Teaching Portfolio

This teaching portfolio is divided roughly according to the six points identified in the teaching portfolio format of the Faculty of Natural Science at the University of Southern Denmark, as it is based on data collected in this structure.

1) Formal educational training

During my time as an assistant professor, I was enrolled in the University of Southern Denmark's Lecturer Training Programme in August 2010 and completed it successfully in June 2011. The program consisted of a total of six days of off-campus seminars, a paedagogical development project, 2 ECTS of elective educational training courses, 21 hours of supervision by an internal and an external supervisor, 12 hours of peer supervision, and a final poster session presenting the results of the development project.

In total, I have participated in the following educational training courses:
• Body language during teaching, University of Southern Denmark, 2011
• Workshop on exam forms, University of Southern Denmark, 2011
• Teaching in multicultural classrooms, University of Southern Denmark, 2010
• BB9 — Get acquainted with the new e-learn.sdu.dk, University of Southern Denmark, 2010
• Academic Danish, University of Southern Denmark, 2010
• Course for PhD supervisors, University of Southern Denmark, 2009

2) Administrative tasks relating to education

In 2013 and early 2014, I was spearheading the redesign of our computer science education, where we used the transition from a quarter system to a semester system in order to improve the horizontal and vertical alignment in the education. In addition, I successfully managed to shift the workload from frontal lectures to project work by reducing the number of courses and topics inside the courses in favor of more hands-on experience for the students.

Since 2013, I have been a member of the department's teaching committee as well as the responsible person for the educational reporting regarding our computer science education. In 2013, I was also the semester coordinator for the computer science education.

From 2009 to 2012, I was the faculty representative in the e-learning strategy commission of the University of Southern Denmark. This commission was responsible for deciding the university's course regarding e-learning platforms and in general regarding the use of ICT in education.

In 2011, I was responsible for the development of the computer science and ICT part of the B.Sc. merc. IT education in close cooperation with the department of leadership and strategy in Slagelse.

3) Experience of supervision and teaching courses

I have (co-)supervised 24 M.Sc. students, 4 B.Sc. students, and 1 Ph.D. student. I was very recently admited to the Danish external examiner corps. I have also been an internal examiner for both graduate courses and individual study activities at our department.

The following is a list of the courses I have been teaching:
• Concurrent Programming (5 ECTS, 3rd quarter, spring 2014)
• Object-oriented Programming (5 ECTS, 2nd quarter, fall 2013)
• Introduction to Programming (5 ECTS, 1st quarter, fall 2013)
• Concurrent Programming (5 ECTS, 3rd quarter, spring 2013)
• Object-oriented Programming (5 ECTS, 2nd quarter, fall 2012)
• Programming Languages (5 ECTS, 1st quarter, fall 2012)
• Introduction to Programming (5 ECTS, 1st quarter, fall 2012)
• Advanced Topics in Programming Languages (5 ECTS, 4th quarter, spring 2012)

• Database Design and Programming (5 ECTS, 3rd quarter, spring 2012)
• Programmering B (5 ECTS, 2nd quarter, fall 2011)
• Programming Languages (5 ECTS, 2nd quarter, fall 2011)
• Programmering A (5 ECTS, 1st quarter, fall 2011)
• Programmering B (5 ECTS, 2nd quarter, fall 2010)
• Programming Languages (5 ECTS, 2nd quarter, fall 2010)
• Programmering A (5 ECTS, 1st quarter, fall 2010)
• Programming Languages (5 ECTS, 2nd quarter, fall 2009)
• Introduction to Computer Science (10 ECTS, 1st & 2nd quarter, fall 2009, no teaching)
• Database Design and Programming (5 ECTS, 3rd quarter, spring 2009)

In addition, I have been teaching assistant for 25 courses and seminars.

4) Methods, materials and tools

I do not believe in one-size-fits-all when it comes to teaching. Thus, I usually employ a multi-method approach in my courses with the goal of activating as many of the students as possible. The methods used range from traditional frontal lectures and discussion sections to student presentations, project work, and group supervision meetings. In general, I like to create a collaborative atmosphere, in which the students and I are working together towards their learning goals

Regarding concrete tools for student activation, I have experience using audience response systems ("clickers") for multiple-choice questions with immediate feedback, in-class group work, in-class discussions, and in-class tests. In my experience, a good mix is important in order to keep the interest level high. The real challenge is in my experience not to get the students' attention, but to keep it throughout the teaching period.

Regarding examination forms, I have experience with written exams, oral exams, and to a very large degree project-based exams. In most situations, I prefer project-based exams, as the students are examined during a longer period than just a few hours and the setting is much more realistic. In addition, courses where programming takes a big role are unnatural to be performed without due time, access to online resources, ...

In my supervision of students, I discuss the supervision roles I can perform with the students when we align our expectations. As a result of this alignment, sometimes I am using a master-apprentice model, a mentor model, a process-oriented model, or a reflection-based model. Once again, there is no one model that fits every student. While I am automatically leaning towards taking a master or mentor role depending on the students' seniority, I am flexible to adopt the role that fits best.

Regarding teaching materials, I have created original sets of slides for two introductory programming courses and a set of lecture notes for a programming languages courses. The latter is partly based on lecture notes from courses that I had the pleasure to take when I was a student. In addition, I have adapted various set of slides that came with books to fit my vision of the course and to use examples that speak to our student population. For all courses I have prepared original sets of exercises and in many cases detailed project descriptions.

5) Educational development and awards

I received the faculty's teaching award in 2012 in recognition of both my commitment in first year teaching and my development of a graduate course with a focus on individual projects regarding innovative ICT applications. In 2012 I applied for funding from the e-learning project pool and received DKK 81,408 in funds from the pool supplemented by DKK 132,050 in financing from IT service and the department of mathematics and computer science. The project's goal was the development of a cross-platform software allowing for the seamless integration of hand-writing using digital pens into the digital exam workflow.

In 2011, I performed a paedagogical development project as part of the Lecturer Training Programme about "Interaction in large classes", where I tested and compared various techniques for student activation in classes of more than 100 students. The project focused on group work vs class-room use of audience response systems. The results were presented in a poster session in June 2011.

6) Reflections on teaching and student evaluations

In the last five years I have evolved my teaching style from a classical frontal lecture style towards more student involvement. At the same time, I have been working to establish a collaborative atmosphere, where the students and I are together working towards achieving the students' learning goals.

As ownership is a very potent motivator for student activation, in smaller courses I like to give students the possibility of defining their own topics. This approach was sometimes hindered by the courses' rather rigorous course descriptions focusing on concrete lists of content rather than experience and competences. Where necessary, I have been adjusting such overly rigorous course descriptions while ensuring vertical alignment.

All my teaching in the past five years has been evaluated by the students. While the results were ranging from very good to excellent, often there were comments that started a reflection process and lead to changes in future editions of the same course or even other courses.

An example of such a development happened in the introductory programming courses, where students were describing their difficulties with relating the learned programming elements to the practice of actually sitting down at a computer and programming. In order to bridge this gap, I introduced an element I termed "live programming" into the course, where the lectures go back and forth between frontal teaching and me sitting down and solving small tasks together with input from the students. In later evaluations, some students expressed that the speed of the live programming sessions was too fast for them to follow. As a result, in the previous edition of the courses, I slightly reduced the amount of topics introduced as well as the number of live programming sessions in order to be able to go through this important part at a pace appropriate for all students.

Another example were students complaining about the lack of obvious connections to their education in courses, with students from multiple educations. My first solution to this problem has been to offer different projects with different application domains. This has not only increased satisfaction for those students that lacked coherence to their subject, but also of the general student population, as choice is related to increased feelings of ownership.

Finally, a major problem has always been to give relevant and timely feedback to large student populations. This problem has actually become worse since the introduction of digital exams, as scribbling some notes with a pen on a printed project report and delivering the report to the next lecture is significantly faster than giving individual feedback by e-mail etc. Here, in the future I would like to work towards using new ICT solutions in order to make giving feedback in the digital domain easier and faster than it used to be on paper.