Title: Kollegiala tvärgrupper – en modell för insamling och spridande av kunskaper, exempel och idéer

Keywords: Peer learning, Teaching and learning in higher education

Presentation format: Poster

Authors:

Per Berglund[1] and Viggo Kann[2]

[1]KTH, Industriell Bioteknologi
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Abstract

Bakgrund och syfte

Programansvarigas nätverk, studierektorsnätverket och PriU-grupperna är exempel på kollegiala tvärgrupper på KTH. Vi presenterar dessa grupper, analyserar dem ur ett kollegialitetsperspektiv och försöker förstå varför grupperna är uppskattade av deltagarna och värdefulla för KTH. Med denna poster vill vi visa hur kollegiala tvärgrupper kan användas för att samla in och sprida kunskaper och exempel samt fånga upp idéer.

Kollegialitet handlar inte bara om ledarskap utan är också ett pågående prövande och kritiskt samtal som ofta liknas vid seminariet och som innebär uppskattning av kollegan som en specialist som man kan tala med, konsultera, kritisera och få kritik av [Sahlin & Eriksson-Zetterquist 2016]. Som Bo Sundqvist uttrycker det: *När man söker en lösning på ett gemensamt problem samtalar man och lyssnar på varandras argument.* [Sundqvist 2010].

Precis detta händer i KTH:s kollegiala tvärgrupper som går på tvärs mot organisationsgränser och för PriU-grupperna också på tvärs över roller.

Vid universitet och college i nordamerika finns ofta fakultetskommittéer, dels standing committees, dels mer tillfälliga ad-hoc committees, för olika frågor. Det förväntas att varje lärare deltar i arbetet i någon kommitté. Dessa är alltså kollegiala tvärgrupper som används i det kollegiala arbetet och i vissa fall också i den kollegiala styrningen [Locke et al 2011].

Utfört/pågående arbete

År 2012 startades programansvarigas nätverk, PA-nätverket, efter att den interna utbildningsutvärderingen EAE 2011 konstaterat att uppdraget som programansvarig var för ensamt. Alla programansvariga på grundnivå och avancerad nivå, cirka 110 stycken, är medlemmar i nätverket som träffas en gång i månaden under terminstid. Träffarna brukar inledas med en kort presentation som följs

av gruppdiskussioner. Studierektorsnätverket bildades i december 2017 och har samma upplägg som PA-nätverket. Det finns omkring 50 studierektorer på KTH som alla bjuds in till nätverket.

Hösten 2016 hölls den första storträffen för alla utbildningsledare på KTH. Sedan dess har en storträff hållits varje termin. Nära 100 personer har deltagit varje gång. Vid den första storträffen utsågs ett dussin områden till prioriterade frågor för utbildningen. Dessa frågor diskuterades under träffen och deltagarna fick anmäla intresse för två prioriterade frågor var. Detta var starten till PriU-grupperna, som är kollegiala tvärgrupper som träffas och helt förutsättningslöst diskuterar en prioriterad fråga i varje grupp.
PriU-gruppsmedlemmarna utbyter kunskaper, grupperna genererar idéer och förslag och storträffarna används för att dels förmedla dessa vidare och dels få in ännu fler idéer. Prodekanus och utbildningsutskottet samlar in idéerna och ger varje år återkoppling till grupperna.

I varje PriU-grupp finns också en medlem i utbildningsutskottet. På dessa sätt kan gruppernas arbete tas tillvara av KTH:s ledning och riktas åt det håll där behovet är störst. Vid storträffarna finns också möjlighet att starta nya PriU-grupper för nya frågor.
Storträffen och PriU-grupperna lever därför i symbios – båda behöver och stöder varandra.
För att ytterligare fördjupa den kollegiala medverkan öppnade vi i april 2018 PriU-grupperna för all intresserad personal [Gummesson 2018].

Resultat/observationer/vad vi lärt oss

För att ta reda på vad ledare på KTH och vad gruppdeltagare tycker om värdet av kollegiala tvärgrupper har vi frågat ett antal skolchefer, grundutbildningsansvariga och deltagarna i studierektorsnätverket.

Några ledarsvar: *"PriU-grupperna är bra för kollegiekänslan - Vi jobbar med detta tillsammans!", ”En bra ’botten-upp’-modell för kvalitetsarbete där alla är välkomna att jobba och som då också skär igenom den hierarkiska strukturen GA-PA-lärare”.*
På frågan ”*Om du har deltagit i studierektorsnätverket,vad tycker du har varit givande?*” svarade 11 av 13 studierektorer: att få träffa och prata med andra studierektorer, att få information om och diskutera studierektorsspecifika frågor samt att få information om aktuella ämnen.

Budskap

Kollegiala tvärgrupper är lärande både för den individuella deltagaren och organisationen. De ersätter inte den formella kollegiala fakultetsorganisationen på KTH, utan utgör ett mycket viktigt komplement för förankring och inhämtande av goda exempel och nya frågor av stor vikt för utbildningsutvecklingen på KTH. Arbetet med att stödja kollegiala tvärgrupper på KTH bör absolut fortsätta.

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Title: Performing Queer Phenomenology in First-year Architecture Education - Encouraging Meaningful Learning through the Critical Engagement of Subjectivities

Keywords: First-year experience in higher education, Pedagogical teaching tools, Project-based learning

Presentation format: Presentation

Authors:

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Abstract

Performing Queer Phenomenology in First-year Architecture Education - Encouraging Meaningful Learning through the Critical Engagement of Subjectivities

Background and purpose

The five-year foundational architecture education at KTH is grounded in project-based pedagogy defined by “learning by doing” methodologies. Projects are carried out within courses that belong to a category called “design studios”. These courses generally accept 18 - 25 students and are taught by 2-4 teachers who have backgrounds in practice and / or research. The design studios provide the site for the testing and synthesizing of knowledge presented through lectures and seminars in other courses. Project-based education within a design studio organization has been the central pedagogical model for educating architects in Europe for more than a century.

Architects do not build buildings. Instead, we develop representational material for the communication of ideas, methods, materials and constructions. Architecture education today includes little or no work in “full-scale”. In other words, very rarely are the students encouraged to test their representations of buildings outside of the virtual space of the traditional representation tools - drawings and models.

The architecture profession in Sweden is and has always been dominated by a male, white, heteronormative workforce, particularly in the higher, decision-making positions. Arguably, this has resulted in a built environment as well as an academic discourse on architecture adapted to male, white, heteronormative sensibilities and physique.

Our intended outcome of introducing queer feminist methodologies by the encouragement of a gendered, positioned and situated perspective on what is designed where and by whom, has been to

develop design studio to promote deep learning through the forming of a critical project where the student's own subjectivity is engaged and studied as the student develops analytic skills through the shifting of perspectives.

Work done/work in progress

Over the past 4 years, the authors of this abstract have developed the second design studio course in the first year of architecture education at KTH. Drawing on ideas and methods defined by Sara Ahmed in her essay "Towards a Queer Phenomenology", the exercises of this design studio guide the student through a design project where traditional tools of representation are complemented by performing and testing architectures in full scale to engage a gendered and situated perspective. While traditional phenomenology highlights the relevance of experience, Ahmed lifts the importance of the situated subject within a phenomenological framework. The design studio instructs the student to develop architectures for herself to use and experience. Design decisions are not to be based on standards and existing examples (normative framework). Instead, the body and preferences of the individual student (embodied and specific framework) constitute the ground on which to build decisions and arguments.

Results/observations/lessons learned

Generally students are excited about how their own response to issues addressed by the course can be implemented. We know from central KTH ABE course evaluations that our students gave higher evaluations in an average of five out of six questions relative to other design studios in the same course, especially in questions concerning the student's sense of agency to control their own education, learning from others and the overall sense of inclusiveness in the studio environment. From individual conversations carried out with all students, we know that this is often attributed to the specific aspects of our studio structure that build on queer feminist theory, explicitly the assignments that are performative and require an examination of their own individual coded ways of seeing.

Take-home message

Introducing queer feminist perspectives and methodologies in foundational architecture education is relevant not only in regards to the pertinence of this topic to architectural discourse at large, but also because it promotes a more inclusive and engaged learning environment. Judging by the quality of the students' work and reflective presentations - as evaluated by ourselves and several colleagues - shifting tools and perspectives that engage a contemporary critical discourse has promoted meaningful learning.

Title: Promoting social change and sustainability through course design – implementing a pedagogy of hope, transformative learning and action-taking

Keywords: Course development, Sustainable development , Teaching and learning in higher education

Presentation format: Poster

Authors:

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[1]KTH, Dept. Of Urban Planning And Environment

Abstract

Background and purpose

Universities have an important role to play in relation to a transition towards a more sustainable future. Individuals studying today are the future decision makers, professionals and consumers.

This study is trying to address the question concerning the possibility of promoting social change and sustainable development through course design. Education for sustainable development is important in relation to the needed transition towards a more sustainable society. More importantly, we need to incorporate different pedagogical approaches and forms of teachings activities with the potential of contributing to this transition into all forms of education.

This study focus on presenting experience from an attempt to incorporate new pedagogical approaches and thus teaching activities aiming at promoting a sense of hope, more profound change of mindsets and action-taking. Elements that could be implemented not only within education for sustainable development but into many different curriculum areas.

The study focus on the course “Political Economy for Environmental Planners” (AG2142, 7,5 hp), given as an second-cycle course at KTH (Royal Institute of Technology). The students are mainly master program students, e.g. from Environmental Engineering and Sustainable Infrastructure (TMHIM), and exchange students. In general the students represent different geographical contexts and educational backgrounds.

Methods for collecting data primarily consist of action research (autumn 2016, 2017 and 2018), course evaluations incl. meetings with course representatives and a focus group interview with students (spring 2017). Action research is a method where professionals, e.g. teachers, can be researching their own practice (Asgaard Nielsen & Svensson eds. 2006). While producing new knowledge about the practice together with the participants of this practice, the researcher is also focused on changing the studied practice. In addition, document studies have been carried through to support the implemented teaching activities and the design of questions in the course evaluation (2016 and 2017).

Work done

The teachings activities have been successively developed, implemented and evaluated during three course offerings, during the years 2016-2018. As a general approach we have made room for as many discussions as possible, both during lecture time and seminars. The ambition has been that all students should feel comfortable expressing their thoughts. Thus, we work with creating an open and welcoming classroom atmosphere. Another focus is on presenting the students with good initiatives, showing actions taken concerning for example attempts to develop and implement alternative solutions to the current economic system. Yet another teaching activity is a group assignment focusing on envisioning alternative futures. The students work with envisioning two different types of alternative futures (20 years into the future): one status quo and one preferred future. They also have to describe some steps that need to be taken in order to move society in the direction of their preferred future. As background material the students had been given different texts on hope and despair and a text presenting different futures scenarios.

Results

The results show that the implemented course design: promoted and enhanced the students' awareness and thinking of sustainability; enhanced the students' personal commitment and action taking in relation to sustainability; and increased the students' hope concerning the possibility of creating an alternative, more sustainable future.

Take-home message

It is both important and possible to work explicitly with promoting students' hope concerning the possibility of creating an alternative, more sustainable future. In order for the students to become change agents they have to have this active and positive hope. This kind of pedagogy can be implemented not only within education for sustainable development but into many different curriculum areas.

Title: Putting Constructive Alignment to Work: A Hands-on Experience with a First-Year Programming Course

Keywords: Course development, Peer learning, Student engagement and motivation

Presentation format: Presentation

Authors:

Musard Balliu[1]

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Abstract

This abstract discusses our experience with using Constructive Alignment (CA) for developing a Programming course for first-year Computer Science and Engineering students over a three-year period.

Background and purpose:

The project seeks to provide a better alignment between different course activities, including lectures, lab sessions and home assignments, maximizing the fulfillment of learning objectives. To this end, we investigate different activities that allow students engage in interaction with each other and leverage elements of active learning [2] to achieve the course objectives. The approach enables teachers receive early feedback on possible issues with the course and intervene in a timely manner. The pedagogical idea is based on the theory of Constructive Alignment [1,3], which provides a principled way of aligning the learning outcomes, teaching and learning activities, and formal examination.

A primer on CA:

In essence, constructivism states that the best way of creating knowledge is by means of activities that students engage in, rather than by rigid knowledge transfer from teacher to student. The teacher's role is seen as a facilitator that contributes to the teaching activities creating an environment that enables students engage in deep learning. To this end, CA provides an aligned system of instruction, a web of consistency, where students are entrapped to engage in appropriate learning activities. By putting the student activities on the spotlight, the teacher has to be clear about the learning objectives, which drive teaching and learning activities, as well as feedback and assessment methods.

Work done:

The main goal of this project is to apply the theory of constructive alignment at the letter, providing a student-oriented learning environment and increasing the qualitative and quantitative indicators of the course. To this end, we set out to achieve the following goals:

- Enhance students' experience by introducing elements of active learning
- Help teachers to identify possible issues and get feedback early on
- Improve the alignment of course activities towards the fulfillment of learning objectives
- Increase cooperation between students and train their presentation skills
- Make the learning experience more productive, interactive and fun
- Increase the course quality by improving on quantitative and quantitative indicators

We have applied the theory of CA to a first-year undergraduate course for three consecutive years. The following activities and factors have played a key role in making the programming course successful: (a) student motivation and enthusiasm; (b) anonymous online quizzes to monitor progress; (c) training of problem solving skills; (d) quick recaps at the lecture's start; (e) alignment of labs with graded assignments; (f) enforcement of work-in-group and presentations, and (g) care on threshold concepts.

Results/observations/lessons learned:

The analysis of student evaluations and examination results reveals that CA produces excellent results. 92% of the students evaluated the course as good and excellent, while 70% of the students managed to complete the course after the first examination. We asked specific questions about the proposed changes and activities and they were highly appreciated by over 85% of the students. Students felt enthusiastic about all course activities . This can be best described with students' own words:

-"The teaching was very interactive and easy to follow and keep up with. Everything was explained at a level fit for both beginners and people with some experience. It was by far the most fun and fulfilling course I've ever had."

-"The "we love programming" approach is really inspiring. Very good to have one lecture and repeat it next time."

-"The Kahoot questionnaires were quite a nice start of the wednesday lectures as well as a fun way to test the progress. "

Take-home message:

CA is an excellent framework to successful teaching.

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Title: Recently hired tenure-track faculty and Swedish

Keywords: internationalization

Presentation format: Presentation

Stage of the project: Mid stage

Authors:

Rebecca Hincks[1]

[1]ITM , Institutionen För Lärande

Abstract

Background and purpose

The academic job market is becoming increasingly globalized. At KTH, English has become the working language in many environments, and transnationals can no longer rely on natural exposure to Swedish to help their learning process. Furthermore, for many possible reasons, some faculty may make conscious decisions not to spend time and effort learning the language. We have reached a point where departments are finding it difficult to staff courses that should be given in Swedish. Other challenges include a shrinking pool of faculty who can take on leadership positions, and emerging communication barriers between the university's administration and faculty. Nor can non-Swedish speaking transnational faculty perform their vital mission of outreach to the community without translation services.

It has been perceived by some as a solution to set a time period within which the transnational should be able to perform functions, for example teach, in the local language. Often that time period is two years. From a language teacher's perspective, this seems like an unreasonably high expectation, especially given that new tenure-track faculty are likely to be in the phase of life where they are building both their research careers and their families. They have in fact little or no free time, and yet it is in their free time that they are to find the hundreds of hours necessary to develop their Swedish to an advanced level.

The purpose of the work reported here was to find out how widespread the two-year expectation is in Northern Europe and at KTH. I was also interested in assessing what kind of progress KTH tenure-track faculty were making towards becoming proficient in Swedish, and what kind of institutional support they were receiving.

Work done

In spring 2018 I conducted a brief review of job advertisements at top northern European universities for evidence that other employers also had these expectations. I also collected responses from 75 KTH colleagues who had been hired to tenure-track positions in the last five years, asking them about their knowledge of Swedish and what institutional expectations and support they were experiencing regarding learning the language if they were not already fluent.

Results/Lessons learned

In brief, I found that across the Nordic region there is a widespread expectation that newly hired faculty should be able to teach in the local language after two years. About one third of new tenure-track faculty at KTH speak Swedish when hired. Most transnational KTH hires were not hired with expectations that they learn Swedish in a short period of time, but at present, a quarter of them are expected to learn Swedish to a high level. They are largely expected to do their learning in their free time and are not making much progress.

Take-home message

Across the Nordic region there is concern about the implications of the fact that an increasing share of university employees are not proficient in the local language (Gregersen et al. 2018). However, placing demands on faculty and then not giving them a reasonable chance of meeting them is not a reasonable way forward. Best practice for adult language learning would indicate that at least a thousand hours of study are required for most adults to reach the skills necessary for professional purposes. If departments seriously expect transnational faculty to teach in Swedish within two years, they should allow the individual the equivalent of six months of full-time study of the language. A more reasonable time frame for learning high-proficiency Swedish would be five or six years. Language-learning plans should be written for all new hires to tenure-track positions, and followed up at regular intervals.

Reference

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Title: Stackable Master Concept in an International Setting

Keywords: Digitalization of education, internationalization, Teaching and learning in higher education

Presentation format: Presentation

Stage of the project: Mid stage

Authors:

Torsten Fransson[1]

[1]EIT Innoenergy

Abstract

Stackable Master Concept in an International Setting

Torsten Fransson

Senior Educational Strategy Advisor, EIT InnoEnergy

Background and purpose:

One of the goals in establishing the European Institute of Innovation and Technology (EIT) was to be instrumental towards a “modernization” of the higher education in Europe. KTH is a major player in the EIT, is a member of several of the EIT “Knowledge and Innovation Communities” and is as such involved in several forward-looking educational initiatives.

The EIT InnoEnergy invesitigates several different such educational concepts, among this a “Challenge-Based Digital Stackable Master level” concept in which it can be possible for learners to receive education from teachers at different universities while still being in a “program-mode”, both with a completely pre-determined learning path but also with the possibilities for more individual learning. The learning units to be used in the program are stored in a repository and are accessible by learners throughout the program such that the individual learners can take different units at different chronological times, and independent upon their geographical position. Each learning unit is a building block in the repository and consists of the Intended Learning Outcomes (ILOs), Grading and Assessment Criteria, questions corresponding to the ILOs and some recommended knowledge material where learners can seek information (Fig 1). These individual learning units are small, re-usable units developed by instructors from different universities and/or other organizations.

In this concept the learners will be presented with a team-challenge early in the program and then gradually build up the knowledge, skills and competences towards solving the challenge. The learners in a specific team shall ensure that they combined have the competences to solve the challenge, but they do not all have to go equally deep into the different parts of the program. Some students will have a deep knowledge in some area and an overview in some other areas, whereas for other students it will be the inverse. The individual learners will as such build up the competencies in small blocks and receive a “micro-credential”, with individual grading, for each unit passed. The overall system is shown in Fig 2.

Fig. 1: Overall structure of the individual learning units in the repository

Fig. 2: Overall structure of the “Stackable Master concept”

Work done/work in progress

The concept is piloted through the subject energy storage. At the time of writing this abstract there is 146 learning units (in draft form) in the repository, corresponding to around 450 Learning Hours[1]. These units cover various aspects of the energy storage discipline, including various “soft skills” as well as the innovation and entrepreneurial perspective that is a requirement for the EIT Label.

Results/observations/lessons learned

The results indicate that there is a significant interest from individual teachers at different universities to exchange learning material and to commonly aim to develop international digital online programs in which students from different cultures can work together towards solving societal challenges of different kind. The pilot study “energy storage” includes instructors from EIT Climate, EIT Digital, EIT InnoEnergy and EIT Raw Materials, as well as also persons from outside these organizations, which will allow to later (when more material has been collected) create new approaches to multi-disciplinary and may create new types of international programs.

Take-home message

It is possible to create international academic (presently non-degree awarding) study programs with content from a number of teachers in different cultures, and to offer this content in the form of small learning units (in the size of learning hours corresponding to [if ECTS would have been given which presently is not the case] 0.1 ECTS). Such international collaborations will open new opportunities to create educational programs between universities/organizations and will allow for “remote students” to receive a valuable education even if they cannot be on-campus students. The re-use of the learning units is another important factor as it will allow teachers to collaborate on educational matters in completely new, modern ways that so far is not extremely spread.

[1] It is estimated that there will be around 200 learning units by the end of the year

Title: Structured Incentive Learning: A Pedagogical Toolbox for Improved Teaching and Learning

Keywords: Course development, Pedagogical teaching tools, Student engagement and motivation, Student learning, Teaching and learning in higher education

Presentation format: Presentation

Authors:

David Broman[1]

[1]KTH, Computer Science

Abstract

1. Background and purpose

I was invited/nominated by the SoTL organizers to submit a proposal for a talk to SoTL 2019. The background is that I was nominated by students from the CINTE program because of the first-year course I teach in their program. Previously, I was awarded teacher of the year at KTH in 2017. In this talk, I will share some of my experiences and lessons learned, which I hope can be useful to other teachers at KTH.

2. Work done/work in progress

Teaching is not about transferring knowledge magically to students using one-way communication. As teachers, we can help students learn by giving guidance and providing learning activities that enable students to learn from their own knowledge framework. It is also vital that courses fit together, that is, that learning objectives, teaching activities, and assessments are aligned. These are all great and well-established theories about learning, but how do we do this in practice?

In this talk, I will provide advice, tools, and lessons learned based on my experience of teaching courses at Bachelor's level, Master's level, and doctoral level. I will talk about key components to what can be called structured incentive learning. In this approach, the structure of a course plays a key role and the student's incentive for learning is in focus. As a teacher, my hope is that you (as another teacher) will learn something new, be provoked, or just get some new insights and inspiration.

3. Results/observations/lessons learned

The presentation will highlight and discuss some important lessons learned concerning structure and incentives in education. Key elements concerning structure are i) constructive alignment, ii) course information, and iii) recruiting and teaching the teaching assistants. Key elements for incentives are i) incentives for listening, ii) incentives to practice, and iii) incentives for feedback.

4. Take-home message

There are many components that are important for student learning. In this talk, I will argue that structure and incentives are two key components.

Title: Studenters stress studeras och skärskådas

Keywords: Peer learning, Student learning

Presentation format: Poster

Authors:

Viggo Kann[1] and Emma Lundkvist[2]

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Abstract

Bakgrund och syfte

Stress och psykisk ohälsa är vanligt hos unga människor och inte minst hos universitetsstudenter [Söderberg m fl 2017]. Det är till och med en större andel studenter på universitet och högskola som lider av psykisk ohälsa än för yrkesarbetande i samma ålder [Folkhälsomyndigheten 2018].

Universitet har ett ansvar för studenternas fysiska och psykiska hälsa enligt Högskoleförordningen [2009]:

"*Högskolorna ska ansvara för att studenterna har tillgång till hälsovård, särskilt förebyggande hälsovård som har till ändamål att främja studenternas fysiska och psykiska hälsa.*"

Därför är det angeläget att undersöka hur stressade våra studenter känner sig och vilka stressfaktorer studenterna upplever, så vi kan göra ett försök att minska problemen med stress och ohälsa genom att medvetandegöra studenterna om hur stressade studenter i allmänhet är och därigenom få studenterna att intresserade av att sätta sig in i hur man kan hantera och minska dessa problem.

Utfört/pågående arbete

Under vårterminen 2017 skickade Farmaceutiska fakulteten vid Uppsala universitet ut en enkät om stress till samtliga studenter på apotekar- och receptarieprogrammen (911 studenter). Inspirerat av denna enkät gjordes vårterminen 2018 en motsvarande enkät för studenter i årskurs 1-3 på civilingenjörsutbildningen i datateknik vid KTH (500 studenter). Följande frågor var gemensamma för båda enkäterna:

Hur ofta deltar du i den schemalagda undervisningen?
Om du ibland inte deltar i schemalagda aktiviteter, vad är anledningen/anledningarna till att du inte deltar?

Hur ofta känner du dig stressad över dina studier?
Om du känner dig stressad över dina studier, vad anser du att det beror på?
I vilken grad anser du att stress är ett problem/hinder för dig i dina studier?

Vid farmaceutiska fakulteten i Uppsala anordnades i våras en workshop för lärare och studenter där frågan diskuterades. Utifrån detta togs en rad förslag fram som skickades till grundutbildningskommittén. Fakulteten jobbar vidare med frågan på flera fronter, exempelvis frågor kring informationsflöde och introduktion till universitetsstudier.

I november 2018 genomfördes inom den programsammanhållande kursen för datateknikprogrammet på KTH [Kann och Högfeldt 2017] ett reflektionsseminarium med temat ergonomi och psykisk hälsa. Inför seminariet fick studenterna förbereda sig genom att bland annat läsa Folkhälsomyndighetens rapport Psykisk ohälsa bland högskole- och universitetsstudenter kan förebyggas [Folkhälsomyndigheten 2018], resultaten av ovanstående stressenkäter vid Uppsala universitet och KTH samt titta på videon *Så minskar du studiestressen – här kan du få hjälp* [SVT 2018]. Varje student fick också skriva ett reflektionsdokument och bland annat reflektera över följande frågor:

Vad upplever du är mest stressande och påfrestande i dina studier på KTH? Vad gör du för att hantera detta? Finns det ytterligare saker som du skulle kunna införa i ditt arbetsflöde/veckoschema för att minska negativ stress och psykisk ohälsa?

Studenterna fick läsa och kommentera sex kamraters reflektioner och därefter diskutera frågorna vid det en timme långa reflektionsseminariet.

Resultat/observationer/vad vi lärt oss

533 Uppsalastudenter och 495 KTH-studenter besvarade enkäten. Nästan 30 procent av KTH-studenterna och över hälften av Uppsalastudenterna känner sig stressade över studierna i stort sett varje dag. Största anledningarna till stress hos båda grupperna är nervositet inför tentorna och egna krav på höga studieresultat. För KTH-studenterna ligger prioritering av fritidsaktiviteter och brist på motivation för studierna också högt. För Uppsalastudenterna är för höga kunskapsmål och krav samt att ligga efter i studierna två vanliga anledningar till stress.

För en fjärdedel av KTH-studenterna och för nästan hälften av Uppsalastudenterna i studien anses stress i hög grad vara ett hinder för studierna.

Vi kan alltså notera att det är stressigt att vara student. Programansvariga och lärare behöver bli medvetna om detta för att inte oavsiktligt förvärra situationen.

Budskap

Många studenter är drabbade av stress, vilket påverkar deras studier menligt. Det här är frågor som behöver lyftas och arbetas vidare med på våra utbildningar.

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Title: Teaching assistants' experience of their roles and responsibilities in relation to tutorials

Keywords: Teaching and learning in higher education

Presentation format: Presentation

Stage of the project: Mid stage

Authors:

Emma Riese[1] and Viggo Kann[1]

[1]EECS, TCS

Abstract

1. Background and purpose

Teaching Assistants (TAs) have shown to be important for student success in science, technology, engineering and mathematics (STEM) [1]. However, it has also been stated that TAs are not always properly prepared for their task as a teacher and lack training [1, 2]. A previous study concluded that training was perceived as an import factor by the TAs themselves in the context of a first-year engineering course [3]. We wanted to gain a better understanding of how TAs in computer science courses at KTH experience their roles and see if we as faculty and course coordinators could further assist them in their development as teachers.

2. Work done/work in progress

In 2017/2018, an initial study was conducted that explored how TAs in introductory computer science courses experienced their roles and responsibilities in relation to computer lab sessions [4]. The interviewed TAs were also asked about their experiences of tutorials (*övningar*), but since the initial focus was lab sessions, the data regarding tutorials was excluded in [4] but is presented here. The data consists of interview answers from six respondents, who had been working as TAs between 2 and 6 years. Since then, we have also continued to work with TAs by offering workshops to TAs and course coordinators and collecting more data through surveys.

3. Results/observations/lessons learned

The TAs had in a similar way as in the lab sessions [3] experienced a lack of training and instructions regarding the tutorials. They stated that the material they were typically given was not enough for the

whole tutorial and they would have to come up with material by themselves. The exercises they were given to go through did not always come with a key and TAs could be a bit unsure if their own solutions were correct. The TAs had been given few or none pedagogical tools on how to explain solutions and material to the students. Some TAs did also state that they actually preferred to make examples/pick examples on their own, since the ones they were given could be a bit unclear and also given to them too late (at which point they already made own examples). The TAs expressed that even though they knew the other TAs in the course, they would all prepare and come up with examples on their own and not share them with other TAs. None of the interviewed TAs had visited any other tutorials and therefore had little knowledge about how other TAs plan and conduct their tutorials. Even if they wanted to do that, they felt it might be tricky both because they are typically scheduled at the same time, but also because they felt it might make their coworker uncomfortable. It was also very rare that the course coordinator checked in on them during the tutorials and they were almost always the only teacher in the classroom.

4. Take-home message

We recommend that TAs should be offered initial training and support throughout the courses they teach. As part of that training, we suggest that the TAs should be encouraged to prepare and evaluate the tutorials together and to visit each other's tutorials for inspiration and knowledge sharing. For the TAs to be able to grow as teachers, they should also be given the opportunity to access the students' evaluations and discuss their performances with the course coordinator.

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Title: Teaching Gender Equality, Diversity and Equal Treatment in a Mechanical Engineering Program

Keywords: Course development, First-year experience in higher education, Diversity in the classroom

Presentation format: Presentation

Stage of the project: Mid stage

Authors:

Anders Söderberg[1] and Martin Edin Grimheden[1]

[1]ITM, Machine Design

Abstract

Background and purpose

Under Swedish law, higher education institutes should always promote and take account of gender equality in their activities. The Strategy selected by the Government is “Gender mainstreaming”, meaning that all activities and decision should have a clear gender equality perspective. Since 2016, Universities are responsible for producing plans for how these activities are integrated and part of the Universities ordinary activities.

Work done/work in progress

The Mechanical Engineering program at KTH revised the program syllabus in reaction to the above, and students accepted from August 2016 are now required to “possess good knowledge and expertise in the issues and areas of sustainable development, gender equality, equal opportunities and diversity” to be awarded the engineering degree.

In anticipation of the above, the faculty engaged in extensive development and training activities starting 2014. A number of training conferences for faculty, work and material provided by consultancies and an engagement from a large number of students have resulted in a modified curriculum covering the new learning goals. The new curriculum is in effect starting August 2019 and includes two new courses in the first year.

Results/observations/lessons learned and Take-home message

In the development of the new curriculum, and the new courses, we have tried to utilize a CDIO mindset.

The learning goals relating to gender equality, diversity and equality treatment can be considered similarly as most other learning goals. The topics need to be introduced, taught, trained, practiced and examined. It is advantageous with synergies with similar topics and if the topics are included in projects, theses etc. Also, the learning goals, translated to complementary learning skills, can and must be applied in all other activities in the curriculum where relevant.

During 2018 a study has been performed among all students and faculty in the program. The results from this study will be presented in full at the conference.

VERSION 2 - WORKSHOP ALTERNATIVE

Abstract Workshop SoTL 2019

Background and purpose

Under Swedish law, higher education institutes should always promote and take account of gender equality in their activities. The Strategy selected by the Government is “Gender mainstreaming”, meaning that all activities and decision should have a clear gender equality perspective. Since 2016, Universities are responsible for producing plans for how these activities are integrated and part of the Universities ordinary activities.

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Results/observations/lessons learned

The SoTL workshop aims at gathering experiences and ideas from similar development activities around KTH. It is difficult to change an educational system, further so in an area where in many cases

colleagues have difficulties seeing the relation to existing core technical activities. A fundamental motivational factor for the Mechanical Engineering program to focus on gender equality, diversity and equal treatment is to “train better mechanical engineers”. We do believe that there is a need to explain, discuss, argue and explain again and again why and how these activities and new learning goals will result in “better mechanical engineers”.

Take-home message

At the workshop, we will discuss and argue why the above is necessary. We will give examples of activities we have considered successful, and not so successful, and facilitate a discussion between peers at other degree programs with similar ambitions and experiences.

Concluding the workshop we will also present results from an extensive study performed during 2018 among all students and faculty members of the mechanical engineering program.

Title: Teaching information literacy to first year students using an e-learning module in Canvas

Keywords: Digitalization of education, First-year experience in higher education, Pedagogical teaching tools

Presentation format: Presentation

Stage of the project: Mid stage

Authors:

Maria Unger[1]

[1]KTH Biblioteket

Abstract

Background and purpose

University libraries have a long tradition of teaching information searching, reference management and source criticism (information literacy) to students in higher education. At KTH this instruction has taken the form of hands-on computer lab sessions in smaller groups or traditional lectures, sometimes in combination. In our experience the hands-on sessions are the most effective learning activities but they are time consuming for the library staff and we have no possibility to offer this type of learning activity to all students at KTH. In order to increase our ability to offer hands-on practice to more of the students at KTH we decided to create an introductory course in information searching, reference management and source criticism as an e-learning module in Canvas.

Work done

The Canvas course was created during the spring and summer 2017. We decided that the aim of the Canvas course should be to give the students some immediate use of the results, while simultaneously teaching them information searching, reference management and source criticism. We created a series of tasks that would take the students through the process of finding and evaluating reference material for a project. The students were asked to document their work in a form that they hand in as the final assignment of the Canvas course.

The first students to try out the Canvas material were first year students in biotechnology and chemistry in September 2017. Since then an additional five groups of students have worked through an updated version of the Canvas course in 2018. Until December 2018, nearly 500 students have partaken of this material in connection to projects in other courses.

Observations

The final two questions of the form the students hand in as their assignment were for self-evaluation, “What have you learned?” and feedback, “Is there something you would like to tell us?”. Most students answered the self-evaluation question and nearly all of them judged that they had learned something new. The comments were in free-text form but could be roughly divided into the categories 1) information searching (75%) 2) reference management (36%) and 3) source criticism (52%). Some students wrote that they had learned about two or all of these things.

Fewer students answered the feedback question but the comments were very helpful for course development. Here we got information about such things as broken links, uncertainties in the interpretation of some questions and spelling mistakes as well as conflicts with assignments in other courses and helpful tips for improvement.

Take home message

With a tested and further developed course in Canvas it should be possible to integrate an implementation of the Canvas-module on information literacy in project courses for most programs at KTH.

Title: Teaching Philosophy of Science to Scientist and Engineers

Keywords: Course development, Digitalization of education, Pedagogical teaching tools, Peer learning, Student engagement and motivation

Presentation format: Presentation

Authors:

Till Grüne-Yanoff[1]

[1]KTH, Philosophy

Abstract

My development of the course *Theory and Methodology of Science* (TaMoS) includes new learning tools, digitalization and a strong peer-instruction component. About 1200 2nd and 3rd tier students take TaMoS per year, for many it is mandatory. The challenge was to develop a course in the philosophy of science relevant for science and engineering students; and to teach it in such a way that students without prior philosophical instruction or interest effectively acquired both content and skills, and also experienced this as relevant. For content development see (Grüne-Yanoff 2014), I will concentrate on teaching methods here.

Basic parameters of the course, established before I took over as examiner in 2015, are 11 (non-mandatory) lectures, 4 (mandatory) seminars, an exam that covers the lecture content at 4.5 hp and a project part that expands on lecture content at 3 hp. The course is given in every period, so attendance ranges from 100-400 students per period.

Starting in 2016, teaching strategies for the course were developed along 3 dimensions:

- Self-paced learning through online content provision,

- Active learning through quizzes and tasks that facilitated repetition, application and reflection of content,

- Peer instruction through debate sessions, discussion fora, group assignments and peer commentary.

Online content is provided through 5 video lectures available on CANVAS. The remaining 6 lectures, as well as two flipped classrooms, are offered on campus. Videos were produced originally for a Massive Open Online Course (MOOC), in collaboration with KTH's Media group. Each lecture now consists of 5-7 video clips, each 5-12 min long. About half of video clips were recorded in KTH's studio, the other half in the lecture hall. All video clips went through extensive post-production. Enrolled students can access

all videos during the whole duration of the term.

Active learning is facilitated through quizzes and tasks, incentivized through a bonus point system. Maximum bonus points improve one's exam grade by 3 levels (e.g. E to B), but only if the exam was passed. Campus lectures include a preparation quiz, testing understanding of a pre-assigned text, and a participation quiz, recording engagement with content during the lecture. Video clips end with 2-4 questions per clip, checking concept understanding or encouraging concept application or reflection. About each lecture module, students have to formulate a question of their own, discussed in flipped classrooms. Seminars train application and reflection on concepts and skills through teacher-guided discussions. In the project part, students are asked to apply course content for the purposes of analyzing and criticizing a published scientific article.

To facilitate *peer instruction* students often discuss quizzes with a peer, and record their joint answer in CANVAS. Before each flipped classroom session, students review and rank all submitted questions. In seminars, students engage with their peers views. In the project, students write review comments on peers' submissions, and also participate in the writing of a group essay.

Results of these changes are assessed based on three types of data: grade development, students' evaluations and teachers' feedback. *Online content* was universally praised: students could self-pace their learning, repeat or skip at their own need, and were freed from a demanding schedule. *Active learning* activities received largely positive feedback: students appreciated their improvement in understanding, but also noted the increased demand on their time (including required repeats if they made mistakes) and the occasional misunderstanding due to vague formulations of questions. *Peer instruction* received mixed feedback. While many students appreciated the opportunity to interact with others, some were also critical, pointing out that peer questions and comments often moved the course of track (particularly in a larger group in lectures & flipped classrooms) or worsened quality (where peers weren't properly prepared).

Overall, the pedagogic changes improved the course considerably. To my knowledge, these strategies for a philosophy course at such a large scale have not been implemented before. My experiences show that self-paced, active and peer learning are possible to implement at such a scale.

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Title: Using the Arduino Due for Teaching Digital Signal Processing

Keywords: Digitalization of education, Pedagogical teaching tools, Project-based learning, Student engagement and motivation

Presentation format: Poster

Authors:

Joakim Jaldén[1], Xavier Casas Moreno[2] and Isaac Skog[3]

[1]KTH, Information Science And Engineering
[2]KTH
[3]Linköping University, Dept. Of Electrical Engineering

Abstract

The proliferation of cheap electronics and computer platforms such as the Arduino and Raspberry PI, not to mention the capabilities of modern smartphones, is opening up new possibilities for what type of experiments and laboratory exercises can be done on a budget. In the KTH course EQ2300 Digital Signal Processing (DSP), typically taken at the first year at the MSc level, we have capitalized on this opportunity in the development of new lab activities based on the Arduino platform.

The DSP course at KTH has by tradition been somewhat theoretical in nature but has always had some form of lab component as a learning activity related to implementation, also intended to motivate students by demonstrating the practical applicability of the theory. Traditionally, the lab has used an industry standard DSP development platforms. This setup has two primary shortcomings: 1) the development platforms are relatively expensive, limiting the number of lab kits available; and 2) the professional software integrated development environment (IDE) is involved, and thus have a high barrier to entry that takes time from understanding the fundamental concepts taught in the course. On the contrary, the Arduino platform is cheap, owing to the economy of scale of the massive hobbyist do-it-yourself (DIY) market. Further, rather than a complicated proprietary IDE, the IDE of the Arduino is based on an open source project with roots in the MIT Media Lab Processing project, where the teaching of programming was the main focus.

During the summer of 2017, we created a summer internship where a prior student developed a so-called hardware shield for the Arduino Due, to enable easy interfacing of audio signals with the Arduino Platform. Overall, the shield can easily be manufactured using a printed circuit board manufacturing service, leading to a sub 500 SEK per unit production cost (Arduino included). For evaluation purposes, we built 30 units in the first round. We are now using these for the second time in the DSP course at KTH, we have lent some for test use in another course at KTH, and teachers at Linköping University

have made a second set of cards DSP course in Linköping. Special design considerations were taken to make the platform usable with as little additional equipment as possible, and to reduce the barrier to entry. In the present form, the minimum external equipment required is a sound source, e.g., a smartphone or a laptop computer, a set of headphones, and USB-power. A computer with Windows, MacOS or Linux and a USB-port is needed for programming, but not for just running the lab platform. While the current lab used in the KTH DSP course also utilizes a spectrum analyzer and an oscilloscope, this equipment is not necessary for valuable lab exercises.

With a sub 500 SEK unit production cost, we believe we are in reach of our long-term goal, which is to be able to supply a course of 50-60 student with an individual lab platform during the duration of the course. Doing so will enable both curiosity-driven inquiry and experimentation, as well as continuous learning related to implementation skills for the length of the course, and most importantly without having to rely on a dedicated lab space. One can still include activities that require more expensive equipment and dedicated lab space, but the majority of activities can be done outside of the lab in a way that allows each student to learn and experiment at their own pace. This philosophy is in line with several similar ongoing projects such as, e.g., the lab-in-a-box project at Stanford University or a similar DSP activity at EPFL building on the Nucleo-64 platform. The project is also in line with efforts that aim to introduce lab activates in MOOCs.

For KTH SoTL 2019 we wish to disseminate our though and insights from this initiative, we will share experiences with similar initiatives at KTH, and we will demonstrate the platform an inspire similar initiatives for the future.

This work has previously been presented in the educational track of the 2018 IEEE International Conference on Acoustics, Speech and Signal Processing, Calgary, Alberta, Canada.

Title: Utbildningsledares erfarenheter av förändringsledning för utveckling av ingenjörsutbildningen

Keywords: Sustainable development , Peer learning, Teaching and learning in higher education

Presentation format: Poster

Stage of the project: Mid stage

Authors:

Lena Gumaelius[1], Per Berglund[2], Leif Kari[3], Arnold Pears[1] and Anna-Karin Högfeldt[1]

[1]KTH, Dep Of Learning In Engineering Sciences
[2]KTH, Bioteknik, KTH Management
[3]KTH, Department Of Aeronautical And Vehicle Engineering

Abstract

Utbildningsledares erfarenheter av förändringsledning för utveckling av ingenjörsutbildningen

1. Bakgrund och syfte

Ett flertal större arbeten har varit tongivande för det utvecklingsarbete som genomförts på grundutbildningar vid KTH, såsom CDIO-initiativet (Edström et al, 2009a), KTH:s framtida utbildningar (Edström et al, 2009b), EAE 2011 (Berglund, 2011; Geschwind et al, 2012), MHU-enkät[1], HSV12[2]och HU-integration (Lundqvist & Strömberg, 2017), Programanalyser och genomströmningsprojekt[3].

Grundutbildningens utveckling på KTH leds av ett flertal aktörer med olika ledningsuppdrag. De ledare med närmast kontakt med utbildningarna kan sägas vara programansvariga, grundutbildningsansvariga, studierektorer och utbildningsadministrativt ansvariga. Vidare har studentkårens studeranderepresentanter (CFU:er) direkt anknytning till förändringsledningens genomförande, liksom pedagogiska utvecklare.

Sedan EAE 2011 har en omfattande strukturell utveckling genomförts, där flera arenor och fora skapats för att stärka utbildningsledares och relevanta medaktörers möjligheter att genomföra ett pedagogiskt utvecklingsarbete med hög kvalitet (Berglund & Kann, 2018)[4]. Vidare har studier utförts, bl.a. på nordisk nivå, för att bättre förstå programansvarigas inflytande och möjligheter till förändringsarbete (Högfeldt et al, 2018). Där lyfts att både det formella och det informella inflytandet har avgörande betydelse. Det informella inflytandet är mer krävande på individnivå att utveckla, och organisationen bör stödja och stärka lärosätets kollaborativa lärar- och studentkulturer. Juniora utbildningsledare bör får

tillgång till den utvecklade gemensamma erfarenheten och kulturen och chansen att aktivt bidra till dess förnyelse.

Syftet med föreliggande studie är att följa upp erfarenheter bland erfarna utbildningsledare vid KTH kring de med- och motgångar de mött i det förändringsarbete som genomförts under det senaste decenniet. Med denna uppföljning kan vi bättre förstå vilka aktörer, processer, policys mm som spelar in för de olika rollerna, samt vilka incitament och motiv som kan föreligga vid förändringsarbete. Vidare är den balansgång mellan det traditionella och det nya som ett förändringsarbete alltid bör innebära intressant att analysera närmare. Ramverket för formellt och informellt inflytande kan utgöra ett bidrag till samtalen och till analysen. Det övergripande syftet med detta är att förbereda för en grundlig genomgång kring de roller och organisation för utbildningar som finns idag och hur detta kan och bör förändras under de kommande åren för att ytterligare stärka möjligheten till det pedagogiska utvecklingsarbetet.

2. Pågående arbete

Under januari och första veckan i februari har fokusgruppsintervjuer med grundutbildningsansvariga, studierektorer, programansvariga samt CFU:er genomförts.

3. Resultat/observationer/lärdomar

Resultaten visar att de kritiska aspekterna på spelplanen för förändringsledning av KTH:s utbildningar behöver utvecklas gällande

Bevakande av poängen och det egna ämnet

Engagemang och meritering av utbildningsutveckling

Ägarskap, mandat och stöd

Tid för eftertanke och nätverkande

Vidare visar resultaten när det gäller specialfallet rörande integration av hållbar utveckling i utbildningarna att lyckad förändringsledning kan bero på följande aspekter:

Vikten av ägarskap och kompetensutveckling

Behovet att diskutera och ompröva definitioner, nivåer och progression

Målet att skapa kontextbundet, relevant och autentisk innehåll och form

4. Take-home message

Fokusgruppintervjuer har varit mycket intressant att utföra på vår lokala spelplan. Många av de intervjuade har poängterat att det varit givande för dem också. Det som vi oroade oss för före intervjuerna var att de intervjuade skulle känna sig obekväma med att framföra kritik. De mycket relevanta och kritiska diskussionerna och slutsatserna verkar peka på att de intervjuade upplevt att det varit högt i tak och tillåtande.

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Title: Walking with Seminars

Keywords: Course development, Peer learning, Student engagement and motivation

Presentation format: Workshop

Authors:

Olle Bälter[1] and Björn Hedin[1]

[1]EECS, MID

Abstract

Background and purpose

Low levels of physical activity and sedentary behaviour are a growing health problem globally and physical inactivity is associated with increased risk of numerous ailments, cardiovascular disease and mortality. To counteract this, the Walking seminar was invented at KTH in 2015. It is a small step towards a less sedentary lifestyle for students and teachers. Several teachers have already adopted walking seminars, but since it can be perceived as unorthodox, at least before you have tried it yourself, we offer this workshop to give hand-on experience on how to conduct a walking seminar.

Work done/work in progress

We started by transforming an on-campus course into a blended course to make sure all participants had accessed the information that would be discussed during the seminar. These walking seminars were evaluated among 131 students and nine teachers leading the walking seminars (Bälter et al. 2018). The responses to the student survey and teacher interviews indicate that discussions, sense of well-being and the general quality of the seminar improved, regardless of how physically active participants were the rest of the time.

Results/observations/lessons learned

Students might be sceptical towards a walking seminar, before they have tried it. However, if introduced a day with pleasant conditions, very few are willing to go back to sitting indoors. There is some time lost for the organisation (putting on clothes, dropping of bags, opening doors), but since the discussions outdoors are way more intense than the indoor discussions, this more than makes up for the lost time. The methodology for walking seminars has evolved since its beginning and at this workshop you will get a feel for state-of-the-art when it comes to promoting and arranging a walking seminar.

Take-home message

Walking seminars can be more efficient than traditional seminars if correctly implemented This practical exercises in this workshop brings you up to speed with the latest method to organise walking seminars in your own course.

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