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Student-student online coaching: The case of math coaching

Introduction

Most learning takes place outside the classroom in our everyday lives. Thus, researchers need to examine how technology can be used to support learning both inside and outside the classroom. On campuses, there are common spaces such as hallways, lounges and cafés, which support informal learning (Nicholson, 2002). It has been argued that social media (Bull et al., 2008), such as instant messaging, has the potential to support informal learning in online settings (Contreras-Castillo et al., 2006).

The aim of this presentation is to describe a learning activity that we label student-student online coaching, defined as “an online service where students get help with their schoolwork from more capable students”. We will present an example of math coaching by using instant messaging.

The potential of student-student online coaching can be motivated by Vygotsky’s (1978) theory on the zone of proximal development (ZPD). He argued that intellectual development is based on collaboration between a learner and a more capable person: “[ZPD] is the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers.” (p. 86)

Various concepts have been defined that emphasize interaction among learners, such as learner-learner interaction, computer-supported collaborative learning and knowledge-building communities. However, while these theoretical strands focus on interaction among members of a class or a group, which might be more or less capable, the focus of student-student online coaching is on how students can be coached by more capable students. In such circumstances, it is likely that high levels of intellectual development, as prescribed by the ZPD theory, can be achieved.

In our presentation, we will present the concept of student-student online coaching. Then, we will ask the audience to identify examples and experiences of student-student online coaching in small groups, and briefly present their examples. This will be followed by a presentation of student-student online coaching, i.e. the math coach project. The session will be concluded by giving the audience the opportunity to try math coaching by using instant messaging.

Math coaching by instant messaging

In this section, we give an example of a project that can be described as student-student online coaching. A more thorough discussion of the project is presented in Anonymous et al. (in press). In the spring of 2009, the project “Math coach” (www.mattecoach.se) was started in Stockholm. The project offers K-12 students help with their homework in mathematics by coaches that are available in MSN Messenger. The coaches are studying to get a double degree as a teacher and Master of Science with a focus on mathematics and physics.

Below, we draw on transcripts of math coaching conversations, as all communication is logged, currently comprising more than 6,000 conversations. Moreover, a brief survey was sent to the K-12 students that participated in a math conversation during spring, 2011. We have also conducted four interviews with coaches.
In autumn 2010 (Sep 13-Dec 16) there was 2,712 hours of conversations. The year distribution was 44% for secondary students (aged 12-16) and 56% for upper secondary students (aged 16-19). Most of them had questions regarding a specific problem (79%) and the most common subject was Algebra. During spring 2011 (Jan 18-May 31) we conducted a survey after each conversation that measured perceived satisfaction. The mean was 4.3 on a five-point ordinal scale, where 5 was very satisfied and 1 was very dissatisfied. The following are examples of perceived benefits and limitations of math coaching:

“I couldn’t believe that math could be so fun when you understand!”

"It would be better if [they] just told us what to do instead of going deeply into things."

“Great way to learn since I am already online all the time. The math coaches are so nice and patient to me!”

“30 minutes solving one problem is too long. It would be easier to talk with them.”

It seems beneficial that IM communication is not necessarily in real-time. It is possible, for both students and coaches, to stop and reflect. In a dialogue of questions and explanations the coaches sometimes recognize gaps in students’ knowledge, but students may also ask for information that is missing or comment on inconsistencies in the explanations (Ploetzer et al, 1999).

Communication via IM can be anonymous and misunderstandings occur. Some coaches feel that, despite the anonymity, it is possible to get to know students. As a student returns he or she gradually gets to know the coaches. One problem many coaches mention is that it can be difficult to know whether the student has understood. Several coaches also mention that they sometimes find it difficult to coach on the right level. For students to learn effectively, the coaches need to be able to interpret the students’ competence level in order to coach on a level that is within their development zone. It seems particularly challenging to coach at the right level when using IM and therefore it is important to try to establish a personal relationship with the students.

References


