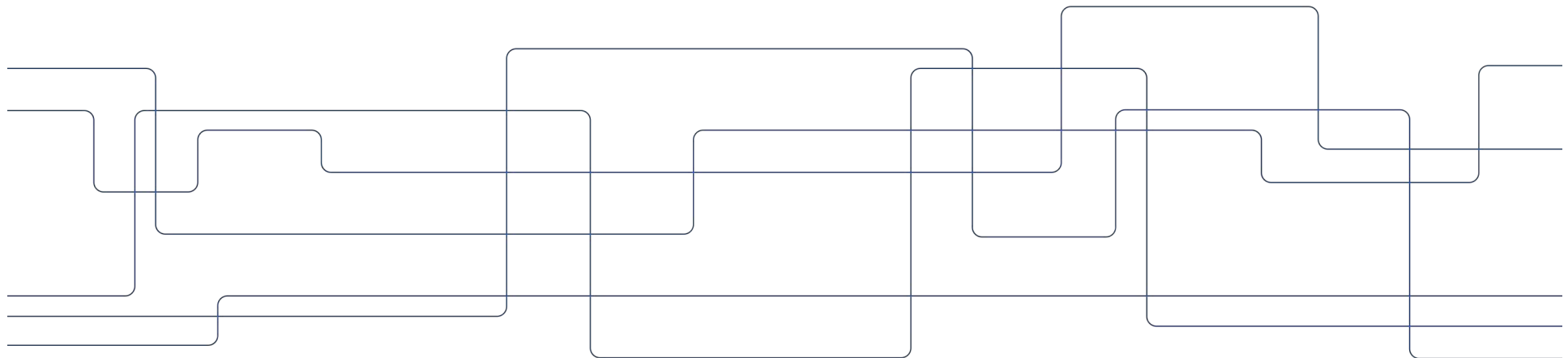




Experience of
Student-led recitations
from 2006-2020

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Courses at division using student-led recitations

- Semiconductor Devices, year 2 students, ~40 students
- Digital Design, year 1 students, ~130 students
- Electrical Circuit Analysis, year 1 students, ~130 students
- Analog Electronics, year 3 students, ~40 students
- Linear Algebra, year 1 students, ~50 students
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Why student-led recitations?

- I took the basic pedagogical course at KTH and heard about one implementation of the method
- Problem:
 - Less than 50 % could solve typical exam problems
- Likely cause:
 - Students work too little on solving examples themselves
- We wanted to make students solve problems
- We had tried "control quizzes" with bonus points
 - doesn't tackle students who needed help



Student-led recitations

(our implementation)

Course PM:

- Schedule 6 weekly sessions as "student-led recitations"
- 6 problem sheets (with 6 problems each) are handed out at course start

Preparation:

- During the week, students solve the problems and prepare for presenting their solutions on the whiteboard
- Arriving on the session, students "tick" on a list which problems they are prepared to present
- We randomly pick students to solve problems on the board
- Discussion after and during solutions
 - alternative solutions, assistance when problematic

Rule:

- At least 20 out of a total of 36 problems must be ticked (compulsory moment) to be allowed to take the written examination
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Fears and solutions

- Students could copy solutions (unfair)
 - In preparing to present the solution they will learn anyway
 - Students could tick problems without having prepared (unfair)
 - No pleasure to fail in front of the class
 - Rule: all ticks for this student at the actual exercise would be cancelled (we never had to use this)
 - Poor pedagogy and low tempo with student solutions
 - Students turned out to be excellent pedagogues
 - Everyone in the room has prepared is familiar with the problem (they can follow)
 - Difficult to make system completely fair
 - No grading, only compulsory
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Our results

- Students do well at the exam

| | |
|---------|---------------|
| Before: | ~55% approved |
| 2006 | 78 % approved |
| 2007 | 70 % approved |
| 2008 | 83 % approved |
| 2009 | 86 % approved |
| 2010 | 75 % approved |
| 2011 | 76 % approved |
| 2012 | 60 % approved |
 - Students like student exercises [4,17 out of 5]
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Student interview A

How long time did you prepare for the student recitations?

- I tried to do as many problems as possible. I didn't just want to do the minimum, but all of them because it is good for the exam. (laughter) Well, for each recitation... I don't know but at least 6 hours maybe.
 - The student recitations really helped me learn the subject. I have to calculate things otherwise I don't get it.
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Student interview B

What was it like before the exercises?

- We sat in a group and did the six problems, helping each other. Then the evening before I read through to get a good grip, and then I ticked them. Well, we sat maybe... how long could it have been, 5 hours in the group and 2 hours on my own.

And when you study in groups, what is it you really do then?

- We have a whiteboard (in a vacant classroom). Then you do one problem each and we stand together discussing it at the board. That's how we do the problems, on the board.

If we look at the other, the four normal exercises.

- Oh, nothing at all, I just went there. They are normal exercises where he solves problems, right? I don't prepare for that, just copy the solution and try to follow and then use the notes when cramming for the exam.
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Student interview B (cont)

If you compare student exercises with teacher-led exercises?

- Student exercises are better because you have worked on the problems. You should do that in teacher-led sessions too, or at least read the problems. Then you would learn more. In teacher-led exercises you mostly copy the solutions. If you are lucky you understand. But otherwise it doesn't give much. But student exercises gave a lot.
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Student interview C

- *Anything you want to add?*
 - In the beginning I didn't want the student exercises, it was a scary thought. It was a bit tough that you had to solve problems yourself, but then I realised that I would not have got started working like this without them.
 - Even if there were errors on the board sometimes, the right solutions were on the homepage later. It was so fun to see if anyone had solved the problems differently from yourself.
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Now the fun part!

Please ask me questions and let's discuss.....

