Blended Learning in Higher Education: Construction of a Platform for Students of Information Science

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Abstract

The InfoCenter is a learning platform of the Dept. of Information Science at the University of Düsseldorf, Germany. It consists of elements of face-to-face teaching, of multimedia mediation (text books, slides, classic texts, interactive videos, FAQ lists, video glossaries), e-Portfolios, Web 2.0 tools (wikis, weblogs, social networks, social bookmarking and folksonomies) and of the use of a learning management system (with learning units and tests). The platform was evaluated by its users (university students) by means of SERVQUAL. According to the evaluation, students are satisfied with the InfoCenter and are willing to use it for their exam preparation.

1. Introduction

"With the emergence of Internet technologies, there has been an explosion of nontraditional learning opportunities during the past few years" [22, p. 299]. E-learning uses information technologies to disseminate and convey knowledge [22]. The benefit of e-learning, according to Moriz [16], is the possibility of using multimedia content. Another important factor is place and time independence. E-learning can also be a relief for teachers. For example, updating documents and courses that are available online is much easier and faster than updating printed material [22].

In addition to the benefits of e-learning there are also some disadvantages e.g. lack of social interaction [16], financial costs and the fact that some content is not suitable for a virtual presentation [13]. For these reasons, so-called "blended learning" is at the center of attention. The concept of blended learning is based on the integration of classroom and e-learning phases [2]. Blended learning also means that the content is integrated in different media and methods [2]. It is important that the individual components in a blended learning platform be not only next to each other but also embedded and integrated in a social environment [13].

2. Construction of the Learning Platform

The concept of blended learning has been implemented by Isabella Peters, Sonja Gust von Loh and Katrin Weller, of the Department of Information Science at Heinrich-Heine-University in Düsseldorf, Germany. The resulting learning platform "InfoCenter" integrates various multimedia and collaborative services that allow students to repeat what they have learned, to ask questions and exchange information among themselves or with teachers. It provides an ideal complement to classroom teaching, as themes and issues from the lecture can be taken up again and explained. The platform has been described by Beutelspacher and Stock [4]. In this article, we are also going to talk about recent developments of the platform.

2.1 Concept

The InfoCenter has been included on the website of the Department of Information Science, so it is easily accessible for the students. The learning platform is designed so that students can choose their own time and place of learning individually. The wide range of different media and services, and the interactive lecture recordings, shall ensure that the students can choose their own learning path.

2.2 Interactive Video Lectures

Lecture recordings offer students the opportunity to become independent of time and place to watch a lecture [15]. The Internet offers new possibilities for obtaining information that the user may also want to apply to videos [10]. Interactivity is ensured through a clickable table of contents, by jumping directly to the topics the students are interested in and through the use of context-sensitive links to full texts and other important information. The recordings show teachers and students who can always ask questions during the lecture. This allows active discussions between students and teachers [3].

2.3 E-Portfolio

"An eportfolio is essentially an online collection of reflections and digital artefacts that students can use to demonstrate their development over time to various audiences" [5]. The e-Portfolio system we use is the open source software Mahara. It offers one solution for students to present themselves, to deal with digital documents and to share information with others. The first ambition to use Mahara in our lectures was that the students, mainly in the first term, should learn how to deal with digital media and with their personal information in the World Wide Web.

Mahara offers drag-and-drop features to create own websites und to handle documents [5]. For educational propose teachers create websites which are linked to a lecture-group. On this websites they include the lecture-slides, important information to other e-Learning systems and extended information to the lecture.

2.4 Web 2.0 Services

In Web 2.0, users are not just readers, but may participate with little effort even in the creation and distribution of content [17]. In Web 2.0, students are encouraged to generate their own content for other students [21]. The boundaries between teachers and learners become blurred. Both are the architects of the learning environment [9].

In the following, we will introduce the Web 2.0 services which were integrated into the learning platform of information science. The focus here is on collaborative content creation and development and on the communication between students using wikis, blogs, social bookmarking and social networking [25].

2.4.1 Wikis

The use of a wiki requires only a little knowledge of the functionality and design of the World Wide Web [6]. Different priorities of students and discussions about difficult issues are integrated into one system. This may cause a broad knowledge base that can be used by other students to search for information or discussion topics. The main page of our wiki is divided into four areas. First, it gives general information about the curriculum. The help section contains e.g. FAQs, information about the University or the city of Düsseldorf. In the "formalities" section, important information about exam registration, term papers and study regulations have been assembled. The fourth area is the work area. This area provides collected information about information science topics.

2.4.2 Weblogs

Weblogs become increasingly important in blended learning [1]. For writing a blog entry, no HTML knowledge is required, which makes participation easier. The comment feature allows one to make comments on each blog entry. This encourages discussion between the participants [1]. Students and employees can present reports on their internship, experience, comment, get new research results or read up on current events [20].

2.4.3 Social Bookmarking and Folksonomies

Social bookmarks are web bookmarks that can be created and developed collaboratively by users. In our platform the social bookmarking services BibSonomy (www.BibSonomy.com) is used. The literature can be accessed by using tags. These tags are not predetermined. This has the advantage that the vocabulary is not given by only a single indexer, but that a knowledge base is created with different vocabularies. Due to the collaborative content development, it is easier for students to find scientific works. Students can manage their bookmarks and references and make them available to other students [24].

2.4.4 Social Networks

Social networks are platforms on which users can network with each other and form communities. Each user creates his or her own profile page with personal or (depending on platform) professional information that they can thus pass on to their virtual contacts [11]. In the private sector, these social networks have been around for several years, with great success. But social networking is gaining in importance in e-learning and blended learning as well [12]. Mason and Rennie [14] believe that the casual atmosphere in such networks is a good foundation for learning. The Department of Information Science has created its own Facebook profile (www.facebook.com). On the profile page, the students can find updated information on the department and the discipline. As a fan of the profile it is possible to find other fans to contact. This creates a network of students and staff.

2.5 Learning Management System

Important elements of blended learning platforms are Learning Management Systems, e.g. ILIAS (www.Ilias.de) [8]. The open-source system ILIAS (Integrated Learning, Information and

working System) allows teachers to include and create learning content and provide this to their students. With the help of ILIAS learning items, students have the opportunity of revising and deepening the contents of a lecture. The learning items are, like the lecture, the accompanying text book [23] and corresponding films, divided into chapters, allowing for an easy navigation between topics. The test function of ILIAS, which asks for students' current state of knowledge, gives an overview of achieved scores and the right solutions directly after responding to a question block.

2.6 Further Learning Material

Main topics of the lectures have been selected and filmed as video glossaries, which are hosted by YouTube (www.Youtube.com). These videos are organized in the form of a dialogue, where an employee takes on the role of the questioner, while another gives the answers.

In close cooperation with the examiner, typical exam questions were included in the learning platform. Students can get a picture of what they could expect in their oral exams.

The reading of literature is very important for students so they can find their own interests and priorities. Therefore the InfoCenter provides links to articles and research literature for each topic.

The InfoCenter also provides the lecture slides, so that students are able to print out and learn from the slides.

3 Evaluation

The learning platform was evaluated in the summer term 2009. The 19 participating students of Information Science were at the end of their second semester. For the evaluation, the SERVQUAL ("SERVice QUALity") method was applied. This is a questionnaire that works with two scales on each question [17]. On the one hand, SERVQUAL captures the expectations of the test persons of a service and, on the other hand, the specific experiences while using the service. The participants had the opportunity of rating their expectations and experiences on a scale from 1 (worst) to 7 (best).

3.1 Results

In general the expectations of students were very high, and were mostly fulfilled satisfactorily.

In the field of Multimedia Mediation, very large differences between the expectations of students and the actual experience can be observed. In particular, the experiences of the lecture slides differ by -0.83 in contrast to the expectations. Many students consider video lectures to be a useful complement to conventional teaching. The experiences of the lecture recordings of information science are lower than the expectations, but still satisfactory with a value of 5.67. The lower value may result from the fact that the videos are very long and exceed the attention span of many students. The use of typical test questions preparing students for the oral examination meets the expectations. The clear questions of the tests and the immediate feedback from the students seem to raise motivation. The ILIAS learning modules have been rated relatively well, but do not meet the expectations. The reason for this may lie in the extent of the learning modules. The students are very critical of the use of collaborative media for blended learning. A study by Klein et al. [10] found out that almost all students use Web 2.0 services. The most popular are Wikipedia, social networking and social media platforms like Facebook or YouTube. It seems to be difficult for the students to involve these services in the learning process.

The worst results in terms of expectation and experience were found in social bookmarking. According to Freimanis & Dornstädter [7], only a quarter of the students know about social bookmarking.

Due to the wide range of offered learning materials, it is possible to address all types of learners. Students are thus able to select the one learning method that best fits their learning style and their personal information management. The fact that many students have to do with Web 2.0 services both in private and as part of their studies, there are few problems with using the learning platform, even if their use in the learning process is not sufficient so far.

Many students think that more courses need to be included in the InfoCenter. Here we must consider to what extent this can be rectified, keeping in mind the very high effort involved in preparing some of the materials. Creating the collective knowledge base is less expensive, because all students and staff can participate.

5 Conclusion

According to the evaluation, students are generally satisfied with the platform and are willing to use it regularly for their exam preparation. A majority of the respondents say that more courses should be integrated into the learning platform.

As the evaluation of the InfoCenter has shown, the platform needs to be adjusted in a couple of places. A particular difficulty that has occurred during the test phase is the acceptance among students, particularly with respect to Web 2.0 services. Furthermore,

Despite these problems with blended learning environments, Page et al. [18] suggest that the numerous advantages, including the ease of updating information as well as location and time independence, blended learning will be even more popular in the coming years.

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