

## Teaching portfolio

### **1. Teaching CV: A list of any lecturing and supervision tasks, including specification of academic fields, scope, level (bachelor, master, continuing education, PhD) as well as any external examiner tasks.**

#### List of Designed Courses

Aalborg University (2012-2016)  
Netværk og Forandring (BSc)  
Sustainable Transitions (MSc)  
System Visualisering (BSc)  
Engineering Work in Multicultural Environments (MSc)

Technical University of Denmark (2006-2012)  
Technological Systems (MSc)  
Design in Multicultural Environments (BSc + MSc)

University of Los Andes, Colombia (1997-2006)  
Historia de la Tecnología (BSc)  
Tecnología y Sociedad (BSc)  
Introducción a la Ingeniería General (BSc)

#### PhD Courses

Theories of Sustainable Transitions PhD Course offered at the Technical University of Denmark (2010) with Professor Frank Geels  
Theories of Sustainable Transitions PhD Course offered at Aalborg University – Copenhagen Campus. Offered with Professor Adrian Smith and Professor Anabel Marín in 2013 and with Professor Rob Raven in 2014, 2015 and 2016.

### **2. Study administration: A list of any study administration tasks, e.g. study board membership, head of studies or semester or course coordinator, accreditation, etc.**

Semester coordinator for BSc Sustainable Design Fifth Semester, Systems Design (Fall 2015)  
Course Coordinator for Course Network and Change (Netværk og Forandring) for BSc Sustainable Design Fourth Semester (Spring 2015 and Spring 2016)  
Course Coordinator for Course System Visualisation (System Visualisering) for BSc Sustainable Design Fourth Semester (Spring 2016)  
Course Coordinator for Course Sustainable Transitions for MSc Sustainable Design Second Semester (Spring 2015 and Spring 2016)

### **3. University pedagogy qualifications: A list of any completed courses in university pedagogy, PBL courses, workshops, academic development projects, collegial guidance and supervision, etc.**

University Pedagogy Course (Undervisning DTU) completed at the Technical University of Denmark in 2013, which is the required course to apply for Associate Professor positions.

### **4. Other qualifications: Conference attendance, editorials, presentations, etc. relating to education, 'University Teaching Day', etc.**

Invited presentation "SOCIAL SCIENCES AND ENGINEERING: THE SUSTAINABLE DESIGN ENGINEERING PROGRAM AT AALBORG UNIVERSITY" delivered at the Colorado School of Mines in the United States, 11 November 2015.

### **5. Teaching activity development and teaching materials: A list of any contributions to the development of new modules, teaching materials, study programmes, e-learning, collaboration with external business partners, etc.**

#### Example of Innovations

During the spring semester of 2015 my colleagues and I decided to experiment with a new form of supporting the learning process of the students in two theoretical courses. One course was Netværk og Forandring a 5 ECTS course that is part of the Bachelors in Sustainable Design Engineering in the fourth semester. The other was Sustainable Transitions, also a 5 ECTS course, which is part of the Masters in Sustainable Design Engineering in the second semester of the program.

Both courses were theoretical. The traditional practice with these types of courses also at Aalborg University is that they are evaluated with a written exam that the students deliver at the end of the course and where they are expected to use the theoretical insights of the course to answer a relevant question. Although this practice is well intended, one problem is that the students do not get substantial feedback during the course, but just at the end, when they have no chance of revising their understandings and adjusting their learning process. There was also a general concern among the teaching staff that the students were not developing writing skills at the level required in both educations. The use of blogs was intended to address these two issues: providing feedback during the course; and supporting the students' writing skills development. This could have been addressed with partial essay deliveries during the course. However, we also thought that we are in 2015 and it is time to use the Internet not only as a source of information, but also as a media for developing new knowledge with the students. One technical advantage of this media for instance is that students can incorporate multimedia in their analyses. A social advantage that was also considered was the fact that the blogs are publicly available. And that feedback could be delivered as comments to the posts. Students were given freedom to choose the platform to do their blogs.

Two examples of blogs from Netværk og Forandring can be found at:

<https://sharedcarscp.wordpress.com>

<https://delebil.wordpress.com>

Three examples of blogs from Sustainable Transitions can be found at:

<http://sustainabletransition.tumblr.com>

<https://sustainabletransitionschristinesvensson.wordpress.com>

<http://ameliaration.com/2015/05/sustainable-transition-a-concluding-synthesis-of-research-and-analysis/>

Every student got written feedback four times during the course. An example of feedback delivered to one of the blogs in Netværk og Forandring is (an example in English in the next page):

Kære N og D,

Hermed feedback til jeres blog indlæg nr. 2:

Mangler en titel og en introduktion.

Jeres introduktion af hvad SCOT gå ud på er præcist i forhold til hvad er rsg og ff. Men når det kommer til tr halter den. I skriver: "En teknologisk ramme kan bruges som uddybning mellem den relevante sociale gruppe og den betydning, som bliver tillagt delebilsordningen". Tr er ikke relativt til en rsg. Det kan deles mellem forskellige rsg som er mere eller mindre inkluderet i en tr.

Senere hen i jeres analyse i diskuterer rsg kun som forskellige kundegrupper som forventer forskellige fra ordningen.

Fleksibilitet for eksempel er noget forskellige rsg som er de forskellige firmaer tilbyder på forskellige måder: nogle kræver abonnement, andre kun betaling per minut, nogle kræver at bilen bliver kørt tilbage til hvor de blev hentet, andre gør det ikke. Og de gøre denne diskussion senere hen i indlægget. Det er godt. Spørgsmål er hvad er de ff mellem alle disse rsg og hvordan kan teknologien stabiliseres med at ff formindskes: er det sådan at abonnement service bliver standard? Er dette jeres argument? Hvorfor? Til sidst i denne del snakke i om inklusion af brugere i ordningen på grund a abonnement. Denne brug a inklusion koncept passer ikke med SCOT.

Jeres analyse af parkerings problematikken kunne forbedres med at vise hvilke rsg gruppe synes ikke at delebils ordninger skal være prioriteret. Det er sandt at flere parkerings pladser ville være en fordel, men hvilke rsg skal fremme denne løsning og hvordan. Og hvordan skal bekæmpes resistansen fra andre rsg som vil ikke har at delebils bruger så meget plads.

Sidste eksempel er også interessant, men de kunne være en fordel at forsår hvor blev garantien formet: hvilke rsg havde ff og hvordan blev de ændret så nu er der en garanti. Dvs garantien er en resultat af en lukningsproces.

Mangler en konklusion.

God med faglig og case referencer, men de kunne skrives mere formelt.

An example of feedback given to a student of Sustainable Transitions during the semester is the following:

Dear Camilla,

Here my feedback in reverse order from the last to the first blog:

Your current blog comparing the theories is a list of bullet points with unconnected claims about the theories. It would be better to write some paragraphs focusing on the aspects of each theory you find strong and those you find weak. It does not have to be an exhaustive analysis. This is meant to be a selective analysis: you select what is more salient. One of the bullets on MLP says "Critic: it does not take in consideration the individual perspective, but social groups.". Be careful with this. All the theories we have studied in the course are about social development, and non of them makes any claim about individual behaviour or has the individual as an object of study. All of them focus on sociotechnical systems as the main unit of analysis. Remember that the question you should be addressing in this last blog is "How do the different theories contribute to a better understanding on how to support transitions to sustainability?"

On the AoD blog. Remember that the main claim here is that an arena is any constellation of actors that seem to cohere around something a claim, a mindset, a routine, a geographical area, a technology (whereas MLP's regime and niche are

always defined around a technology within a sector). The section on the presentation of the concepts of junction is good. You could improve it revising the language and breaking it into three separate paragraphs. Your analysis of Nordhavn is missing the presentation of the tensions: what are the tensions in relation to insulation and energy? I guess that you could point out that the ambitions are way higher than in other development projects, but at the same time the buildings are smaller (40% according to the video), which means that they require more insulation, is this realistic? You could also speculate if something similar to what happened in Freiburg might happen here regarding building for a too a little energy demand which would not cover the investments in district heating (if there are any projected for Nordhavn).

In the TM blog it is not clear if the type of process you are describing happened or is something you estimate might happen. I think you should make explicit the nature of the process you are describing. Apart from that it is a very interesting process of coordination, which could be even better. You could point out which other levels of coordination would be desirable to make new development projects like Nordhavn even better from a TM perspective.

Your MLP presentation is clear. However, I am not sure what is the niche in your case. Did Rockwool become a major player after the 1970s crisis. Can you claim that Rockwool was a niche that grew to be part of the regime thanks to the landscape pressures (the energy crises of the 70s)? Or was Rockwool always a major player –part of the regime- that adapted its business to the new conditions?

Apart from receiving written feedback to each blog post, the students also got general feedback during the class in two aspects. One on form: how to write an analysis, which includes what is a good introduction, what is a good conclusion, how to compose the analysis in sections, how to use theoretical concepts accurately, how to use visual aids or multimedia, how to reference correctly and other formal details.

And most importantly students also got feedback on their understanding of the theories and how to improve them. The closing lecture for Netværk og Forandring was a revision of the theories studied in the course and a discussion of the most typical misunderstandings. The teaching team spotted these misunderstandings while reading the different posts to provide feedback. A table was the main pedagogical tool used to discuss in the closing lecture of the course the main aspects of each theory, the proposal of network and change it conveys and the typical misunderstandings that students exhibit.

After having all these individual and in class feedback, students still got two more weeks to correct their blog posts for final formal delivery. As you can see from the examples above, the results are remarkable.

No formal evaluation been conducted at the time of writing this report, there has. However, informally the students have confessed that they have dedicated more time to these courses than to others. Here is an example of what one student from Sustainable Transitions wrote when she delivered the final version of her blogs:

Jeg vil lige benytte chancen til at sige at det har været et meget tidskrævende kursus, OG også et super spændende kursus, som har været rigtig relevant at have. Jeg ville dog ønske at jeg kunne have brugt mere tid på det specielt at rette igennem (som i nogle tilfælde kræver en hel omskrivning), men det store projekt forlanger tid nu hvor det er blevet skubbet i baggrunden indtil nu. Pointen er at det er fedt at blive udfordret, så tak for det!

My colleagues and I expect to have more elements to decide on what adjustments to make to the use of blogs as a learning tool. We are aware that they have to be adjusted as not to overwhelm the students. So more balance is needed. And to fully exploit the potentialities of the Internet and the use of multimedia we have considered for next time to select a common topic of analysis, have a couple of persons to interview at the beginning of the course; record them and use excerpts from the interviews as part of the analysis during the semester. This requires some planning to set up and make the materials available, but we think it might be worth the effort.

## **6. Teaching awards you may have received or been nominated for.**

Type your answer here...

## **7. Personal reflections and initiatives: Here you may state any personal deliberations as regards teaching and supervision, any wishes and plans for further pedagogic development, plans for following up on feedback/evaluations from students, etc.**

Manifesto on Teaching

Why do I teach?

The main reason I teach is because I like it! I have always liked it and I have devoted my life to teach, learn how to teach, improve my teaching, create new course and create new education programs.

For me teaching is about learning with the students. In this sense, the most exciting adventures have been to create new courses, programs and activities and test them with the students. I feel also privileged to work at Aalborg University in

Denmark because this institution has Problem Based Learning as its core structural pedagogical principle. This means that in all educations at all levels, from the first semester of the bachelors to the last semester of the masters and all PhD courses and activities are based on problems and projects. Therefore the opportunities teachers have to learn with the students are higher than in traditional universities.

I have also the privilege of teaching and learning with students in three languages and with regular activities in three countries: Denmark, Colombia and the United States.

Although teaching as "learning with the students" sounds great and ideal, in reality it requires a lot of work. The first thing one has to remember over and over again, is that teaching is not about telling the students verbally the contents of a given theory or body of knowledge. This is difficult because is how the majority of teachers behave around the world.

Teaching is about creating the conditions for students to learn by themselves. In this sense, it is good that teachers use less time to present contents, and more time to give feedback. I learned this first through a very high-quality training course in pedagogics at the Technical University of Denmark where I developed my PhD (2006-2010) and where I worked as a postdoctoral researcher and junior teacher (2010-2012). The main message of this training course was precisely that: good teaching is about creating the conditions for students to move their own frontier of knowledge. The course itself was a very good example of what it was intending and thus as a student I had complete control of my learning process, I got valuable feedback from my peers and teachers, and I appropriated the basic principles and the tools to set into motion my own process of learning how to teach, monitoring my teaching, and continue improving my skills and competencies.

One very valuable principle I learned in 2012 was that of constructive alignment: the objectives, the activities, the evaluation and the outcomes of a course, a semester or a project should be aligned. And this requires a lot of thought, discussion and work. One way of checking that this is working is to present the students the first day of the semester with the actual questions of their final evaluation. If everything is aligned it should be clear for the students and for the teacher that the objectives, and nothing else, is what is assessed in the final evaluation. All the activities in the course during the semester should support students' learning in order to be able to successfully approve their examination. This only makes sense when the examination is a comprehensive advanced discussion of the learning process. This fits perfectly with the oral exams used to evaluate projects at Aalborg University.

Another very valuable principle I have learning through my training in PBL teaching and through my experience as a supervisor of projects at Aalborg University is that students should take 100% in the responsibility of their learning process. The supervisor has to refrain as much as possible from taking responsibility for any aspect of the learning process, be it, the mastering of knowledge, finding relevant additional knowledge and resources, solving internal problems of the students' working teams or organising students' learning activities. As a supervisor I should support students' learning and organising activities, and challenge them to do more, but never take responsibility or do what they should be doing.

## **8. Any other information or comments.**

Type your answer here...