Help me! Online Learner Support through the Self-Organised Allocation of Peer Tutors

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The natural need for teacher support

This contribution is about a self-organised social networking mechanism to arrange instant online coaching by peers. The availability of instant support for learners who got stuck in their learning activities is an important determinant of study success. In online learning contexts, however, frequent one-to-one communication with students strongly raises the workloads of tutors and teachers. Through the internet connection students, indeed, expect instant support when they experience any problems with their learning tasks. Also, the diversity of the calls for help increases dramatically because of highly individualised learning routes and different paces of learning, which are advocated as the distinguishing features of online delivery. Contemporary constructivist pedagogies, which suggest complex, open learning tasks, seem to worsen things, because they require intensive, tailored tutoring rather than standardised support. Simply appointing more tutors would make online education unaffordable; limiting the amount of support would inevitable harm the quality and effectivity of online learning. In practice, online students cannot always be given the required support at the right volume and at the right time. While students may be working energetically on their study assignments and the associated learning materials, they may run up against a problem that needs to be solved first to be able to proceed. Naturally, students will try to figure it out themselves (which can be very informative as such), but after a while a remote teacher will be necessary to provide support in order to avoid pointless wasting of time. Indeed, the permanent availability of some service which preserves the effectivity of learning, is the essence of education.

Exploiting the (invisible) community of fellow-learners

The consultation of peers may be an interesting alternative. Even when online learning may incorporate some group work or communities of learners, the common notion of student cohorts is not necessarily preserved, which positions online learning as a quite solitary, individualised mode of learning: peer groups and peer consultation are not self-evident. Although a synchronised cohort of learners not always exists in online education, there may be many students working at the same domain or module, who are possibly not aware of each other and may not know each other. They may follow different learning routes, have different learning objectives and study at different paces and times. This invisible community of fellow learners, however, engage in the same subject matter and share the same interests and the same problems. It yields the social and intellectual force to provide peer tutoring as a powerful means to address the ever-growing need for support. Importantly, peer support is not just a sly trick of shifting the teachers' workloads to the students: indeed, various researchers report that peer tutoring often is found to produce higher learning outcomes (Fantuzzo 1989; Gyanani 1995; King 1998; Wong 2003) and to have positive effects on motivation, reflection, self-esteem and commitment (Fantuzzo 1989; Anderson 2000). By exploiting the (invisible) community in a convenient way, peer tutoring can be applied to preserve appropriate and affordable online tutoring services within a population of students. To this end, a self-

organised peer-coaching mechanism has been developed to deal with individual calls for support by allocating the most appropriate fellow students for providing support.

The intelligent allocation of peers

We consider a population of students that are individually working on a number of domain tasks (learning modules, assignments, domain nodes or learning units) that make up the curriculum. It is assumed that individual learning routes and progress of students are logged by the system, that is, each time a student completes a learning module and starts with a new one the learner positioning data are updated. When a student of the population calls for support, the allocation mechanism uses the learner positioning data to select the most appropriate peer tutor from the population; it does not include the semantics of the calls for support per se. The allocation algorithm is assumed to meet criteria in two separate dimensions:

1. Quality: Select a competent tutor. The peer tutoring system would fail when incapable tutors were assigned. Therefore, the appropriateness of the peer tutor has to be established.
2. Economy: Achieve a fair workload distribution. The peer tutoring system would fail when only the sub group of highly qualified students were involved as a tutor. Therefore, the quality criterion should be balanced with the actual workload for each student.

So, in order to be successful, the peer allocation algorithm has to balance these conflicting demands. An extensive explanation of the allocation algorithm, as well as the outcomes of various simulations can be found in Westera (2007).

Practical work

The peer-allocation concept has been implemented in a client application that is integrated in the student's virtual learning environment (cf. figure 1).

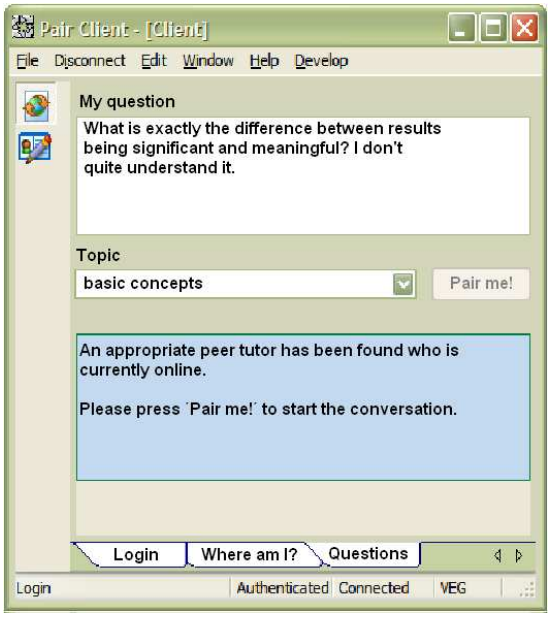

Figure 1. Example of the instant peer support window.

When an appropriate peer tutor has been found, the student can immediately start a conversation using chat. All communication is logged. The peer tutoring mechanism has been tested in the different contexts. First, a pilot was carried out in a statistics course of the psychology bachelor programme of the Open University of the Netherlands. Second, a pilot trial has been arranged at the ICT Media Design programme of the Fontys University of Applied Sciences (the Netherlands).

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