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Pædagogisk grundsyn

How much knowledge one has, matters less but how nicely one is able to transfer the existing knowledge to younger generations, especially to students, matters a lot when it comes to teaching. Teaching is an art that involves knowledge, skills, communications in a well-balanced manner. The combination of modern tools such as certain computer softwares, programs, interactive 3D designs, etc. simultaneously makes teaching to more efficient and effective. Teaching offers a continuous learning process, which improves the teacher a lot over time. Realizing self-mistakes and subsequently improving them over time is the best way to become a good teacher. The level of understanding of students being taught, also plays a very important role and a teacher must be able to clearly identify it. The teacher is always supposed to uplift the understanding of students from their existing levels and the involved challenges are often different. In order to be a good teacher, the following aspects must be very carefully considered with respect to any particular course, which is actually my approach with respect to teaching:

Advance Preparations:

- Clearly identify the course content, structure of the course, level of students (Bachelor, Masters, or PhD), backgrounds of students (often their backgrounds are different), allotted time for the particular course, lecture timings, etc.
- Making up the self-course plan, ideas, preparation of lecture materials in advance.
- To clearly think about the aspects like fundamental, mathematical formulations, conceptual designs, applied, etc. within the scope of course with possibility of real-life examples.
- Identifying suitable teaching modes electronics vs physical and accordingly preparations.
- Preparing the lecture materials well in advance.

During the class:

- During the class, it is important to actively engage with students about the course materials, this helps in motivating them and deep understanding.
- Short exercise and real application examples during the lecture help in actively engaging the students with the course.
- Asking the innovative questions during the lecture and discussing them together makes them better learn the subject (Problem Based Learning approach).
- Overall communication is very important in contrast to one way communication, it is important to make the course content interesting and connected to real world scenarios.
- Exercise questions should be designed in such a way that there is balanced combination in terms of simple and complicated questions.
- In a physical lecture, inviting a student on board to solve the questions in front of the class is very helpful.
- It must be a well-organized teaching involved with constant student interactions.

After the class:

- Students should get proper set of questions to think about the concepts discussed in the class. It is always good to work on exercise in subsequent class as it offers students a multiple learning.
- As a teacher, one should always be open for discussions towards any subject related questions asked by students.

My pedagogical view is mainly based on my comprehensive training during habilitation and long teaching (nearly 10 years) to B. Sc. and M. Sc. level students in Germany. During this period, I have taught Solid State Physics, Semiconductor Physics and Nano Electronics and being from Physics background, I had privilege to connect the fundamental aspects with applied aspects in semiconductor, electronics, and nanotechnology, etc. together which really deepened my understanding very well. Along with my own efforts with respect to teaching, the tough questions from the students helped a lot. Also, it helped in a better and deeper understanding of my own research problems and identifying new research topics. The aspects which I never learned being a student, have nicely learned being a teacher.

Undervisningserfaring

Kursusbeskrivelse ECTS År Eksamensform
Nanofabrication

Technology nanofabrication technology
electron beam lithography (EBL)

nanoimprint lithography and focused ion beam, bottom-up patterning techniques.

(Cleanroom Microfabrication, EBL)

(Civil Engineering, Mechatronics, 9th sem.; Civil Engineering, Physics and Technology, 9th sem.), M. Sc. students. 5 point 18-20 Mundtlig

Formel Pædagogisk Uddannelse

- Habilitation training in Germany
- Pedagogical training in Germany
- Mentoring at B. Sc., M. Sc. Ph.D. and Postdoc levels in Germany (2009 to 2019)
- Expert committee member for several B. Sc., M. Sc. and Ph. D. students