INFORMATICS STUDY-DAY: IMPROVING THE ACADEMIC AND SOCIAL LEARNING ENVIRONMENT AMONG FIRST-YEAR COMPUTER SCIENCE STUDENTS

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During the fall semester of 2017 the Excited center for excellence in education organized a study-day for all first-year students in the bachelor program informatics at NTNU. The project started out as an initiative to improve the new students’ overall experience with being a new student. Throughout the semester, the project has evolved into an interdisciplinary learning environment valued by the students. This paper will describe the project further and present some important lessons learned.

1 INTRODUCTION

The overall goal of the “Informatics study-day” project was to improve the academic and social learning environment. Studies have shown that there is room for improvement in the experienced learning environment, especially related to follow up from faculty staff (Studiebarometeret, 2017). In addition, we know that students in Trondheim are among the loneliest in Norway, despite scoring highest on general quality of life (Studentenes helse og trivselsundersøkelse, 2014). Therefore, we asked ourselves, what can the department do to improve the academic and social learning environment?

Local surveys and feedback from the students have indicated that the students struggle with a fragmented study week. The informatics students generally take four courses in parallel every semester. In their first semester they take two computer science courses, one mathematics course and a scientific philosophy course.1 These courses are mainly structured into lectures and drop-in labs, with weekly or semi-weekly assignments. Additionally, the students at this program do not have any courses during their first semester where they are not mixed with students from other programs. Thus, the feeling of belonging to a class might be low, which was something we hoped to change.

2 ORGANIZATION AND IMPLEMENTATION

Because there were no lectures scheduled in their study plan on Fridays, our idea was to organize a full study-day for all first-year students every Friday, where students could come and work on whatever subject they wanted. We chose first-year students because we thought they could benefit the most from this kind of initiative, and we unfortunately did not have the resources to do it for every class.

The Informatics Study-day initiative summarized:

- First-year students at the Informatics Bachelor program were invited to a Study-day every Friday, from 9am-4pm
- The rooms used were located in the building where the students have most of their laboratory work. Also, their student organization has an office there.
- We invited the scheduled teaching assistants (TAs) for computer science courses to come to these rooms. In that way, the TAs came to the students, as opposed to the students having to look for their TAs as is currently the norm.

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1 The two computer science courses are Information Technology, Introduction (http://www.ntnu.edu/studies/courses/TDT4110/2017/1#tab=omEmnet) and Web Technologies (http://www.ntnu.edu/studies/courses/IT2805/2017/1#tab=omEmnet).
In addition to the course specific TAs, we provided extra TAs who could help students in all subjects.

We provided a simple breakfast at 9am.

We organized different social and academic activities and classes throughout the semester.

## 2.1 Implementation

During the first weeks of the semester, the first-year students have a number of introductory classes and projects before they start their regular courses. We used these introductory classes as an opportunity to give students information, and planned on starting the study-days when regular classes started. For the first full study-day we created an extensive program, including dinner at the end of the day. The program included talks from various people and organizations the students will meet throughout their studies, as well as icebreakers and teambuilding activities. In addition, we conducted group interviews using TAs with the goal of learning more about the students’ motivation, interests and challenges. The results from these interviews were used as a base for further planning and possible follow up studies.

After this start-up session, the study-day was mostly focused on facilitating a well-functioning learning environment for the students. A typical study-day starts out with a social breakfast, before the students start their work, either in groups or on their own. The rooms were set up with round tables for group work, as well as spaces more suited for individual work. Posters were set up with information about current and future assignments, as well as information about where to get help in the various courses. Throughout the day, some students come and go, while others sit there the whole day.

In addition to the start-up session, we have organized two “special” events so far. At one point, we organized a study group devoted to a writing task in the mandatory philosophy class. The interviews we conducted during the first study-day revealed that many students were dreading this assignment, especially the writing. Therefore, we had TAs prepare to answer questions related to the topic of the assignment, as well as provided guidance in academic writing. The other event we initiated, was a course on time management and motivation. We invited experienced instructors from the welfare organization to come in and do a two-hour session with students who were interested. In the future, we plan on doing the same for with an exam preparation course.

## 2.2 Interdisciplinary collaboration

An essential aspect of this study-day was creating one space where students could study and get help if they needed it. The general way students can find help is that they have to find their TAs, located at different rooms at various times. During the study-day we aimed to bring TAs to the students, which would hopefully lower the threshold to seek assistance when needed. In order to do this, we needed to collaborate with the various course coordinators and lecturers. First of all, we needed access to the assignments and course information so that we could help the students with their progress. Second, we needed to be involved in the organization of TAs, so that they would be scheduled to work on Fridays. Two of the courses in these students’ plan were from our department (Department of Computer Science), and for those courses it was relatively easy to collaborate. We got access to the learning management pages, and were able to request TAs for Fridays. However, for the two other courses it proved a bit challenging. Although we did receive positive feedback on the initiative and gained access to the assignments, we ended up organizing TAs our self.

## 2.3 Additional TAs

In addition to the TAs provided from the two computer science courses, the Excited project had hired 13 TAs to work on various projects throughout the semester. One of these projects was the Informatics Study-day, where they were involved in the organizing and provided academic help to the students. These TAs were from many different computer science related study programs; however, they were all in their second year or more. Thus, these TAs had taken the courses the first-year students were taking before, or had more experience in the various topics. In a way, they acted as all-round TAs, who could
help out with almost anything. These Excited TAs were also in charge of organizing and making the breakfast, which included going shopping every week and setting up the food in the morning.

3 CHALLENGES AND LIMITATIONS

The participation during these days have varied somewhat. The first couple of weeks we had a steady rate of about 40 students every morning, with more students showing up throughout the day (the class consists of 130 students in total). This is not a mandatory activity, so the fact that the attendance has been low is unsurprising. Nevertheless, we have wondered if this initiative is reaching the students who need it the most; the students who are struggling socially or academically. Furthermore, how can we reach these students?

Additionally, we have experienced that the very different level of previous experience and knowledge among the students is challenging. The fact that computer science is not a large subject in primary and secondary school, but is a popular elective for those who are lucky to have the opportunity, creates an interesting situation. Some students have no experience with computer science when starting at university, while others have been programming for years through coding clubs or electives. This is a unique situation within STEM subjects, and creates a challenge for us as computer science educators. For some students the introductory computer science courses are trivial and boring, others in the other side find it very difficult. Concurrently, this can be viewed as an opportunity for collaborative and peer learning, and the study-day initiative can help facilitate this. At Informatics Study-day, experienced students can help their peers. However, this requires that these students participate, which as mentioned, has been a challenge.

4 OBSERVATIONS AND LESSONS LEARNED

We are currently in the process of formally evaluating this project; however, we already have some interesting observations. Firstly, the feedback we have gotten from the students throughout the semester has been very positive. Many students have said that Fridays are their favorite day of the week and that they would probably not study much on Fridays if there was no study-day. Additionally, older students have said that they wish they had a similar initiative when they were in their first-year.

Based on feedback throughout the semester we have hypothesized that the two main aspects for the success of the Informatics Study-day initiative is the cross-curricular organization where the TAs come to the students, and the social environment created by having a fixed space and time every week. In addition to being available for questions, the Excited TAs were instructed to walk around the area and talk to the students. As a consequence of this, the TAs were asked many questions on the form “by the way, while you’re here, can you have a look at this”. In addition, we experienced that the atmosphere of the room was generally very cheerful and positive, even though the students were sometimes struggling.

5 GOING FORWARD

The idea of organizing a study-day is in no way revolutionary, but we learned that it can have a big impact at a relatively low cost. Additionally, this is not an initiative that works exclusively for computer science students; however, we think that computer science students specifically can benefit largely from developing collaborative working skills in the way that this study-day facilitates. In that regard, we would very much like some feedback from other educators.

5.1 Discussion topics

- How can we attract more students to participate? Especially, how can we reach students who are at risk of dropping out and the academically strong students at the same time?
- How can we include more faculty staff to participate? What would it take for you to show up?
- Is this fulfilling a specific need for computer science students? If so, why/why not?
6 REFERENCES
