

# **Help to recruit the future Engineers**

– And learn how to activate learners through Design Thinking

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## **ABSTRACT**

*Key words: Future Engineers, Design Thinking, Problem based learning, Active learning, Innovation.*  
Please indicate clearly the type of contribution you are submitting:   X   hands-on,

## **Background**

One of the greater challenges an educator face is inactive or demotivated learners. Learning will not occur unless the learner is actively involved in the learning process in one form or other. It can be discussed whether learners at higher educational institutes can be expected to be self-motivating and active learners. But regardless of what position educators take in terms of expectations to the learner's engagement, the didactic methods applied in the learning situation can either catalyse or prohibit activation and engagement of the learner.

For this reason every educator should ideally be familiar with active learning tools and be enabled to implement them in learning processes to the extent that is found meaningful.

## **Set-up**

During the hands-on session the participants will initially be introduced to the 5 stages of Design Thinking as they are defined at Institute of Design at Stanford University.

- 1: Empathize
- 2: Define
- 3: Ideate
- 4: Prototype
- 5: Test

(<http://dschool.stanford.edu/redesigningtheater/the-design-thinking-process/>)

For the hands-on session a challenge is posed:

*“How can we, inspired by active learning processes, support teachers at elementary level in primary schools (grade 0-4) in the development of pupil's motivation to and capabilities of becoming engineers, hereby ensuring a solid scientific foundation and motivation that will enable and catalyze application for an engineering degree.”*

Participants will work through the five phases of Design Thinking and, in teams, create potential solutions to the challenge at hand.

The last 20 minutes of the session is going to be used for evaluation of the design thinking process and for participants to share their thoughts on when, how and where they could use this type of active learning process in their own educational practice. This has the purpose of giving the participants an opportunity to reflect on their own learning and inspire each other with possible ways to implement design thinking in engineering education.

## **Expected outcomes/results**

At the end of the hands-on you have had the chance to explore how to work with the Design Thinking process yourself. On top you have come up with a concept to support the acquisition of future engineers.

It is expected that the learning outcome of a learning sessions where Design Thinking is used as process methodology reaches level 4 on the SOLO taxonomy (Biggs, J; Collis, K. 2014), complex use at an extended abstract level, the learner is expected to use their own resources and create. Depending on the framing of a Design Thinking process there is an opportunity to reach the highest levels of learning, according to Per Erik Ellström, developmental learning either on the productive type 2 level or the creative level, depending on whether the problem is given or not (Ellström, P.2001).

The more you empower students in the learning process the greater the learning potential is, due to the fact that the boundaries are not restricted by the curriculum

## **REFERENCES**

Biggs, J. and Collis, K(2014) Evaluating the quality of learning- The SOLO taxonomy.

Ellström, P. (2001). Integrating Learning and Work: Problems and Prospects. Human Resource Development Quarterly, vol. 12, no. 4.