Mobile Collaboration Tool for University Education

Stefan Berger, Rainer Mohr, Holger Nösekabel, Klaus J. Schäfer
Chair of Business Informatics III
University of Regensburg
93053 Regensburg, Germany
{stefan.berger, rainer.mohr, holger.noesekabel, klaus.schaefer}@wiwi.uni-regensburg.de

Abstract

This paper describes the implementation of a collaboration tool for learning groups. The tool is embedded in an e-learning and m-learning environment at the University of Regensburg, which allows its functions to be accessed not only from a webbrowser but also from a personal digital assistant (PDA) or any phone which supports the wireless application protocol (WAP). In addition to the implementation, this paper also discusses the advantages of learning groups and the benefits gained by supporting them in mobile scenarios.

1. Introduction

These days the aim of a university or college is not limited to teaching students factual knowledge (see [2], p. 42) but social skills are becoming more and more important. The ability to work in a team, to cooperate and to communicate with fellow students, is beneficial for the acquisition of knowledge and also a prerequisite for later employment. Collaborative learning is defined by Pinheiro as "... the process of students working in teams to pursue knowledge and learning. In collaborative learning, information, ideas, and problem solving are actively shared among the team. [...] Collaboration can also be asynchronous, where students log onto a network at different times and locations leaving their contributions for others to see and discuss." ([6], pp. 118-119). Studies ([1], [4], [7]) have already shown the efficiency of collaborative learning, although they did not examine the effect of computer support. The structure of this paper basically follows the course of action taken at the University of Regensburg. In the second chapter the basic framework, namely the "Virtual University of Regensburg" (VUR), an e-learning platform, and the mobile extension called "Wireless E-Learning and COMmunication Environment" (WELCOME) are presented. Chapter three discusses the purpose and implementation of the collaboration tool and the fourth chapter portrays future enhancements, followed by the conclusion in chapter five.

2. Basic Framework

The VUR is an internet based e-learning platform. It is used currently by 83 lecturers and 3100 registered students. The objective of the VUR is not to replace traditional forms of teaching, but to support and extend existing lectures. With WELCOME, the students at the university are able to take part in mobile education (see [5], p. 103). The services offered by WELCOME can be grouped into four categories: study administration, mobile education, communication/personal features and campus services. Since WELCOME is a WAP application, it can be used with any WAP enabled device. Most mobile phones have a WAP browser, as do PDAs based on PocketPC and PalmOS. The technical foundation of the entire portal is the Roxen web- and applicationserver with an integrated MySQL database holding all relevant data about the students and lectures. In addition to these, a newsserver, a chatserver and an SMTP server can be used for communication between students and lecturers. An external provider enables push information via the short message service (SMS), which sends notifications about new material and new postings to the mobile device.

3. The Collaboration Tool

The effects of computerised support for learning processes is similar to that of traditional business processes. König names three success factors [3]: quicker reaction, lower costs and improved quality. Applied to the educational domain, this would mean that learning materials and other relevant course information can be distributed and communicated faster, students can contact peers and lecturers anytime, anywhere at the moment they require specific information or need to discuss ideas, electronic material can

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be distributed at lower cost and is available at the time and place needed and collaborative learning, coordination and group work can be done anytime, anywhere, without loss of time.

In order to achieve these effects, a collaboration tool was integrated into the e-learning and m-learning platforms. Any user can create a new workgroup, which can be either private or public. Private groups are not listed publically and can only be joined by invited students. This invitation is sent via SMS or email by any member of the private group. Public groups can be joined by any student (while private groups are invisible except to those who are invited), although the initiator may limit the maximum number of members. The idea of private and public groups reflects the circumstance that some learning tasks take place within a limited number of people. For example papers and presentations in a seminar covering a certain topic are prepared by a maximum of four students, and external users could be potentially hindering if they were in the same workgroup.

After joining the group, the student can access a number of functions from the main menu: the blackboard, messaging, discussion and administration. The blackboard displays all recent events, including new group members, new files, discussion entries and administrative actions taken. If so desired, the team members are also notified via email or SMS about new entries. With the messaging function, a student can contact the whole team or single students in the group. This is especially useful when dealing with different groups where the members of the group just got to know each other.

Furthermore the group can also exchange files, if they have access to a webspace (which is the case at the University of Regensburg). The system does not store the files due to legal, bandwith and disk space reasons, thus the file sharing takes place via URLs. Documents can be published in different versions; simultanous editing is not implemented. The current range of functions already allows the students to engage in a discussion, to exchange ideas and to share documents. Another possibility are learning groups gathering at the beginning of a course. This is useful for interdisciplinary courses where students from different faculties come together without knowing each other personally. In this case the collaboration tool can be helpful in getting to know the peers.

4. Future Development

The main feature desired by students is the ability to have a common group calendar that can be integrated with the personal events in each students PIM application. Tools developed at the Chair of Business Informatics III, called SISOPOS (Student Information System On Palm OS) and its pendant SISONET for PocketPC, enable these functions by bridging the gap between the internet based environment and the offline PDA applications. These tools fetch events from a database and enter selected appointments into the PDAs own calendar. The system is able to detect changes in date and time, in case the meeting or deadline has changed. Other enhancements of the collaboration tool will be a voting system to enable descision support, and thereby reducing the overall communication, and an online agenda for meetings. Every group member will be able to contribute agenda items for each individual meeting.

5. Conclusion

The current implementation of the collaboration tool is only a first step in bringing CSCW to e-learning and m-learning. Collaborative learning combined with the advantages of mobility and electronic content will very likely improve the acquisition of knowledge, lower costs and advance the social skills of the students. Future research will have to conduct empirical studies, so the assumed benefits can be quantified if possible. Another topic is the implementation of new and enhanced features as discussed in the previous chapter if so desired by the students.

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