Adaptive Learning Spaces

A Project Description
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1 Introduction

Several new teaching and learning paradigms have been established under the general "umbrella" of e-learning, all of them bringing invariably a gamut of new opportunities to the open and distance learning front. The strides achieved in the respective fields, have been, however, accompanied by the lack of (or limited amount of) face-to-face contact between instructors and learners, as well as between learners themselves, which has created new hurdles in the education process. The related problems can be coarsely classified into two categories: (a) lack of (or limited) "real-world" contact between instructors and learners makes it difficult for the former to provide individualised support and guidance; and, (b) lack of (or limited) "real-world" contact amongst learners has detrimental effects as far as social- and group learning- patterns are concerned.

2 Adaptive Learning

Adaptivity has been proposed and employed as a plausible approach to achieving individualisation / personalisation in different forms of computer-supported, or computer-mediated education. However, most of the adaptive learning systems developed so far are targeted towards individualising the delivery of course materials to students, in lieu of an instructor. Little work has been devoted, to date, to the employment of adaptive techniques for supporting the more active engagement of learners in the learning process. Current approaches reflect models that adopt a "teaching" perspective, where the delivery of material is the primary goal. There is no attempt to model, anticipate, guide or support "learning activities at large", i.e., activities in which the learners engage (on an individual or group basis) before, during, and after the learning materials have been delivered to them, and which are vital to the creation, assimilation and internalisation of knowledge.

3 On-Line Collaboration

Moving on to the second dimension of the problem, namely the lack of face-to-face contact amongst learners, one should start by noting that the ODL technologies available today do not suffice for enabling the types of interactions between learners afforded by traditional classrooms. It is widely acknowledged that a large part of success of the learning process lies with the opportunities of learners to interact with others: working in groups, exchanging ideas and helping each other are standard "classroom" practices, at all levels of education. With limited real-world contact, learners have limited means for formulating personal mental models of other learners' capacities, skills, interests, strong and weak points, disposition towards teamwork, willingness to help, etc. Without such models in place, learners cannot make informed decisions about everyday learning tasks such as: whom to direct a question to; which person(s) have the complementary skills required to put together a group that can effectively work on a given task; etc.

Although CSCL systems have introduced mechanisms vital to the attainment of such, they do not, to date, provide sufficient guidance or direction for the learner during or after the interaction sessions. Furthermore, they fail to provide the means by which learners can attain the types of social awareness and coherence that would naturally develop in a classroom situation. The preceding shortcomings are magnified if one considers that modern pedagogical approaches (e.g., constructivism) bring the active participation of learners in the creation and assimilation of knowledge, and of creative group work to the forefront.

4 Project Goals

The goal of the ALS project is to develop advanced concepts and technologies through which lack of (or limited amounts of) face-to-face contact between instructors and learners, as well as amongst learners in current state of the art e-learning environments can be partially compensated for. To achieve this, ALS is working towards:

- widening the range of, as well as increasing the amount of, guidance and support that on-line learning systems can provide to learners and instructors, and
- providing novel means to support the social cohesion of groups of learners, as well as the engagement of their members in collaborative / team tasks and processes.

ALS is developing, field-testing and making openly available a software infrastructure that builds upon and goes beyond the state-of-the-art in the fields of e-learning and adaptive hypermedia systems, to support the creation of active, personalised learning spaces, that will have a clear focus on learning activities, treating learners as active members of, and contributors to, their learning environments, rather than as passive recipients of their contents.

5 Results and Future Perspectives

Having reviewed the state-of-the art thoroughly, we conducted interviews, questionnaires and focus groups with relevant stake-holders, i.e., learners, teachers, providers of learning material and educational institutions, in order to explore attitudes and requirements for the suggested components. The resulting requirements specification highlights several interesting insights of the project so far:

- Cooperation and Collaboration: Stakeholders saw audio and video communication as the most important channels, supporting learners in working on quizzes and discuss topics.
- Privacy: Learners emphasised the importance of making transparent and controlling which information is stored in their profile and who has access to that information. While learners did not object to the fact that the system would monitor their on-line learning activities, they felt that the data must not be available to end users, including teachers, unless the learner give explicit permission to do so.
- Adaptivity: Adaptive features should focus on the learning tasks. In particular, learners would appreciate recommendations for collaboration partners, when to build or even abandon subgroups. Among a number of other adaptive features, adaptive blog syndication would individualise the learning experience and facilitate learning that is tailored to the individual's needs.

The project's main outputs will include the software technologies developed, as well as a series of "Best Practices" reports and papers that will accumulate the project's acquired knowledge and experience in integrating these technologies into existing on-line and blended learning settings.

6 Relevance for EC-TEL Community

ALS addresses a largely neglected area of on-line learning: support for collaborative learning activities and compensation for the lack of face-to-face contact.

The suggested component oriented architecture opens the possibility to integrate ALS components with many existing systems. It is anticipated that most of the components can be plugged into the major Open Source LCMS platforms, e.g., Moodle and Sakai. The EC-TEL community might be interested in taking advantage of that fact and reusing some of the components in their own prototypes or products. Also, we are looking for interested people who might want to test components with their own content or material, in particular in areas where group cooperation and collaboration are vital for achieve certain learning objectives.

Consortium

ALS is funded by the European Commission under the Minerva Programme. Members of the consortium include Warwick University (UK), Johannes-Kepler University Linz (AT), National College of Ireland (IE),

Bauhaus-University Weimar (DE), Turpin Vision Ltd. (NL), SOFTWIN (RO), VISTA Company Ltd. (BG), and Technical University of Eindhoven (NL).
For further information on ALS visit www.als-project.org.