



4th International CDIO Conference
ACTIVE ENGINEERING EDUCATION

June 16-19, 2008
University College Ghent
Ghent, Belgium.

Proposal Template

Title

Multidisciplinary active learning for engineering students: two pilots, one goal.

Authors and Affiliations

Author With Whom to Communicate:

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Other Authors

Maarten Cannaeerts, Department of Industrial Sciences, campus DE NAYER, Hogeschool voor Wetenschap & Kunst.

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Walter Lauriks, Acoustics and Thermal Physics section, Department of Physics and Astronomy, K.U.Leuven.

Martine Baelmans, Applied Mechanics and Energy Conversion section, department of Mechanical Engineering, K.U.Leuven.

Type of Presentation: active paper (15-30 min)

Short Description

We will present and compare two types of multidisciplinary projects for engineering-students: 'physics' for first year bachelorstudents and 'thermotechnique' for masterstudents.

The presentation will be organised in a studio classroom-like way: the participants work together in small groups, the results will be presented using a mix of hands-on experiments, exercises and lectures.

Relevance to Conference Theme, Strands, and/or CDIO Initiative

Indicate by a tick which strand the presentation most closely relates to.

Application of CDIO to a wide range of disciplines	Curriculum and programme design
The involvement of industry	Technology-enhanced learning
X Development of professional competencies	Assessment of professional competencies
Design-implement experiences	Facilitating change in engineering education
Supporting sciences and CDIO	Evaluating the impact of CDIO Programs
Student involvement	Active and experiential learning

Abstract

Setting-up multidisciplinary teams of industrial and civil engineering students in order to solve some practical problems in a collaborative way enables students to develop personal and interpersonal skills [1].

We will present and compare two types of projects realized for students at two campuses which are geographically dispersed: 'physics' for first year bachelorstudents and 'thermotechnique' for masterstudents.

The first project is implemented for 600 first year engineering students. The goal consists of writing a scientific paper in multidisciplinary teams of maximum four students. The huge number of students and the fact that they are in the beginning of their studies, implies that we have developed a very strict education reference frame.

The second project focuses on 100 students. The goal is to design an integrated draft of the technical installation of a building in the context of rational energy use. This specialised project requires additional personal and interpersonal skills at a high level.

Both projects have a completely different approach, but the final aim consists of creating an authentic learning environment which is comparable with their future professional occupancies.

- [1] Mennes, K., Langie, G., Cannaerts, M., Buelens, H., Lauriks, W., Indekeu, J.O., Truyen, F., "Differences in student perception in heterogeneous learning teams." Proceedings of the EADTU conference (*European Association of Distance Teaching Universities*), Rome (2005) (<http://www.eadtu.nl/proceedings/>)

Active presentation techniques

We will activate the audience by using

- a studio classroom-like approach (integrated use of hands-on experiments, exercises and lectures)
- clickers

We propose to present this paper before or after the paper 'Reaching net-generation learners with social technologies' of Maarten Cannaerts since this author focuses on one of the two presented projects.

Facilities/equipment required (tick all those needed)

- X Computer projector (provided in all locations)
 - Overhead projector
 - Flip charts and pens
- X Clickers (personal response system)
 - Coloured flash cards
 - Post-it notes
 - Other (please detail)

Send all proposals electronically as MS Word or pdf files to jgaywood@liv.ac.uk on or before
December 7, 2007