Learning environment for self-directed learning, collaboration and social networking

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Abstract: - In the paper we describe a learning environment for self-directed learning, collaboration and social networking composed of loosely coupled web 2.0-based educational tools. The set of tools includes blogs, wikis, social bookmarking tools, tools for synchronous and asynchronous communication, tools for federated search, tools for management of learning contracts, etc. Findings of validation of such environment in teaching process in the context of higher education are also presented. The presented work has been performed within the iCamp project (www.icamp.eu) from the 6th Framework Programme of EU.

Key-Words: - self-directed learning, iCamp, learning environment, social networking, collaboration, trial

1 Introduction

Learning environments have started to move from monolithic LMS (Learning management systems) based settings prescribed by educational institutions to individual learning environments composed of loosely coupled educational tools, which can be selected by the learners themselves. This approach brings many advantages to the learner, but also the problems that need to be solved. The learner can choose the tools and compose an environment according to her own preferences, and change or update it when new, better tools appear. One of the benefits for the learner is also that she can continue using such an environment after leaving the educational institution, for example a university, as part of the life-long learning process. In the LMS based settings the systems are normally closed and made available to the students only when they are involved in the educational process at the institution. On the other side, the large number of available learning tools and systems challenges the learner to select the most appropriate solution for her learning needs. Interoperability among the heterogeneous tools and systems also needs to be provided.

The iCamp project, a research project from the EU FP6 aims at creating an open virtual learning environment for higher education across Europe by connecting different learning systems and tools with a special focus on open source software [1, 2]. The networked learning environment is envisioned as a learner centred environment where participants will find scaffolds for self-directed and self-organized learning, collaboration and social networking across national borders and disciplines [3]. A portfolio of open source learning tools and systems, together with the iCamp Folio tool help a learner in choosing the right tools for her learning needs [4]. The developed environment is being validated in the context of higher education. Three trials with different foci and scales are being implemented within the project. The first one was focused mostly on student collaboration across borders [5, 6]. Self-directed learning component was added to the second trial, which is described in this paper, while the last trial focuses also on social networking.

Paper’s main objective is to describe a learning environment for self-directed learning, collaboration and social networking composed of loosely coupled web 2.0-based educational tools. The findings of validation of such environment are also given. The paper is organised as follows. First we describe the validation methodology and the main concepts, such as a learning contract. In Section 3 the learning environment is presented, and in Section 4 the validation results from the trials. Conclusions are given at the end.

2 Methodology

The main goal of the trial was to validate how self-directed learning can effectively be supported with the use of social software in online cross-cultural collaborative learning settings. Within the trial the students were supposed to advance their competencies for self-directed learning, including their skills in deploying technological tools to collaborate, their interaction skills with international partners in a foreign language, their abilities to locate learning resources, and their autonomy to negotiate and make relevant decisions.
The trial was carried out in the context of formal higher-educational settings in which students and facilitators were distributed geographically and culturally (nationally). Facilitators are faculty members responsible to supervise and facilitate groups of students working on a common project. The students were master students in computer science, new media and social science. A few iCamp project members were also involved in the trial in order to provide pedagogical and technical support, if necessary.

A total of 5 facilitators and 27 students from Czech Republic, Poland, Slovenia and Turkey participated in the trial, which was conducted from April 2007 till June 2008 in three phases. Two of the facilitators were external to the project, i.e. not involved in its daily activities.

2.1 Preparation phase

In the preparation phase (April 2007- July 2007) the facilitators and iCamp project members were proposing student project topics from computer science to new media and web 2.0, and clarifying and fixing technical and conceptual details for the next phase. An example of a proposed student project topic was: “Cybercrime in Europe - This project should analyse and compare cybercrime situation in particular European countries.” Different educational tools, described in Section 3, were made available to the students, and a help centre for the use of those tools established.

2.2 Project work and learning contracts

The second phase, where students did their project work, ran from middle of October 2007 till the end of January 2008. The start of the phase was aligned with academic calendars of participating institutions. First, the students were required to deploy a subset of the educational tools made available for the trials, create their personal weblog and make self-introduction. After that, they registered in a Wiki-based system for their preferred project topic. There were no constraints in selecting the projects, except that not more than two students from the same country were allowed to register for the same project in order to create multinational groups. Unfortunately, after initial group formation all Czech students had to form their own group due to language problems. The list of all student groups and their project themes is given in Table 1.

The task of each student group was to produce a paper that documented and organised their project achievements. Additional artefacts, such as software, could also be the result of student work. For example, the students in Group 7 had to compare cybercrime situations in several European countries. The paper was supposed to contain an introduction about cybercrime (e.g. terminology, current situation in the World), a brief discussion on the situation in EU, comparison of situations (statistics, legislation) in Turkey, Poland and Czech Republic, and conclusion. While the students could work individually on their country topics, they should have collaborated together about the other issues such as indicators for comparison of cybercrime situation (e.g. security incidents in the past years, estimated losses, measures for prevention of cybercrime), definitions of the terms, editing of the final paper, etc.

<table>
<thead>
<tr>
<th>Students</th>
<th>Project theme</th>
<th>Facilitator</th>
</tr>
</thead>
<tbody>
<tr>
<td>JSI (1), ISIK(1)</td>
<td>Group#1: Nuclear energy and its alternatives in Europe</td>
<td>TBU (Czech Republic)</td>
</tr>
<tr>
<td>JSI(1), ISIK(1)</td>
<td>Group#2: Multidimensional best cost estimators</td>
<td>TBU</td>
</tr>
<tr>
<td>AGH (1), ISIK(2)</td>
<td>Group#3: Open Source</td>
<td>ISIK (Turkey)</td>
</tr>
<tr>
<td>AGH(1), ISIK(2)</td>
<td>Group#7: Cybercrime in Europe</td>
<td>JSI (Slovenia)</td>
</tr>
<tr>
<td>AGH(2), ISIK(2), JSI(1)</td>
<td>Group#11: New media - new movements? The role of the Internet in shaping the social movements in the age of globalization</td>
<td>AGH (Poland)</td>
</tr>
<tr>
<td>JSI(1), ISIK(2)</td>
<td>Group#13: Selection and evaluation of P2P tools for content delivery</td>
<td>JSI</td>
</tr>
<tr>
<td>JSI(1), ISIK(2)</td>
<td>Group#14: The future network society</td>
<td>JSI</td>
</tr>
<tr>
<td>TBU (6)</td>
<td>National Group – Mixed topics of the above</td>
<td>TBU</td>
</tr>
</tbody>
</table>

One of the main pedagogical concepts in the second trial was a learning contract. Learning contracts allow a learner to specify what she wants to learn, how she wants to do it and how her learning will be assessed. Every student in a group was required to prepare a personal learning contract. There were four main elements of the contract: goals, actions, resources, and evaluation criteria. The information included the topic and goals of a project, actions the students were responsible for (as a member of a group), what resources they intended to use for their work, what were criteria of evaluating their work, etc. Students negotiated their personal learning contracts with a group facilitator. In the middle of the second phase, each student was required to revise her learning contract.
In addition, the students had to fill two questionnaires about the tool usage, while some of them were also interviewed by project members.

2.3 Final phase
The last phase (February 2008 – June 2008) was devoted to the analysis of collected information. The main objectives of this phase was to assess impacts of the trial on the facilitators and students involved, to reflect on lessons learnt, and to draw implications for the last iCamp trial. Semi-structured online interviews with the selected students and all facilitators were conducted. Schematic presentation of the whole trial is given in Figure 1.

Figure 1: Schematic representation of the validation trial plan [7]

3 Learning environment

3.1 Educational tools
Within the iCamp project various open source learning tools supporting self-directed learning, collaboration and social networking have been developed or adapted to the iCamp pedagogical requirements and made interoperable. The pedagogical basis for the selection of tools and creating a learning environment were didactical activity patterns appropriate for competence advancement in the three areas mentioned above.

In Table 2 we list the tools and their main functions. Most of the tools are later described in more detail.
Table 2: Educational tools

<table>
<thead>
<tr>
<th>Tool</th>
<th>Main functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wordpress</td>
<td>Blog used for describing and negotiating personal contracts, and for group communication</td>
</tr>
<tr>
<td>Feed on feeds</td>
<td>Feeds aggregation and reading</td>
</tr>
<tr>
<td>iLogue</td>
<td>Description and negotiation of personal contracts</td>
</tr>
<tr>
<td>Scuttle</td>
<td>Organisation and sharing of bookmarks</td>
</tr>
<tr>
<td>E-Mail</td>
<td>Asynchronous group communication</td>
</tr>
<tr>
<td>Flashmeeting</td>
<td>Synchronous group communication</td>
</tr>
<tr>
<td>ObjectSpot</td>
<td>Federated search for learning resources</td>
</tr>
<tr>
<td>myDentity</td>
<td>Visualization of personal e-mail communication</td>
</tr>
<tr>
<td>xoWiki</td>
<td>Registration for the projects; work on a joint artefact</td>
</tr>
<tr>
<td>x-Lite</td>
<td>Synchronous communication</td>
</tr>
<tr>
<td>Doodle</td>
<td>Scheduling the meetings between group members</td>
</tr>
<tr>
<td>VideoWiki</td>
<td>Personal video presentation</td>
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</table>

3.1.1 Blog, feed aggregators and iLogue

The main tool used by the students and facilitators was a weblog set up at ISIK University. It was based on Wordpress that contained an additional Feedback module created within the iCamp project [8]. The module allows users to subscribe themselves to other blogs posts or to suggest another blog to accept posts from user’s blog. Each student as well as each facilitator created her own blog. The blogs were used as a communication and reflection tool, and for documenting personal learning contracts. The second option for describing learning contracts was made available to the students by the iLogue tool. The software, based on the weblog- and wiki-style authoring environment, was developed in iCamp specifically for realising the concept of personal learning contracts.

Simple access to information from different sources at one place was provided to the participants by means of the Feed on feeds tool. This is software based on an open source project that provides RSS and Atom feed reading, server side aggregation, management and sharing. An example of the use of the Feed on feeds tool for aggregating information from group members’ blogs (reading student’s learning contract) and social bookmarking systems is presented in Figure 2.

3.1.2 Social bookmarking

Social bookmarking is a common activity in social networking, used for storing learners’ favourite links in one place, making them accessible from anywhere via Internet and sharing them with other learners. Tagging gives possibility to organize and search stored links easily by extending search to public links of other users. In the trial it was used mainly for sharing interesting resources among the group members and among all trial participants. The users could also make their bookmarks private. The tool used in the trial was Scuttle, an open source social bookmarking system (http://distance.ktu.lt/scuttle/).

3.1.3 Communication tools

Several synchronous and asynchronous communication tools were made available to the participating students, such as e-mail, SIP-based XLite, videoconferencing tool Flashmeeting and Skype.

Tracking and visualizing learner’s e-mail communication was enabled by the web based software myDentity (www.mydentity.eu), which acts as a mail proxy server.

3.1.4 Searching for learning resources

iTcamps’s service ObjectSpot (www.objectspot.org) enables a learner to find relevant learning resources in a network of learning resource repositories and digital libraries. Integration of the repositories and libraries into the network was based on the SQI protocol [9, 10], which became a couple of years ago an official CEN/ISSSS Workshop Agreement.
4 Validation results
The main evaluation instruments employed were surveys, interviews, digital archives (i.e. blog messages, email archives, videoconference recordings), and automatic data logging (i.e. Weblog feeds, myDentity).

Results from the surveys show tool usage patterns of the students. Among the recommended tools the most popular one was weblog. Due to the nature of the project topics collaboration activities were also lower than expected and the tools for joint work, i.e. xoWiki, not used. The students divided their work into tasks and worked alone. At the end they just glued the contributions into a common paper.

The self-directed learning competencies of the students were generally low. This was also the cause of relatively slow start of the work. While students were expecting direct guidance from their facilitators, the facilitators assumed the students would organize among themselves and carry out necessary tasks. Some of the students also had problems with low responsiveness of their group peers.

Learning contracts were relatively new concepts for both the students and facilitators. The students were late with preparation of their contracts, which somehow diminished the goal of personal contracts in the trial, i.e. to help the students in regulation of their learning process. Most of the students also accepted proposed assessment scheme without attempting to propose their own one.

Empirical experiences of the trial thus lead to several implications [7]:

- Some guidance and instructions are necessary in the beginning phase for the groups to kick-off their work;
- Facilitators should have better knowledge on both pedagogical aspects and technical tools;
- Peer induction could even be a more effective incentive than course grades to sustain the students’ motivation for the collaborative work;
- Self-directed learning competence could be fostered in a social setting, but the effectiveness hinges apparently on the quality of social inputs;
- Using social software tools to fulfill learning goals seems plausible, but it may take some time for students as well as facilitators to accept such alternative functionalities; further, it seems quite challenging to break the habitual use of convenient and well-received tools like email.

5 Conclusion
The validation trial has provided useful feedback about the developed learning environment and self-organized learning of the students in higher education. We have also realized that language problems still represent a barrier in collaboration among the university students in Europe. As the students came from four European countries with different languages they had to communicate and produce final results in English. Unfortunately, the knowledge of English at one of the involved institutions was too low for successful student collaboration. Synchronization of student activities can become a significant problem when working in multicultural groups, as students come from different time zones, they have different schedules, etc. Empirical experiences were taken into account for the preparation and realization of the final trial that started just after the end of the trial described in this paper. The trial was focused on social networking, self-direction and collaboration.

References:

