WITH A LITTLE HELP FROM MY FRIENDS. THE ROLE OF THE PEER GROUP IN A PHYSICS ENGINEERING PROGRAMME

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The paper reports on the importance of informal study groups for the academic achievement and social and emotional wellbeing of physics engineering students at one university in Sweden. It is based on interviews with 26 physics engineering students in different phases of their education and 9 staff members – teachers and study advisors. While the programme structure and pedagogy assumes individual study, many students in fact cope with the demanding programme by using peer learning and peer support in informal contexts. The peer groups seem to be particularly appreciated by students with academic achievements in the middle range, but many groups include students at different achievement levels. The groups enhance students’ academic work by different methods of peer learning, they provide (self)discipline at the same time as they help to maintain a study-life balance. They also increase motivation in different ways. The groups are formed more or less ad hoc, without initiatives from the staff, but they are strongly recommended to new students by senior students. Even if there is, in the physics engineering program, a large number of students who prefer individual study, the informal study groups are an important feature in a program, which officially builds on individual achievement, and have a major impact on the achievement and retention of a notable proportion of the student body.

Keywords: Peer learning, peer support, study techniques

Engineering physics is one of the most prestigious study programs in Swedish higher education. The graduates from the program are sought after, not only by technical companies, but also by the financial sector, and many also end up in research. Several national icons of research in academic science, innovation companies, as well as CEO’s of large companies have a background in engineering physics. The program has the reputation of being one of the most difficult university programs.

The programme is five years, and offers a wide selection of courses mainly in mathematics and different areas of physics. The student body is predominantly male (72% men, Universitetskanslersämbetet, 2016). The entrance requirements are not among the highest in Sweden, but generally students know that good command of mathematics is required. Many students choose the program because of the breadth of opportunities it offers afterwards, and quite a few choose it also because of the prestige and the perceived challenge.

Once on the program the challenges become real and need to be dealt with. They are partly different for different student groups, in regard to gender or socio-economic background. However, for most students they consist of the initial shock in realizing the amount of study that is required and handling failed exams – which most students experience - as well as creating a confident physics engineer identity. The challenges are not only academic, but also emotional.
This paper discusses the role of the peer group in managing the different challenges, academic as well as emotional. It presents results from the research project Staging the Successful Student, based on interviews with staff and students in three Swedish prestigious higher education programs: engineering physics, law and medicine. The project focuses in particular on male students’ coping strategies and ways of managing failure. This paper is based on individual interviews with 9 members of staff and individual and group interviews with 26 students in the physics engineering program.

In contrast with law and medicine, programmes based on problem-based learning, engineering physics is regarded as a programme based on individual study. Apart from laboratory exercises, group work is not common. Peer learning is not officially promoted, in spite of the substantial body of research on its benefits also in engineering education (Brown & Poor, 2010; Arco-Tirado & Fernandez-Martin & Fernandez-Balboa, 2011). However, many students on the programme stress the importance of informal study groups as more or less necessary for survival. That is also the message handed down from more senior students. Thus, what the formal structure of the education does not organize, is to a large extent organized by the students themselves.

The importance of the peer group entails a shift of study techniques for many students compared to secondary school. Many of the students have been high achievers, and quite competitive. Many of them continue to study individually during the first semester. However, a large number of them switch to studying in informal groups during their first year. The competitiveness generally decreases, as many of those who have been high achievers in secondary school find themselves in the middle range in the engineering physics program. The decrease in competitiveness is facilitated by the fact that good grades are not necessary to secure a successful start in the professional life – something that is also stressed by representatives of the educational institution. The lack of competition is more or less a prerequisite for creating and sustaining the informal study groups. Several students told about their relief in finding friendly study groups, in contrast to their expectations of physics being a subject where collaboration is not frequent (Hazari et al, 2010).

Formation of study groups is facilitated by the first weeks’ welcoming activities, arranged by more senior students and stressing the importance of socialising. Some study groups are formed already at that stage and keep together several semesters. Others form later and have a more or less fluctuating membership, some being just a group of students preparing for a certain exam. There are both mixed and single sex groups – sometimes female students choose to work together, even if it seems to be more common for them to mix with their male peers.

Study groups often involve students at different levels of achievement. High achieving students see a benefit for their own understanding of the subject matter in “teaching” their more struggling peers (Robinson & Schofield & Steers-Wentzell, 2005). The amount of interaction in the study group varies – it can entail common problem solving on the board, distribution of problems and explaining them for each other, or the group can just be students working on their own, but at the same location and helping to keep each other concentrated.

Peers have been found to be important for many students’ coping in higher education, particularly when it comes to female students (Burke et al, 2013; Solomon, 2007). The more permanent study groups are important for the wellbeing of the students. Many students
witness that without their study group they would have dropped out at some point in their studies. The group offers encouragement and is also a motivating factor: failing too many exams would mean not being in the same phase of studies as the group and losing their academic support. However, the downside of this is that students who are not part of a group or choose to leave a group can be at risk of failing both academically and in regard to their psychological wellbeing. Starting to lag behind may cause a student to leave a group, in particular during the first year, if he feels that he is a burden for the others.

The importance of study groups is acknowledged by study advisors as well as teachers. At the same time the staff acknowledge that among their students there are many with poor social skills. When doing labs, members of the same study group normally work together, and that is also the case in the relatively few other occasions where group work is mandatory. This means that students who do not belong to a study group are at a disadvantage and can be marginalised. This may not be a problem for high achievers – who seem often to be permitted to work on their own – but is a concern for teachers when it comes to average or low achievers. However, generally, with some exceptions, the teachers accept the spontaneous group formations, instead of trying to create groups themselves.

There are is a large number of, maybe in particular high achieving, students who prefer individual study. However, in the student perspective, the study groups are a central feature in a program which officially builds on individual achievement, and hence knowledge about their impact on the achievement and retention of students is important.

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REFERENCES


