Social Learning Environments:
New Challenges for AI in Education

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Abstract. The advance of new social computing technologies (called often Web 2.0) brings new opportunities and challenges for eLearning. They allow us to leverage an endless amount of learning resources, repositories and people – learners, tutors, and teachers. By wise selection and combination of these resources, the "holy grail" of AI and Education can potentially be achieved – a personalized, adaptive learning environment. Yet there are many challenges along the way. To combine functionality offered by various applications, protocols are required (e.g. SOAP) and smooth interface integration (e.g. mash-ups). The resources are distributed and decentralized, created by different authors and organizations and following different semantic and annotation agreements. Imposing hard standards is not going to work, if we want to tap into a wide pool of user-contributed resources, which is the key feature of Web 2.0. Combining these resources requires shared meaning, even if just on a limited scale and time, for the purpose at hand. Community-based semantic agreements (ontologies) that are constantly evolving are one way to deal with this problem. User data is collected by many applications that create their own user models. Sharing this data brings many advantages for personalization, but also creates risks related to privacy. Mechanisms for combining user data and taking action need to be developed. Trust and reputation mechanisms and decentralized user modeling address this problem. Finding appropriate data and applications/services for a given learner at a given time is a big issue. Collaborative filtering is a well-established, relatively light-weight technique in areas that do not require interpreting complex user input. However, learning applications require complex user input. Complex models of learner knowledge need to be correlated, and the cold-start / sparse data problem is a serious hurdle. Finally, the most critical problem from my point of view is motivating stakeholders (authors, teachers, tutors, learners) to participate. Without their participation, the pool of resources and learners (peers and collaborators) to interact with will never reach the level of diversity necessary to ensure personalized, adaptive learning environments for a large number of learners. Designing incentive mechanisms for participation can be viewed as a kind of instructional planning, which can be successful in achieving certain levels and quality of participation. The talk provides an overview of these issues and research that addresses them.