PROBLEMS IN GROUP WORK AT THE BUSINESS INFORMATICS COURSE

Theme: Group work/Student influence

Natascha Janssen, Rosa Maria de Castro F. Vasconcelos, Luis Amaral
Engineering Courses Council
University of Minho
Portugal

Abstract
At Business Informatics at the University of Minho a study has been done to identify problems in teaching and learning. Advantages and disadvantages of group work have been identified by both teaching staff and students. It appeared that many advantages of group work are cancelled by the disadvantages. Group work will continue, but it needs some serious reconsideration with regard to the practical implications. Students have to learn group skills; teaching staff needs to think of other ways of assessing students and has to play an active role, especially in the first year, in the process of co-operation between the group members and in managing a project. Furthermore, a good co-operation between teachers of different areas is required to enable a effective integration of the different areas of the course.

1 Introduction
Business Informatics at the Engineering School of Minho University of is a multi-disciplinary course that educates students to support organisations in their processes of implementation and improvement of information technology. A student will be especially prepared for leading and participating in activities like the development of information applications, the development of organisational information systems, and planning and management of information systems. The course consists of three parts. The first part (60%) is the Informatics part, which is subdivided into Information Systems, Computer Science and Computer Engineering. The second part (22%) is Organisation and Management and the third part (18%) is Mathematics. It is a 5 year course with about one hundred students entering each year.

In every year of the course the students have to do projects in groups. Projects are related either to an Informatics subject, or to an Organisation and management subject. There are no group projects for mathematical subjects. In the first and the second year the students carry out two or three small projects in a group of three or four students. Every project is related to only one subject. In the third year there is one large project, carried out in a group varying from seven to eleven students. This project is an integration between two subjects. In this year, students also carry out two or three smaller projects in smaller groups of three or four. The smaller projects are again related to only one subject. In the fourth year the projects become more extensive. Two or three group projects have to be done in groups of four to six people. Each project takes place in the context of one subject. During the last year the students are being prepared for the labour market and their practical training. Three to five more profound projects for the optional subjects are usually carried out in small groups of two to three students. The last project for every student is the practical training. This is an individual project normally outside the university. The number of projects mentioned is an average based on the
last five years. Apart from these group projects, students get smaller group projects for most of the subjects.

2 Method
In 1996 the Council of Engineering Courses initiated a project, aimed at improving the quality of education at the Engineering School. A pilot study has been done at Business Informatics to systematically identify the most important problems in teaching and learning at this course. Part of the Organizational Elements Model of Kaufman (1981) has been used as a framework for a qualitative study. The elements used -Inputs, Processes, Products and Outputs- were defined in detail. The Inputs of the course are teachers, other staff, students, facilities, regulations and plans. Processes include curriculum, instruction, staff development and the management of the course. Products refer to the students that have finished the Business Informatics course and the Outputs are students working in companies. The actual and the desired situation with regard to these elements has been described. Part of the study focused on group work. A survey was undertaken to identify, among other things, the opinions of teachers and students with regard to group work. Interviews have been conducted with students of every year of the course, including questions about group work. Twenty-nine students have been interviewed. Those teachers who were responsible for a subject completed a questionnaire including questions with regard to the advantages and disadvantages of group work.

3 Results
A content analysis was done with the results of the interviews and questionnaires. Looking at the responses of the teachers, six advantages of group work can be distinguished: learning to achieve a goal together, learning to communicate, learning to co-operate, recognising individual accountability, developing problem solving skills and stimulating weaker students. Firstly, students learn to achieve a goal together and to benefit from the potential of each group member. They learn to work towards a joint goal and to use the individual capacities of the group members as effective as possible. Students also learn to communicate. They have to express their ideas and feelings in a clear way, listen to others and discuss their ideas and feelings with each other. Furthermore, students learn to work in a team and to co-operate. They have to build the team work and find out how to co-operate in order to reach the goals of the team. Another advantage of group work, according to the teachers, is that students learn about their individual accountability. All the group members have to contribute equally to the group projects and they have to be aware of the contributions of other group members. Teachers also mentioned problem solving skills. During a project students are supposed to develop problem solving skills. Finally, the stimulation of weaker students to put more effort in a project to keep up with the others has been identified as an important advantage of group work.

Apart from the advantages, several disadvantages have been identified. At Business Informatics, teachers are afraid that students take advantage of each other. It happens, especially in larger groups, that some group members do all the work, while others do not contribute anything important to the project. Teachers find it difficult to accomplish that every group member realises an equal amount of the project. Most of the respondents mentioned the assessment of the group work as complicated. They describe problems in assessing the contribution of the individual to the project. Finally, a few respondents expressed their anxiety about possible delays in students' work that may be caused by group work.
The students of Business Informatics mainly recognise the communication dimension as an advantage of group work. The exchange and discussion of ideas is mentioned as the most important aspect of group work. Group work teaches them how to exchange ideas and how to discuss ideas among each other. They identified several disadvantages of group work. At the moment most of the group projects take place at the end of the second semester. This causes both practical problems and very high workloads of students in one period. For the group works, students need facilities like computers and study rooms. At the end of the year, many groups are finishing projects for different subjects and they all need the same facilities. Students have difficulties in arranging computers and study rooms. Furthermore, the students argue that many of their colleagues try to get away with the group work and do not carry out the tasks they had to do. They do not feel responsible for the group work.

4 Discussion
Group work at Business Informatics raises a number of questions. Looking at the amount of group work students have to do each year and the period in which the most of the group work is planned, the usefulness of group work is doubtful. At the moment most of the group projects take place at the end of the second semester. Students have to divide their time between many projects in different groups. The tasks they have to do for the different projects are not coherent, because the projects are all related to different subjects. They cannot dedicate much time and energy to one single project and they have to set priorities and decide for which project they will make a serious effort and to which project they contribute less than necessary. Besides this, they experience difficulties in arranging the necessary facilities. Spreading the assignments through the year, reconsidering the number of projects and integrating projects of different subjects would enable the students to contribute more to their group work. Combining projects of the different areas of the course -Informatics, Organisation and Management and Mathematics- would provide useful opportunities for the integration of the knowledge and skills of the students. Spreading the assignments through the year will also improve the availability of facilities.

According to both teachers and students group work is a very useful way of acquiring skills related to co-operation, communication and organisation of work. Students are supposed to co-operate successfully towards a certain goal, exchange and discuss ideas, organise their tasks efficiently and be aware of their individual responsibility for the project as a whole. This implies that students have certain group skills. Johnson and Johnson (1991) identify nine dimensions of an effective group. One of the dimensions refers to participation. They emphasise the importance of the distribution of leadership and participation among group members. 'The equalisation of participation and leadership makes certain that all members are involved in the group's work, committed to implementing the group's decision, and satisfied with their membership' (Johnson & Johnson, 1991, p. 22). At Business Informatics this dimension appears to be difficult in group work. Groups are supposed to work together on their projects and there should be an individual accountability of each group member. The practice is different. Students have to do many group projects a year. They try to do this as efficient as possible and they divide their work. Students usually work together in the same groups for every subject. Some of the groups make appointments about dividing the work of several group projects between the group members: if student A and B of a certain group do project 1, then student C and D of the same group do project 2. Besides this, some students try to avoid their accountability. Other students take over and end up doing almost everything, because they do not want to get a low mark in the end.

To change the above practice into a situation of effective groups, students need group skills. The question is how students get these skills. At the moment there is no special attention for
group skills neither in a special place in the curriculum, nor within the subjects. The question is how students develop group skills. Teachers at Business Informatics probably suppose that students develop group skills during the process of doing a project in a group. Students told in the interviews that they learned something about how to work together. Johnson and Johnson (1991) argue that group skills have to be learned. Students need to learn how to work as an effective group, which is more than finding out how to work together. Therefore group skills deserve a place in the curriculum.

The problem of students not taking their accountability and not doing their share is related to the problems of the teachers in assessing the students. At the moment most of the projects are evaluated by assessing the final report of the project. There is no extra written or oral assessment of the individual group members. There is usually one group mark and all the members of the group receive the same mark. Teachers have indicated they had problems with this kind of assessment of group work. It is difficult to find out if and how much each group member has contributed to the project and to assess them individually.

Assessment of group work and the individual contribution of each group member raise questions and cause uncertainties (Lejk; Wyvill & Farrow, 1997; Hassal & Lewis, 1994). Giving the same mark to everyone does not seem fair, when some group members tend to hide in the group and do far less than others. Assessment of the individual pieces of work of a group member and attributing only individual marks does not recognise the teamwork of the group. Lejk et al. (1996) suggest a number of methods to assess both the group work and the individual contribution. The students can assess each other, themselves and can also be assessed by a tutor in various ways.

Another question refers to the benefits of group projects compared to individual projects. At the moment there is a big emphasis on group work at Business Informatics. As mentioned before, students do group projects for many subjects. Only in their last year do they do a project on their own, which is their final university project. Only then they have to do every step of a project on their own. It may be useful to make students execute individual projects too. In an individual project they develop project management skills and they cannot hide in the group.

5 Conclusions

Group work at Business Informatics is regarded as valuable. Both teachers and students recognise the benefits of group work. However, in order to really take advantage of group work, certain conditions have to be realised. Groups need group skills in order to work effectively. Therefore, group skills need to be taught to students, preferably in the first year. Students should feel responsible for the whole project and have an individual accountability. Besides this, it is important to pay attention to organisational aspects of group work within a course. During their projects students need facilities like computers and study rooms. If many projects take place at the same time, the facilities may be insufficient. A better co-ordination between teachers can improve the availability of facilities for the students. At Business Informatics teachers could try to spread the group projects over the year and to combine the project of their subject with a project of another subject in the same or in another area. Assessment methods need to be explored and discussed by teachers. It is useful to assess group work in a way that recognises both the individual performance and the teamwork. Finally, reconsidering the amount of group work compared to the amount of individual work may accomplish a better balance between individual work and group work.
References

256