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*Published in:*  
Exploring teaching for active learning in engineering education

*Publication date:*  
2017

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

[Link back to DTU Orbit](#)

*Citation (APA):*  
Løje, H., & Grex, S. (2017). Innovation pilot - to improve innovation competences of engineering students. In *Exploring teaching for active learning in engineering education: Book of abstracts* (pp. 179-180). IUPN - Ingeniør Uddannelsernes Pædagogiske Netværk.

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# INNOVATION PILOT – TO IMPROVE INNOVATION COMPETENCES OF ENGINEERING STUDENTS

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## ABSTRACT

*Keywords* - innovation, multidisciplinary, company case, double diamond process model

Please indicate clearly the type of contribution you are submitting:  hands-on,  explore,  poster.

## Background and explanation

In autumn 2016 a new mandatory course *Innovation Pilot* was running for the first time. The course is a result of introducing an updated diploma program at the Technical university of Denmark (DTU) and the new activity in the program is a new common 10 ECTS compulsory course in innovation and multidisciplinary (Nyborg and Christiansen, 2016) called innovation pilot with the focus on enhancing the innovation competences of the bachelor engineering students.

The innovation pilot course is placed on the 5<sup>th</sup> or 6<sup>th</sup> Semester of the education after the students have fulfilled the compulsory part of the education (Nyborg and Christiansen, 2016). The innovation pilot course is offered three times per year in the two semesters (13 weeks) and as intensive summer course (6 weeks) from summer 2017. At DTU there are 17 study programmes involved and it is expected that approximately 450 students will attend the course during each spring and winter semesters.

The outline for the course is that the students work in multidisciplinary teams with specific challenges offered by companies and the idea behind the course is that the students are trained to act as pilots for innovation projects in collaboration with companies. The companies provide open-ended projects which take a starting point in actual challenges observed by the company.

The main scope for this session is a discussion of how to enhance innovation skills/competences in large mandatory course with heavy company involvement and students from many different study programmes?

## The process, i.e. the methods used and/or approach taken

Double Diamond is a process model created by Design Council, a British organization, in 2005 (Design Council, 2005). The model provides a graphic representation of a design process. The double diamond model presents four main stages across two adjacent diamonds. The first diamond in the Double Diamond model concerns problematisation and understanding of a problem. The second diamond is the problem solving phase. Each of the four stages is characterised by either divergent or convergent thinking. These stages are:

Stage 1 - Discover – identify, research and understand the initial problem.

Stage 2 - Define – limit and define a clear problem to be solved.

Stage 3 - Develop – focus on and develop a solution.

Stage 4 - Deliver – test and evaluate, made the concept ready for production and launch.

At the course innovation pilot, the Double Diamond model is used to support the innovation process. During the semester course the students will go through three loops and in each loop the students will conduct an innovation process structured according to the double diamond model.

The company is the problem owner and the students should involve the reality of the company in solving the challenges.

During the work with the double diamond model the students are describing the context of the company problem. Furthermore they will develop prototypes and make suggestions to company for how to proceed further, all which are documented in a report. Furthermore the solution should make sense for the company seen from a business, organizational, operational and technological perspective.

#### **Set-up (activities and materials, assessment, evaluation)**

During the hands on session the participants will be dividing into smaller groups and discuss pros and cons using the double diamond process model for structuring an innovation process. After some time new groups will be made and new discussions will take place which also will include the aspect of using other models to improve the innovation competences of engineering students based on the participants own experiences.

#### **Expected outcomes/results (possibly data/experience from own practice).**

The expected outcomes are more experience which the authors can use for further improvement of the process model in the course.

#### **References**

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