



Faculty of Science & Technology invites you to

Teaching & Education Day, August 22 2018

Teaching & Education Day vänder sig till alla anställda vid fakulteten som är intresserade av att vara med och utveckla undervisningen på våra kurser och program. Seminarier och andra presentationer kommer att hållas på engelska - programmet nedan presenteras därför enbart på engelska.

Welcome to the 4th Teaching & Education Day!

Seminars and introductory presentations will be held in English. The conference is free of charge and open to everyone at the faculty interested in continued development of our courses and programs. The program will start at 08.30 and ends at 16.10. Coffee and lunch will be served.

When? Wednesday 22 August, 08.30-16.10

Where? Sliperiet, Umeå Arts Campus

Programme

08.30-08.40	WELCOME	
08.40-09.40	KEYNOTE 1	<i>Maja Elmgren, Uppsala University</i>
09.40-10.00	KEYNOTE 2, INTRO	<i>Kristina Edström, KTH</i>
10.00-10.30	FIKA	
10.30-12.00	PARALLEL WORKSHOPS W1 (CHOOSE 1 OF 4)	
12.00-13.00	LUNCH	
13.00-14.30	PARALLEL WORKSHOPS W2 (CHOOSE 1 OF 4)	
14.20-15.00	FIKA	
15.00-16.00	KEYNOTE 2	<i>Kristina Edström, KTH</i>
16.00-16.10	SUMMARY	<i>Kristin Palmqvist, EMG</i>

Workshops to choose from:

W1:

- Supplemental Instruction
- Digital tools
- Who do you want to recruit?
- Wicked problems in engineering

Lena Kallin Westin, Marie Nordström (CS)
Karolina Broman, Dan Johnels (NMD, Chemistry)
Maria Berge (NMD)
Johanna Lönngren (NMD)

W2:

- Quality Enhancement
- Scientific writing
- Using amanuensis in teaching
- One-day-one-problem

Fredrik Georgsson (Dean's office)
Kristin Palmqvist, Christian Bigler (EMG)
Bent Christensen (EMG)
Agneta Bränberg, Per Andersson, Annika Moström (UPL, TFE)



Keynote and workshops – brief descriptions

• **Keynote: Towards a community of scholarly practice**

(Maja Elmgren)

If we want to improve student learning, we need to think as researchers also when it comes to teaching, which means to build teaching practice on theories and empirical results, to investigate the outcomes of these actions, and to communicate in a way that enables peers to discuss and criticize.

This presentation will explore some of the important results from discipline-based education research and how these can be put into reflective practice. In this effort we need to discuss educational choices and student learning, not just with colleagues, but also with our students.

They need to become intentional learners; students with good metacognitive awareness and control can reflect on their learning and thereby improve it. Furthermore, pedagogical knowledge enables students to be constructive change agents, contributing to a community of scholarly practice, in which we all learn from each other.

• **W1: Supplemental Instruction – academic support model**

(Lena Kallin Westin, Marie Nordström)

Supplemental Instruction (SI) is a nontraditional form of tutoring that focuses on collaboration, group study, and interaction for assisting students in undertaking “traditionally difficult” courses.

During this workshop, we introduce SI and exemplify how planning and implementation of the SI-program can be done. Student results are shown from the eight projects conducted at the Department of Computing Science.

• **W1: Digital tools – how to use flipped teaching and Virtual Reality to improve students' learning and interest** (Karolina Broman, Dan Johnels)

In this workshop we will present how we have worked together to develop a course in organic chemistry (5KE011). Two years ago, the course in organic chemistry was changed from conventional teaching into a flipped learning approach. Flipped learning approaches have emerged since the beginning of the 21st century to make students' learning environments more active and thereby improve learning outcomes as well as student engagement.

The “flipping” implies that activities in class and at home are shifted, i.e. lectures are moved from university lecture halls to something students do at home, and where problem solving and “homework” is done at university lessons. We will present results on students' affective and cognitive responses, as well as discuss the implementation of the approach. You will also be able to work together on your own courses to explore how they might be changed into flipped teaching.

Moreover, we have added a workshop for the students using Virtual Reality (VR) to practice spatial thinking, i.e., the move between 2D and 3D. This competence is important when studying atoms, molecules and chemical reactions. We will present how the students perceived the use of VR as well as giving you the opportunity to try this digital tool.

• **W1: Who do you want to recruit? A critical perspective on university websites**

(Maria Berge)

It is widely argued that higher education needs to change in order to attract new groups of students and provide students with knowledge appropriate for the future society. In this workshop we will focus on how we produce different possible ‘identity positions’ for our students. More specifically, we will discuss and investigate how we represent our different education programmes at Umeå University, with current websites as a starting point.

• **W1: Wicked Problems in Engineering Education**

(Johanna Lönngren)

Real-world engineering problems are typically complex, ill-structured and ill-defined. Also called “wicked problems”, these kinds of problems lack definite problem descriptions and “correct” solutions. Wicked problems pose serious problems for engineering students and educators. Unfortunately, engineering educators often do not have access to the resources they need to adequately prepare their students to address wicked problems.

In this workshop, we will start to address this lack of resources by collaboratively 1. exploring the characteristics of wicked problems, 2. identifying examples of wicked problems that are relevant to the participants'

areas of engineering (education), 3. discussing what engineering students need to learn to be able to address wicked problems, and 4. developing and discussing outlines of problem descriptions that participants later can use in their teaching. All activities are based on recent, empirical research on wicked problems in engineering education.

• **W2: Quality Enhancement using Critical Friends**

(Fredrik Georgsson)

Having the luxury of getting good suggestions about ones teaching activity from friends is something that few can enjoy. In this workshop a structured way of doing this is shown and hands on experience of the procedure is given.

The method is based on three steps. First a self-evaluation is carried out. Based on the results of the self-evaluation a suitable partner is appointed (step two). In step three the appointed partners advise each other on good practice in teaching activities. The trick is to pair the partners so that their respective strengths complement each other. How this can be done is shown during the workshop.

• **W2: Scientific writing**

(Kicki Palmqvist, Christian Bigler)

On advanced level courses the students at EMG are trained in scientific writing in various ways. We will present two examples on this and discuss when, how and whether it is a successful approach for learning to write a scientific text.

The first example is from a master level course in ecology where the students write a manuscript for a scientific journal based on a field project that they have planned and performed in smaller groups. The other is from a master level course in environmental science where the final examination is based on an existing data set, which the students have to process into an extended conference abstract using a strict scientific format. After a brief presentation of these examples there will be time for discussing these with us followed by a workshop where you can present your own experiences from similar teaching and learning and/or start to consider whether it would be possible/feasible to include scientific writing modules in any of your own courses.

• **W2: Increasing teaching quality with amanuensis - is that a good idea?**

(Bent Christensen)

Broader recruitment bases, decreasing per capita and absolute student economic allocations, increasing costs for staff and rent, and for some subjects, indications of less prior knowledge in beginner students are commonly discussed as obstacles for keeping a high quality of university level teaching.

However, national quality goals for exams have not changed over time, so we have to develop efficient and low cost teaching solutions in order to keep the required examination quality of our students. There are obviously many different ways of doing this. The one in focus here is the use of amanuensis in teaching. In this workshop we will present a number of actual amanuensis activities that we have been involved in. We will then in smaller groups proceed to discuss potential pros and cons of including amanuensis in teaching, and finish off with some conclusions.

• **W2: One-day-one-problem**

(Agneta Bränberg, Annika Moström, Per Andersson)

Student-active working methods, is that possible in only one day? In this workshop you will be presented to the concept of one-day-one-problem. Using this model you and your colleagues may work out your own one-day-one-problems. Our goal is that after this workshop you cannot resist trying.