

Supporting Group Work in Distance Education

Martin Elvheim

Department of Informatics and Mathematics
University of Trollhättan/Uddevalla
Östergatan 18, Box 795
s-451 44 Uddevalla, Sweden
+46 522 65 73 11
martin.elvheim@htu.se

ABSTRACT

Programming courses in distance education often involves group work and solving of tasks in groups. The activities in these groups involve a high level of social benefits that often overrides learning. In order to balance learning with social benefits, Extreme Programming is about to be tested as a learning methodology.

Keywords

Group work, distance education, learning, programming courses, Extreme Programming.

1 INTRODUCTION

In modern distance education the use of electronic media for distribution and not least communication has proven to be more and more important. A great part of this is the expansion of the Internet [1]. As the importance of electronic medias increase, the social factor of study groups seem to be not less but more important. Most distance education is designed with traditional classroom education as a model, which results in missing benefits. [2] An important part of higher education is the interaction in education. [3] The human interaction between learner and instructor as well as the interaction between learners are major interaction types. For teachers and instructors developing distance courses is the focus on the learning itself, using the advantages of the social importance, one of the keys to successful university courses. Programming courses are not an exception from this. In order to support human interaction, group work can be one supporting activity. However it seems that learning are less obvious to students than the social factors. A question raised is how to support learning in order to improve the learning focus.

2 FORMING GROUPS

Students study in groups, both due to a given task within a course and more informal when studying course material, solving individual tasks and discussing lectures. In distance education roles and work-orientation can influence the results as well as the conduction of the tasks [4]. From four identified group types two seem to address social focus. The Team, identified with high social focus and different roles such as leader(s) and group members and The Gang, with focused collaboration and equal roles of the members. These group types support the social focus in the distance courses and provide possibilities to

enhance learning within the student group.

The forming of these group types involves no certain factors, as they seem to appear at different times in different learning groups. Even more, groups can change types from task to task. This gives a wish to affect the formed groups in order to make them work more as these two social group types. Thus, another question added to the improvement of learning is if it is possible to create these group types.

3 PILOT STUDY

An early pilot study has been made to examine some of the deriving factors to learning and social importance in group work in programming courses. The social importance examined was focused on attitude towards group work and group tasks. Within the social factors examined was social importance of group tasks, problem solving, work load and time spent. Learning involved increased syntax knowledge, improved problem solving, understanding of programming usage and improved studying situation.

Social importance

The pilot study supports very well the social importance of group work. Most students find group work important in order to make new contacts and other positive social effects. At the same time they also think group work takes too much time from individual studies.

Learning

As indicated in the pilot study students do not think group work and tasks improve learning. Very few identified positive learning effects derive from solving a programming task in a group. Most students said that group tasks did not support their individual studies before exams.

4 EXTREME PROGRAMMING IN DISTANCE EDUCATION

In order to design programming courses with group tasks that better takes advantage of benefits in distance education and in solving problems in groups, some of the possible key factors can be found in the lightweight programming method Extreme Programming. The practices simple design, refactoring, collective ownership and pair programming [5] are with few changes possible to implement into the learning environment.

All of the Extreme Programming practices will be explained to the participants but not explicitly implemented in the experiment. The main reasons are the short time span, the scope of the programming problems and the overall objectives of the given tasks. The reason for implementing Extreme Programming at all is mainly to increase learning of programming skills and improving the results of the student teams, which will be supported by focusing on a small number of practices.

The above mentioned practices are included in a programming experiment (spring 2002). In order to create the suitable environment, distance education is chosen as a base for the experiment. The groups formed are located at learning centers and given a small and well constrained programming task. All groups are formed with an assisting instructor present and available for tutoring. Four learning centers are part of the study and each learning center has between six and thirteen students that will participate in the experiment. All members of the group will prior to the actual programming learn the key practices of Extreme Programming. The students will be handed a paper regarding the key practices of Extreme Programming and a lecture on Extreme Programming. A student seminar will be held based on the reading and the lecture.

Throughout the group work, some method assistance will be given all groups at all locations. This assistance will be held at the learning center by an experienced teacher. The groups will not have organized contacts across the learning centers. Interaction with the instructor during the experiment will be encouraged. In parallel with the group task, a series of lectures on Java will be held.

5 DISCUSSION

The programming courses involve learning programming skills as well as syntax, which are important components of developers' future work. Some say: methodologies like Extreme Programming can not be learned at the same time as the programming skills are introduced. Previous studies show that the work-orientation and roles are important parts of groups of students. At the same time the mentioned pilot study indicated social importance before learning. Extreme Programming as methodology supports several of these factors; the involvement of all group members, the learning from each other and the collective principles. And most important Extreme Programming is

a slim, easy-to-learn method for developing better software. This experiment yet not conducted are assumed to support the important social factors of group work. More important: learning will be a more outlined component in group work.

REFERENCES

1. Braa, K., Sørensen, C., Dahlbom, B. (2000) The Planet Internet, Challenges Facing Informatics, Studentlitteratur, Lund Sweden
2. Moore, M.G. (1993). Is Teaching Like Flying? A Total Systems View of Distance Education. American Journal of Distance Education, Vol. 7 No. 1, p. 1-10.
3. Moore, M.G. (1989). Three Types of Interaction. American Journal of Distance Education, Vol. 3 No. 2, p. 1-6.
4. Magnusson, M., Svensson, L. Studying How Students Study, Proceedings of IRIS 23, Laboratorium for Interaction Technology, University of Trollhättan Uddevalla, Uddevalla, Sweden.
5. Beck, K (2000). Extreme Programming Explained. Addison-Wesley, Upper Saddle River, NJ, USA