

Using technology in new learning spaces to create a common focus in collaborative learning

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1. Summary

In the last decade, there has been an innovation in new learning spaces that are designed to support collaborative learning by use of technology. They help facilitating changes in the learning culture, and promotes student active learning. In these learning spaces, the goal is to have students actively working together and thereby learn together. The teacher's role is no longer to give monologues but to guide and assist the students through the learning process.

One way of achieving a good learning situation is by creating a common focus for the students. This common focus can be created by use of technology in several ways. We have used interactive whiteboards and student response systems to achieve this. Either way, the technology gives access to the learning process and immediate information about the students' learning outcomes and it serves as a meeting point between students and teachers.

In this presentation, we share our experiences from several innovative learning spaces at NTNU, and reflect on how technology supports collaborative learning and how this influences the teacher role as well as the student role.

2. INNOVATIVE LEARNING SPACES

New innovative learning spaces with group stations are being built to help teachers change their teaching and learning activities into student active sessions and technology plays an important role. When these spaces are used, the students are placed in groups set by the teacher and the composition of the groups is changed every session. Thus, the learning situation becomes independent of the social groupings among the students and new group compositions every week help to improve the learning environment.

2.1. Flat classrooms with interactive whiteboards

Several of the innovative learning spaces we have used are flat classrooms with numerous group stations, each station is equipped with an interactive whiteboard that is connected to a computer (Støckert, 2012). When groups have an interactive whiteboard as a joint focus it contributes to the collaborative process and it gives the teacher easy access to their learning outcome (Andersen, 2018). If you compare this learning situation to a setting where the students are working individually on a laptop or on paper, the latter represents personal space while the interactive whiteboard is a common space for both students and teachers. It is easier to approach the students when you can address the whole group simultaneously and discuss what is shown on the interactive whiteboard. Just the share size of the board makes it easy to get a quick overview of how the learning process is coming along. Technology facilitate the possibility to store and distribute the work within the group and with the teacher afterwards.

2.2. Large auditorium and the use of response technology

One of the learning spaces we have used is an auditorium where group stations are distributed over several levels. Each group station has a large screen to where the students can connect their own devices. What is distributed on the screens can be controlled from the teacher station in the auditorium. Each group station also has a microphone and speaker, and a light signal. In this learning space, the lecture format is broken down into short sessions where the teacher gives a short presentation or guide a discussion between the groups. In the remaining time, the groups solve problems or discuss. To get an overview of the students' current learning outcomes, we use a student-response system where the students answer multiple-choice questions by using their own mobile device. Different methods can be used, and we have found peer instruction the most effective (Mazur, 1997). It gives the students the opportunity to make up their own mind and prepare for the group discussion that follows. As a teacher, we have found that in the following planar discussion it is much easier to ask a question to a group than to individual students.

3. PRESENTATION PLAN

We will show examples of student-active teaching forms from different innovative learning spaces, where technology is used as a tool to increase the joint focus in collaborative learning.

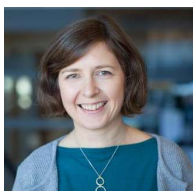
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