The Internet Communication Environment (ICE) - Virtual University as Virtual Community

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Abstract: Our Experiences and research in the field [1,2,3,4,6,7,8,9] have shown, that students working collaboratively are more successful than students working alone. Therefore, it should be a logical consequence to install collaboration as key factor in distance study environment. That is not as easy as spoken, because the classical distance study institutions struggle with a bundle of different problems. E. g. in Germany no study fees are allowed. How to finance highly interactive, small classes? Another problem are the professional restrictions of distance students, their time budget is limited. The consequence is, that normally students have nearly no contact to their peers and their tutors until the final examinations. The drop-out rates are extremely high (more than 90%) and a lot of students study more than six years to reach a degree. The deployment of virtual teaching improved the situation substantially, but not enough. The following paper tries to show a solution for the mentioned problems.

Introduction:

The above mentioned problems are typical, not only for the University of Hagen, which is specialized in distance teaching, but for all similar institutions. To improve the situation Hagen developed in 1996 a Virtual University (VU). Part One shortly describes this University. Part two develops a vision of an improved VU – the virtual university as virtual community. To build up this community meaningful communication tools like the described Internet Communication Environment (ICE) are necessary. The paper concludes with prospect to future needs.

Part One: The Virtual University Project

The University of Hagen has an experience and a tradition of distance education since more than 20 years. Therefore, it was a logical consequence to use the Internet for learning and teaching purposes. The benefits of distance education, time- and location independence and the advantages of the Internet (fast information, easy communication and co-operation possibilities) were combined in the project Virtual University, Germany's first university to offer all its services in the Internet.

The project is experimenting with and evaluating different forms of teaching and learning in the Internet. When the project started a suitable software platform was not available for our purposes, so a platform was built based on Internet technologies and a commercial database system. It is a virtual university system that integrates all functions of a university into a complete, homogeneous, extensible system with an easy to use and intuitive student-centered user-interface. The VU started with only a few courses of electrical engineering and computer science, however, courses and events from all departments were moved to the system over time. For instance, after the first year more than half of the courses came from humanities. This clearly contradicts the original assumption that web-based learning would be accepted easily by the technical departments and their students, but would be accepted very slowly in non-technical departments. Currently, more than 20.000 students are using the Virtual University of Hagen. Since the beginning of the Virtual University more than 1000 virtual learning events took place. The home page of the Virtual University offers the following functions: education - for participation in courses, seminars, practical training and exercises; news - a campus wide blackboard containing all sorts of up-to-date information relevant to the users of the Virtual University; office - the component including administrative functions; research - offers access to all research-related activities in the university; cafeteria - a forum for social contacts between students; library - offers access to both traditional and digital libraries, information - provides general information about the university; shop - offers all material that can be purchased from the university. The experiences are positive throughout.

It turned out, that the most efficient teaching events were highly interactive events like virtual seminars, practical training and online exercises [1,2].

The new virtual university – virtual university as virtual community

As the most popular teaching events are the ones with a high grade of interactivity and collaboration we thought about improving the running VU. The main aspect is to improve the contact possibilities for the students to build a students community. One step on the way to a learning community is the Internet Communication Environment (ICE), an instant messaging service for students developed by our department of computer science.

The ICE is a complex client-server system to manage users, communication profiles and communication technologies. The primary objective of ICE is to support the peer-to-peer communication process: The
A student is able to look online for matching communication partners, contact them easily and reach them with the correct communication tool as soon as possible, especially with synchronous means like chat, audio- and videoconferencing. However, our users have less technical and organizational problems in using internet communication technologies to enhance their learning success. Problems can be solved in direct dialogues with tutors or other students of the course. Organizational questions can be asked on a broad basis to be answered equally fast as directly.

Another important impact is that the building of communities (e.g. beginners, special interest, etc.) will be improved highly.

The secondary objective is the collection of data to analyze the communication processes between users. This information is essential to develop the system with regard to users' needs and to moderate efficiently the community building process.

Technically, we are able to add new technologies into the ICE repository and monitor how much these technologies are used by the users. This will allow us to adapt communication tools to users' needs. Furthermore, we are able to create new communication possibilities with progressing technologies like new mobile communication technologies. Our expectation is that students built up communities more efficient than before and because of that they will be able to solve their problems faster and easier. We hope that students are more motivated and work more effective than before.

Prospect

The last five years have shown that the traditional distance teaching will more and more succeed by modern e-learning environments. The new electronic communication possibilities have the quality to break down the students' isolation, to enable long-lasting learning communities [3, 4, 6] with completely new communication qualities that are fundamentally different from traditional ways of teaching and learning. Students using electronic communication within the virtual university are much more motivated than before; the dropout rate is decreasing and the feedback is entirely positive [5]. The Internet Communication Environment is an instrument to improve students' situation to create a virtual university's community.

It's hard to imagine our everyday life without electronic communication. Email, news, mobile phone, mobile data-exchange will become more and more integrated. Mobile Internet is not just a catchword for some future thing to happen. The ICE is ready for these new facilities. These developments will have a major impact on e-learning. Depending on the situation a message will be received as email, SMS, instant message, or contribution in a newsgroup. Learning communities will exchange data in a mobile way, and workspaces will not require stationary PCs.

Be it mobile phone, PC, laptop, or PDA, mobile learning will be part of life-long learning. The virtual university as a virtual community is one step on the way to future e-learning environments.

Acknowledgements


[9] The Virtual University of Hagen: http://vu.fernuni-hagen.de

Basic Support for Cooperative Work (BSCW): http://bscw.gmd.de