Centre for PBL & Sustainability: Enhancing Sustainability in Engineering and Science education
Holgaard, Jette Egelund; Christensen, David; Kolmos, Anette; Nielsen, Eskild Holm; Christensen, Per; Du, Xiangyun

Publication date:
2009

Document Version
Publisher's PDF, also known as Version of record

Link to publication from Aalborg University

Citation for published version (APA):
WHY THIS INITIATIVE?

As noted by Barnett (2000), the University finds itself in an age of super-complexity, with one of the most complex challenges of our time being to alter trajectory to a more sustainable society on a corporate, regional, national and international level. The political pressure is ever more distinct to provide sustainable scientific and technological transformations to decouple the increase in problematic environmental and social impacts from economic growth, and secure a balance between the three pillars of sustainability. As pointed out by Peet, Bijma & Mulder (2004), education is of crucial importance in this decoupling as sustainable development requires a long-term vision and integral approach.

Several researchers within the field of Education for Sustainable Development (ESD) have argued that a paradigm shift is needed in Higher Education to face these new challenges of sustainability, see for example Cortese (2003), Sterling (2004) and Gough & Scott (2007). On the institutional level this paradigm shift implies a more systemic perspective emphasising collaboration between different disciplines, and on the more operational level the process of education also has to change as stressed by Cortese (2003:19) in the following:

“The process of education will emphasise active experiential, inquiry-based learning and real-world problem solving on the campus and in the larger society.”

Along the same vein, Sterling (2004) argues that an ecological paradigm for education is characterised by development and action-orientation; critical and creative inquiry; reflexive and iterative learning; an indicative and open curriculum; learning in groups, organisations and communities; and a democratic and participative environment. We believe that the PBL philosophy embrace exactly those values.

A PBL approach means a focus on how students’ learning process can be situated to the changing and challenging nature of real life problems. PBL is interdisciplinary, contextualised and student-centred, and the pedagogical means are changed from transferring knowledge to facilitating learning (Kolmos, 2006). According to Kolmos & Graff (2007) the cognitive learning approach of PBL is that learning is organised around problems and solved in a project-organised educational model with a dialectic interaction between the subjects taught in lectures and the real life problems dealt with in project work. The social learning process is team-based and participant-directed and through the project work the students interact with surrounding stakeholders and thereby contribute to development of society in general (Kolmos & Graff, 2007).

Problem and Project Based Learning (PBL) has been shown to be an effective framework for educating engineers and scientists capable of solving complex tasks in a collaborative framework. In a Centre for PBL and sustainability (PBL-SUS) we wish to research and develop PBL methods for integrating Sustainability into Engineering and Science Education to foster sustainable scientific and technological innovations and transformations.

JOIN US!

Be a part of the global network on PBL & Sustainability

Contact: Associate Professor Jette Egelund Holgaard jeh@plan.aau.dk

Department of Development and Planning
Aalborg University

REFERENCES


