Tools to Support On-Line Communities for Learning
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Abstract
Higher education is not only about transmitting knowledge; it is about becoming a member of an expert community. Contemporary tools for on-line learning can be used in opening the learning environment and making the learning process more transparent so that the learners can rely on and benefit from each other in peer-to-peer fashion.

1. Introduction
Teacher-oriented lecturing and courses relying on pre-made learning material are slowly giving way to various student-centred learning methods. Methods used include active learning experiences instead of lectures, holding students responsible for material that has not been explicitly discussed in class, open-ended problems which require both critical and creative thinking, and self-paced cooperative learning [5]. The research around the topic has suggested that when properly implemented, these methods foster motivation and elicit a deeper understanding of the domain [5]. “Transmission of knowledge” is replaced with building knowledge together.

At the same time, on-line learning has gained momentum. Although these two phenomena are independent, they can be fruitfully coupled for even greater combined effect [3]. However, the tools and technologies can be used in opening the learning environment even wider into the direction of learning communities and thus more efficient resource sharing and knowledge construction. The gap between learning and professional practice is going to be narrower.

2. Communities for learning
Communities can simply be described to consist of people sharing common needs or interests. Communities for learning are people who share the learning. Stepping into the direction of professional practice, we can view communities for learning as communities of practice where learning comes from participation [13]:

“Members of a community are informally bound by what they do together -- from engaging in lunchtime discussions to solving difficult problems -- and by what they have learned through their mutual engagement in these activities. A community of practice is thus different from a community of interest or a geographical community, neither of which implies a shared practice.”

Supporting communities for learning can borrow ideas from peer-to-peer networks. As in other contexts, peer-to-peer activity in learning means resource sharing and forming communities in shared information spaces. Peer-to-peer networks are informal, dynamic, self-evolving and self-directed.

Peer-to-peer learning has not been extensively used in higher education since there have not been structures to support it. When integrating peer-to-peer learning into the context of computer-supported collaborative learning, the tools used and the whole learning environment has to be designed to support peer-to-peer learning. Peer-to-peer learning suits conveniently to such contemporary approaches as just-in-time learning and learning-on-demand, but when the course structures are designed to support reliance on peers, higher education can benefit from peer-to-peer learning as well [7].

3. Tools for communities
There has long been an interest in the human-computer interaction community to support people collaborating online [12], but the potential of various technologies is still largely unexploited. Issues in the research field include trust-building between community members by e.g. in-crease of good “karma”, and making community members aware of social relations in the community e.g. by visualizing them for the benefit of the community. Since the Internet can bring the masses together, matching people to form ad hoc small or larger groups from previously unfamiliar people can be achieved.

Awareness and common knowledge building. EDUCOSM [9] offers tools for common knowledge building by joint annotations (highlights and comments) visible to all other users. In addition, there is an open-ended document pool where users can bring resources they believe to benefit the community. Useful resources emerge from the pool as a result of the actions taken by the community members, without the need of explicit metadata or expert rankings. Publishing new work for others to annotate and sub-community formation are also possible.

Other tools for similar types of annotation activities exist, although they have often been used in other contexts than learning per se. Wikis, where any user can modify and contribute to a web page, and blogs (web journals)
have recently become popular tools for communities of practice. Another view to support joint knowledge building is included in KnowledgeForum [2] and Fle3 [1], although their operation is different from EDUCOSM; the systems encourage the learner to reflect on how their ideas contribute to the community and the joint knowledge construction process.

Awareness of others is an important issue in environments without traditional social cues [4]. Enhancing awareness and transparency equips people with information so that the need of pre-made classification is reduced. EDUCO [8] shows the navigation activities in real-time and historically by incorporating the methods of social navigation [10]. In other words, EDUCO visualizes where people are, where they move, and “footprint” information on what resources people have recently visited.

EDUCOSM and EDUCO have been successfully used as platforms for several on-line courses in higher education. The courses have been non-traditional in the sense that they have been based on self-organizing and self-evolving groups of students so that the process of learning has become closer to the process of conducting research -- thus closer to communities of practice.

Matching actors and support for forming groups. Another beneficial tool for communities on-line is the support for forming groups and finding companions or peers from large communities. I-Help [6] is an agent-based system to enable peer-to-peer help by matching unknown actors, which has been used in large undergraduate courses. Every user has an agent, and when help is needed, personal agents negotiate and agree on helper/helpee relation.

Different approaches to group forming have been proposed (e.g. [11]). They all require knowledge about the learners and about the course or the context. These types of tools to support matching unknown actors are much needed in vast virtual universities, where true learning communities need to team up with peers to form ad hoc or more stable study groups.

4. Conclusions

The shift towards informal learning communities and self-evolving sub-communities is happening already. Rising popularity of wikis and blogs is an implication of this shift. Research and development efforts e.g. in the fields of collaborative learning and communities of practice are going on to support the activities involved. Tools such as EDUCOSM can offer novel ways of supporting learning communities in their shared knowledge building. Similarly, tools to support matching unknown actors in large populations exist, among others.

References