative work of their users: Some by adding "traditional" Web 2.0 techniques, such as wikis or collaboratively editable blogs, others, such as KreuzMich, directly in the eLearning-platforms themselves. Thus, the amount of collaboratively generated content varies very much: From simple comments about the offered online lectures (e.g. Casus) across to the editing of one partial offer of a platform (e.g. the wiki in InfoCenter or Toxicon) to platforms that get all their additional information that way (e.g. KreuzMich).

Most offers are funded by institutions themselves or HeinEcomp, while others, such as KreuzMich get no funding at all, which is one reason, why some projects have to rely much more on user generated content than others.

Finally it can be said that platforms that are relevant to a large number of students and are especially used for tests preparation, are most successful. This becomes evident in KreuzMich.

4. Conclusion

The study has shown that there are good, innovative projects in blended learning, which give students the opportunity to learn independently and focused. During our study two possibilities to create blended learning platforms have emerged.

1. On the one hand there is the possibility to buy external solutions with already prepared content that can be adapted with relatively little effort to meet the requirements of the courses. The advantages of this method are the usability and the possibility of external support. Disadvantages are the high costs and the low flexibility in adapting to the needs of the different courses.

2. The second option is to build a new platform from scratch. The difficulty is to find appropriate methods and to combine them in a useful way. In addition, this method requires a great deal of time and money, as all content must be generated and structured. The clear advantage of this approach is the high degree of flexibility. The system and the content can be adjusted to the requirements and needs of the student.

Both approaches can produce good blended learning platforms. Here it is necessary to weigh the pros and cons. To keep the time and cost involved in content creation as low as possible, it is useful to include various Web 2.0 services. In this way, students can participate in content generation. This is especially useful if the platform can be accessed by a large number of students, as seen in KreuzMich.

Furthermore, it seems very important to improve the networking and communication between the administrators of the platforms. In this way, content and technology can be exchanged and thus enhance usability for a larger number of people. Thus, some of the interviews showed that already existing platforms could be used for other departments or faculties as well. An important step in this direction is the work of HeinEcomp.In summary, it can be said that German universities are on a good way, but they still need future development.

Acknowledgements

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