Instructing the Right Study Effort in 0SEUB0 ‘Patents, Design Rights and Standards’ and Other USE Courses

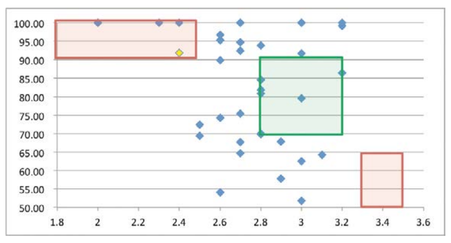
Abstract

TU/e provides User-Society-Enterprise education to prepare its engineers for solving societal problems. Students give good individual course evaluations, but ask for more overall relevance and rigor. First, the introductory course ‘Patents, Design Rights and Standards’ is analyzed and discussed with an expert group. The assessment plan is adapted. Clicker questions are higher order and guess correction optimized; the essay is elaborated and the final exam has a more rigorous format. In the last phase, the results of the course redesign will be studied and extrapolated to other USE courses.

Objective

The project will optimize the study effort and success rate, without lowering the students’ general course evaluation. In a first phase, this will be applied to 0SEUB0. In a second phase, this will be applied to other USE courses.

Very good results for course evaluation, fun and design

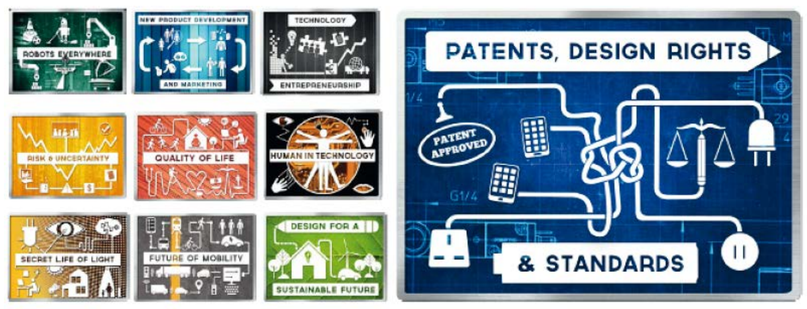


USE courses 2014 Q4-Q1-Q2 and 2015 Q3 with success rate (y) w.r.t. “Study Effort vs ECTS” (x)

Context

TU/e’s educational vision: ‘Engineers of the future must be professionals capable of thinking critically and independently […] able to contribute to solving societal problems’[1]
USE education: user, society and enterprise
Basic course + 10 course sequences
Challenge:

- Students generally report good individual USE course evaluations.
- USE education as whole can improve on relevance and rigour[2].



Practice

Analysis of introductory course: ‘Patents, Design Rights and Standards’ as pilot. Topic: Understanding, awareness and moral consequences of patents, design rights and standards.

Assessment plan: 10% in between clicker test, 20% Essay and role playing game, 70% written exam.

Expert Meeting discussed:

- students indicate problems with examination style
  - expect ‘exact engineering’ questions
  - questions on Multiple-choice
- students less enthusiast about role model game

Wide variation in evaluation guest speakers

Challenge for ‘study effort vs ECTS’ and Success Rate

	Respons	# enq	Course evaluation	Design	Organisation	Study guide	Study effort vs ECTS	Fun	Success rate
13-14	30%	32	7.5(1.5)	4.1(0.9)	4.0(0.6)	4.4(0.7)	2.7(0.5)	4.1(0.9)	89%
14-15	41%	46	7.0(1.9)	3.8(1.2)	3.7(1.3)	4.2(0.9)	2.4(0.8)	4.0(1.2)	94%

Table 1: Results of student questionnaire on oSEUBo

Results

Phase 2: Adaptation course and analysis evaluation 15-16

- Clicker questions: higher order questions, guess correction optimized, more profound feedback
- Essay and role playing game elaborated
- Final exam, new format. Eight lectures, eight topics, also eight ‘parts’. Every part 2 MC-questions, 1 question to answer in 10 words and 1 open question (insight, analysis, application).

Phase 3

- Analysis of 15-16 Q1 and further adaptation for 16-17 (After Q1)
- Extrapolation to other USE courses (Start September)

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1 MEIJERS, A., & Brok, P. den (2013) Engineers for the future: an essay on education at TU/e in 2030. Eindhoven: Eindhoven University of Technology, 11.

2 Graham R. (2015) Bachelor College evaluation and impact study. Report. Eindhoven: Eindhoven University of Technology.