



3RD PAN EUROPEAN DAYS OF ENVIRONMENTAL EDUCATION TOWARD SUSTAINABILITY

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AALBORG UNIVERSITY

Aalborg Centre for Problem Based Learning
in Engineering Science and Sustainability
under the auspices of UNESCO

Aalborg University, Denmark



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Source: <http://diskurs.hum.aau.dk/english/images/denmark.gif>

Aalborg Centre: Vision

Aalborg Centre aims to establish:

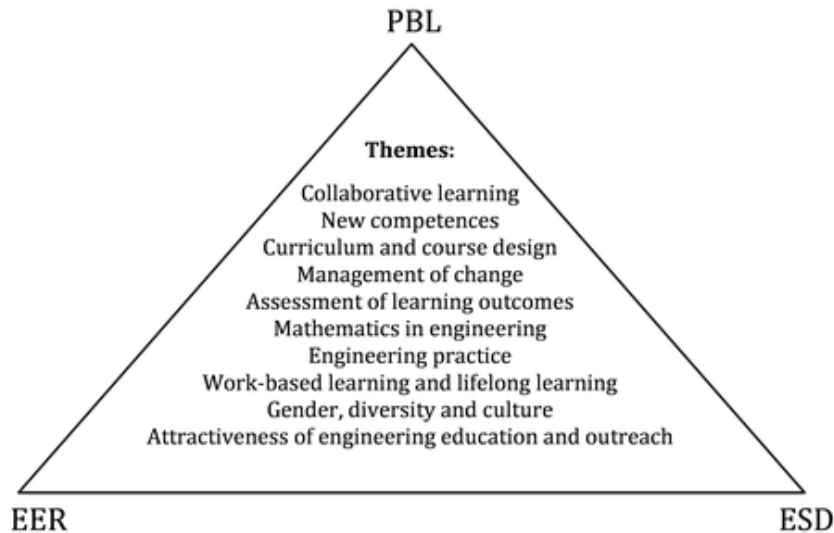
“... a global network of practitioners, researchers, experts and institutions within the field of Problem Based and Project Based Learning (PBL) in Engineering Science and Sustainability from developing and developed economies, and thereby exchange knowledge on how to change engineering and science education for PBL and sustainable development at the national, regional and international levels” (Aalborg Centre, 2014)



Aalborg Centre: Organization and Activities

- Global network
- Research symposia
- PhD training
- Visitors' workshop
- Staff development (MPBL)...
- Tasks forces:
 - Global Network
 - PhD training and Research
 - Engineering & Science for Sustainability
 - PBL staff development
 - Outreach

The primary area of expertise in Aalborg Centre is PBL and engineering education research whereas ESD is a new area that we have started to build up. This comprehensive research program is based on the research in the research group on PBL in Engineering Education (PBL-EE).



Coupling these three research areas are unique and creates a very special platform for research on engineering and science education. Each of the areas forms their own research platform within the Aalborg Centre, however mostly the research projects go across and we wish to integrate research issues more for forming a comprehensive research approach.

PBL principles

- Learning

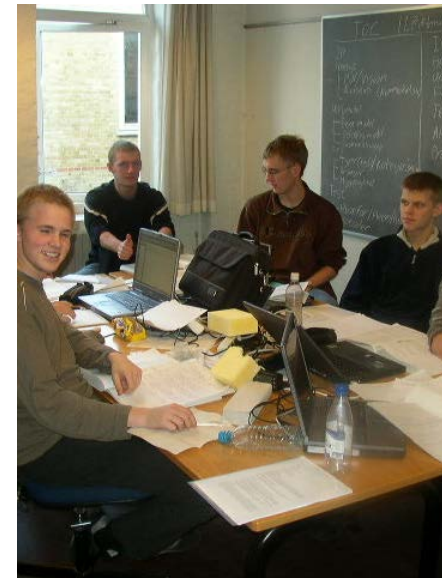
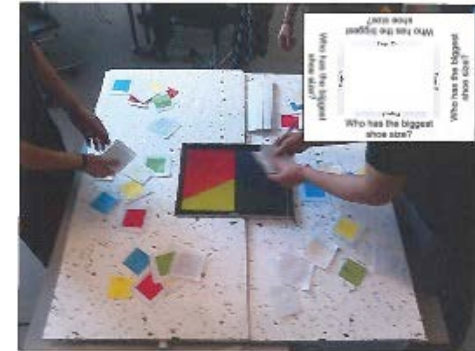
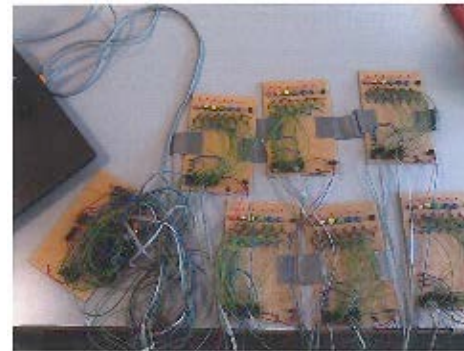
- Problem based
- Project organized
- Contextual learning
- Experiential learning

- Content

- Theory-practice relation
- Interdisciplinary learning
- Exemplary learning
- Meta-learning/ Double loop learning

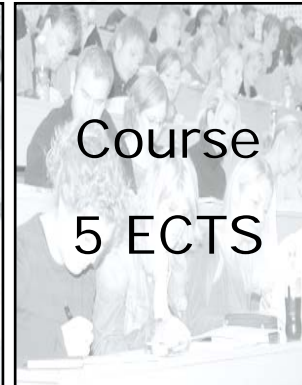
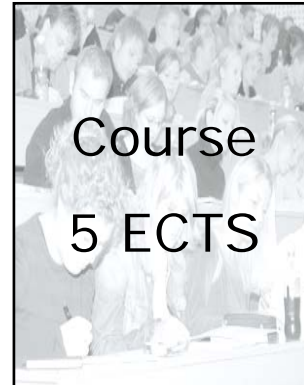
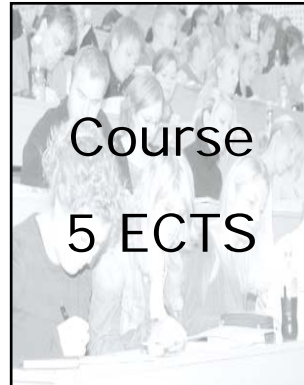
- Social

- Participant directed
- Team based learning

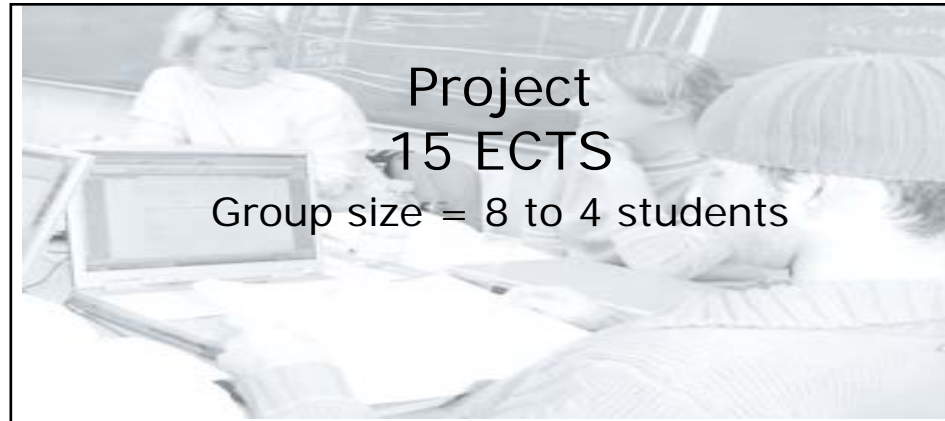


Aalborg Curriculum Model: Problem Based & Project Organized

50%
Courses



50%
Project
work



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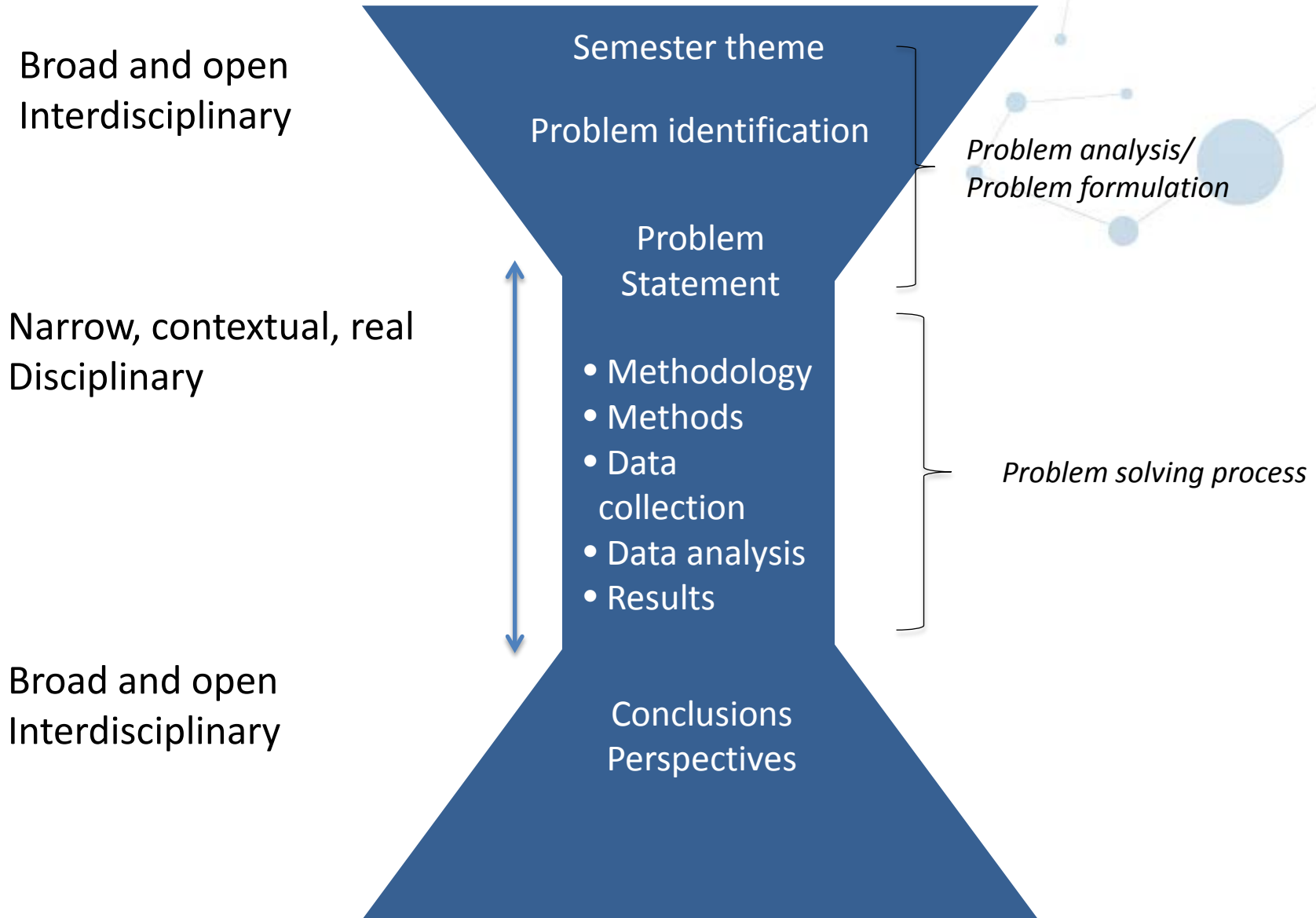
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1 ECTS (European Credit Transfer System)

= 30 working hours

Summing up PBL process

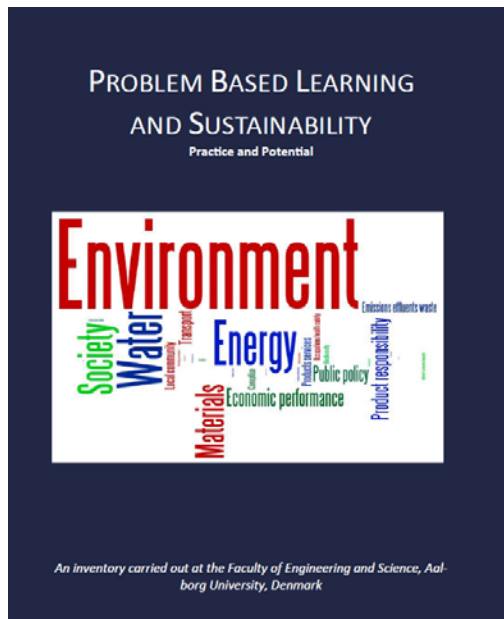


Initiatives and activities for sustainability in higher education @ AAU

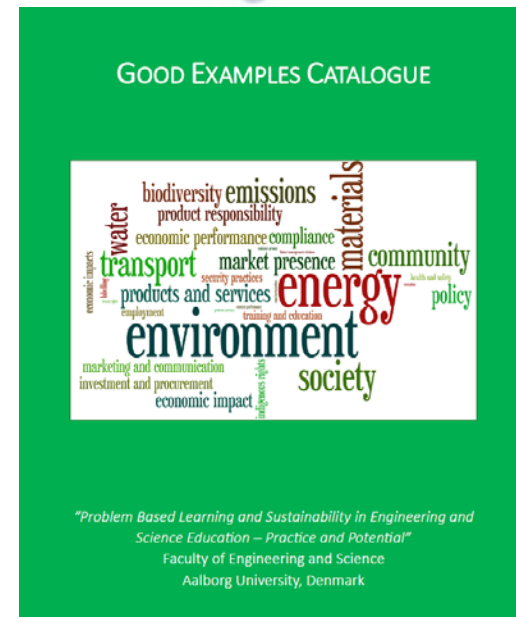
- From a management perspective:
 - Audit and reporting studies: PBL-SUS project
 - Develop faculty profile for sustainability: e.g. academic staff development, greening campus operation
- From a teaching/ learning perspective:
 - Science, Technology and Society (STS) angle in first year projects
 - Projects themes in engineering field and sub-theme in sustainable development
- From a research perspective:
 - PhD training
 - Case studies with industry
 - Conceptualize sustainability in different contexts
- From a outreach perspective:
 - Conferences
 - Webinars and seminars

From a management perspective: Report sustainability presence in all engineering programmes

- Reporting studies (e.g. PBL-SUS project)
 - Tools (e.g. GRI; GASU; STAUNCH, AISHE...)
 - Involved curriculum, students, academic staff, management, campus operations, etc.



Source:
http://vbn.aau.dk/files/198703296/Problem_Based_Learning_and_Sustainability_Practice_and_Potential.pdf



Source:
http://vbn.aau.dk/files/196495477/Good_Examples_Catalogue.pdf

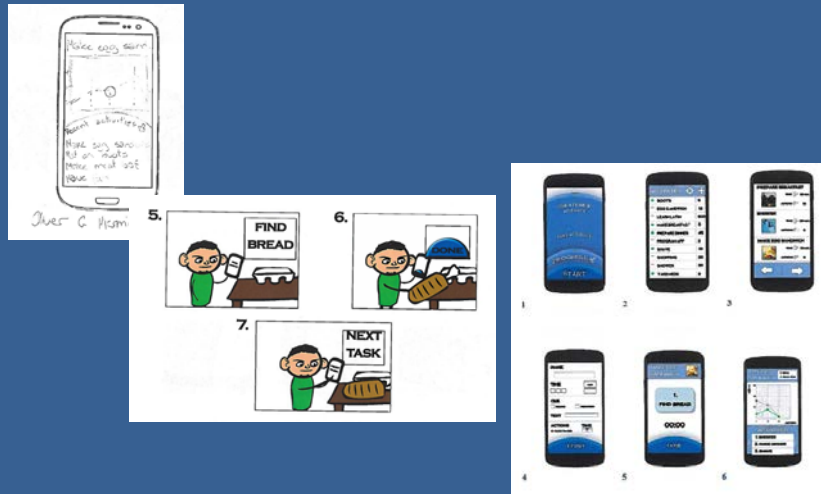
From a teaching/ learning perspective: Example from B.Sc. Medialogy – Spring 2015

Theme: *Designing from Both Sides of the Screen*

Sub-theme: *Sustainable life styles through exercise*

Problem Formulation

How can a mobile phone support the rehabilitation, with daily objects, of right hemisphere brain damage patients, with age between 15-25?



Discussion, perspectives and ethical considerations

Conclusion
(‘answer the problem formulation’)

Conceptualize, understand, apply

Interview and observation of target group

Analysis of existing solutions

Define success criteria

Development of design concept

Design

Implementation (in situ)

*Evaluation (w/target group
and other stakeholders)*

Reflection, synthesis

Closing reflections

- Fragmented initiatives or different levels of commitment??
- Overcrowded curriculum or work overload??
- Contextualize or ‘theorize’ about sustainability??
- Add-on sustainability or build-on identity in educational programme and in sustainability??



Thank you for your attention



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