

Teaching portfolio

1. Teaching CV: A list of teaching and supervision tasks, including specification of academic fields, scope, level (bachelor, master, continuing education, PhD). Please state the teaching method used (e.g. lecture, class teaching, exercises, supervision, examination, coexamination, distance teaching, internet-based teaching and evaluation of teaching). Please also indicate the language of instruction.

Fall 2022

Agile Software Engineering (Bachelor) – (SW5-KBH)

Teaching method: Workshop

Language: English

Systems Development (Bachelor) – (SW3-KBH)

Teaching method: Lectures + Exercises

Language: English

Spring 2022

Introduction to Structural Equation Modelling – (PhD School)

Teaching method: Lectures + Exercises

Language: English

Systems Development in Praxis (Master) – (DAT8, IxD8)

Teaching method: Reading seminar

Language: English

Fall 2021

Systems Development (Bachelor) – (SW3-KBH)

Teaching method: Lectures + Exercises

Language: English

Spring 2021

Systems Development in Praxis (Master) – (DAT8, IxD8)

Teaching method: Reading seminar

Language: English

Fall 2020

System Analysis and Design (Bachelor) – (BAIT3, IxD5)

Teaching method: Lectures + Exercises

Language: English

Spring 2020

Advanced Topics in Systems Development (Master) – (DAT8, INF8, IxD8)

Teaching method: Reading seminar

Language: English

Software Engineering (Bachelor & Master) – (BAIT6T+K, INF6, IxD6, IDA8, CS-IT8)

Teaching method: Lectures + Exercises

Language: English

2. Study/programme administration and management: Experience in programme management and coordination. A list of study administration tasks, e.g. study board membership, chair of study board, semester or course coordinator, accreditation tasks, etc. Experience in planning teaching activities. Experience in programme development. Participating in committees and commissions etc. on education issues.

Fall 2022

Semester Coordinator of SW5-KBH (Bachelor)

Semester Coordinator of SW3-KBH (Bachelor)

3. Formal pedagogical training: A list of completed courses in university pedagogy, PBL courses, workshops, academic development projects, collegial guidance and supervision, etc. Written assessment from the course in university pedagogy for assistant professors. Participation in conferences on pedagogy and didactics. Please enclose any documentation of the above, such as course certificates, references, etc

Between January and December 2020, I completed the University Pedagogy provided by the Learning Lab of Aalborg University. These are the courses I followed:

- Module 1: Teaching at a PBL University

- Module 2: Planning and Implementation of Group Instruction
- Module 3: The Use of IT and Media for Learning and Teaching
- Module 4: The PBL Group – Collaboration, Process and Supervision
- Module 5: Planning, Development and Quality Assurance of Study Programmes
- Elective 1: Research Integration
- Elective 2: Teaching Portfolio
- Elective 3: Working with institutions and companies in project work

4. Other qualifications: Conference contributions and attendance, contributions to debates, scientific articles on pedagogical issues etc. Peer supervision, editorials, mentoring experience or other types of competence development activities.

- Paolo Ciancarini, Marcello Missiroli, and Daniel Russo. Cooperative thinking: Analyzing a new framework for software engineering education. *Journal of Systems and Software*, 157:110401, 2019.
- Paolo Ciancarini, Marcello Missiroli, and Daniel Russo. A study of cooperative thinking. In *Proceedings of the International Workshop on Frontiers in Software Engineering Education*, pages 279–292. Springer, 2019.
- M Missiroli, P Ciancarini, D Russo, and P Torricelli. Developers' week: Alternanza scuola-lavoro rovesciata. *Mondo Digitale*, 18(81), 2019.
- Marcello Missiroli, Daniel Russo, and Paolo Ciancarini. Learning agile software development in high school: an investigation. In *Proceedings of the 38th International Conference on Software Engineering*, pages 293–302. ACM/IEEE, 2016.

5. Pedagogical development and research: Development of new courses, teaching materials, teaching methods, examination types or other types of pedagogical development. Didactic and pedagogical research. Cooperation with external collaboration partners.

Development of the workshop-based Agile Software Engineering class using Liberating Structure. The course has been designed in partnership with Scrum.org which offer a professional Scrum Master certification at the end of the course.

6. References on your teaching skills from superiors or colleagues. Teaching evaluations and any teaching awards received.

At the University Pedagogy, I received the following final assessment: "Daniel Russo has acquired sufficient additional skills and knowledge that enables him to be a proficient teacher at the Department of Computer Science at AAU [...] his lectures are organized as a mix of lecturing and relaxed dialogue both teacher-student and among students where they reflect in groups and share their thoughts with the rest of the class, mentored by Daniel. Throughout, he is focused on facilitating students' (critical) thinking and reflection. His positive and affirming attitude and verbal connection with students bears witness of a clear intent to professionalize their thinking and approaches [...] Daniel's teaching-practice (in-class and online) bears evidence of an understanding of teaching and learning as dynamic processes with multiverse approaches (rather than fixed positions and universal approach) [...] the participation in the Course in University Pedagogy for Assistant Professors was very satisfactory."

7. Personal reflections and initiatives: Here you may state any personal deliberations as regards teaching and supervision, any wishes and plans for further pedagogical development, plans for following up on student feedback/evaluations, etc. Personal reflections on your own pedagogical practice, including objectives, methods and implementation. This should include an analysis and a reasoned description of your pedagogical activities in relation to your pedagogical understanding and student learning. Thoughts on the teaching method at Aalborg University (which is largely based on group-organised project work and problem-based learning)

Learning by doing – is the keystone of constructivism, which deals with the central aspect of how we learn. By saying that, I am not implying that fact-based knowledge is not relevant.

In my perspective, it is just a part of the learning process. As human beings, we naturally adapt our knowledge and skills to solve daily problems. Although knowledge as such might be a relatively stable entity, we endeavor to apply it continuously to a comprehensive set of challenges we experience during our lives. Therefore, educating our students on the reality of lifelong learning is crucial. Constructivist education faces, in my opinion, three main challenges. First, knowledge cannot be simply transferred to students because they are not "empty vessels" to fill with my knowledge but active learners who bring their passion to classes. Therefore, I commit to student-centered pedagogy, involving a dynamic classroom approach to actively exploit real-world challenges typical of the problem-based learning (PBL) approach. The students' job is to acquire knowledge by themselves, as it is mine to allow this process through a well-organized learning environment.

This leads to the second point: the teaching environment needs to stimulate learning. In particular, the need to be open, inclusive, and non-judgmental for all students. Students should feel comfortable expressing their opinions to participate actively in discussions led by the instructor. This aspect is of utter importance. Teaching in a PBL context is not a standardized process. The instructor's role is to let knowledge emerge through a guided and peer discussion.

The third challenge is probably the most difficult one: addressing students' diversity and heterogeneity. Students typically have different learning strategies and personal backgrounds. The instructor's role is to tackle such diversity through various teaching strategies and activation methods. For example, some students might greatly benefit from the peer tutoring of teaching assistants. Once such differences are apparent to the instructor, it is also easier to address specific issues in class, even by using examples that such students(s) can particularly relate to.

Additionally, I would like to reflect on the most effective way to engage students with the learning goals: assessment. We know from the literature that assessment is the primary tool to make students identify with the learning process and also student ownership (e.g., interest, engagement, self-determination). Consequently, the assessment should be student-centered, intended as opposed to instructor centered. In particular, learning and outcome centered implies a close connection with the students' thinking and working processes. Thus, students should not replicate the instructor's knowledge but apply it to a problem of their choice. Proposing standardized exam assignments that typically relate very little to their professional future might jeopardize their learning process. Sambell et al. (2013) stresses the importance of linking the assessment of the learning goals with the tasks they are supposed to perform during their professional careers. In other words, students adopt an in-depth learning approach if they feel the assignment is associated with a real-world problem of intimate understanding. For this reason, it is our responsibility to motivate students to fully engage with the course material in a way that causes them to challenge their preconceptions, reflect on and reconstruct their perspectives and thereby learn for life as learning to learn.

To conclude, I consider my role as an instructor as a stimulator to make students think about real-world phenomena and problems through an applied software engineering lens. Since software engineering is very much about strategic choices while designing and implementing a software system, it is a pedagogical resource. I like to discuss the most suitable engineering approach to a particular problem, e.g., ensuring security. These discussions allow us to discuss various topics, from communication protocols to testing and system integration. It is not about right or wrong solutions but discussing the best fit for a specific problem and being consistent with such a solution. Therefore, I consider my teaching very much rooted in and focused on PBL.

8. Any other information or comments.

Type your answer here...