

Teaching Portfolio

Fundamental Pedagogical View

I have read the "Engineering Education Model of the University of Southern Denmark(DSMI). It fits my pedagogical ideas that form the basis for my teaching. My experience is that engineers learning is most effective when they have a problem to solve and get hands on. That was the method I used as responsible for EMC education at Bang & Olufsen. The advantages are (among other things):

- Student-focused and active learning helping the student to preserve knowledge
- Encourage critical thinking
- Increased motivation for learning
- Self-directed learning skills
- Problem solving
- Real-world experiences making the students ready to work in companies.

As engineer in a private company for many years working together with interns and as external examiner at engineering schools in Denmark, I would like to take the liberty of identifying a few pitfalls in the model. There is a risk that the students have very big ambitious projects but do not accomplish much, because of lack of a theoretical foundation. I have seen too many activities that turned out to be tangential and never came further than a high level proof of concepts. Knowing the pitfalls from working on other side of the fence is very valuable in making activating and problem-based learning successful.

In conclusion, my fundamental view is aligned with activating and problem-based learning. However, it is necessary to combine the teaching with lecture based learning, worked example and goal free problems, in order to give the students the theoretical foundation for innovative and smart problem solving.

Teaching Experience

2017-2019 Introduction to 3D Full Wave Simulation by help of CST MWS. EMCLAB Missouri University of Science & Technology. The short course has been conducted 3 times during the period with approximately 10 students every time.

2004-2006 High school teacher at Randers HTX (Randers Technical Colleges). Teaching math, physics, chemistry and astrophysics.

Supervision of student projects

10+ Internship/BEng/MSc projects as engineer at Bang & Olufsen

Co-supervisor of 2 PhD-students, 2 master students and 1 bachelor student at Missouri University of Science & Technology

Formal Pedagogical Education

2011 PBL in Engineering and Science { Development of Supervisor skills. PhD course at Aalborg University. (2 ETCS)

2006 Kemiske undervisning forsg. (Chemical teaching experiments). Master course at Aarhus University. (5ETCS). Grade: 11 (on the old Danish scale).

Other activities related to teaching and teaching development

2018 Introduction to Near-field Scan and its Applications. Delta's EMC Club. Half day introduction course. The topics were: Hot spot finding and analyzing. Near-field scan in architecture work, immunity scan, near-field scan as pre-compliance test, near-field scan as source for simulations.

2017 How to use 3D EM simulation in an industrial context. Delta's EMC Club. The topics were: Visualizing of general EMC problems, simulations used in the development of new modules and products, simple pre-compliance EMC test of PCB design, SI/PI related problems, Huygens' box principle, near-field scan as source for simulations. 60 EMC engineers participated.

2015-2016 EMC Architecture Work. Bang & Olufsen. Together with another senior engineer, we made an formal education as EMC architect. The course was primarily technical but also project planning and management were a part of the course. 5 engineers were educated.

2015-2016 Basic EMC for mechanical and software engineers. Bang & Olufsen. EMC is cross disciplinary. Hence many problems can be avoided if other engineers than electrical engineers know the importance. Approximately 100 engineers participated.