When a "good" problem is key to success…

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Type of submission: hands-on activity

Prerequisites: required - basic knowledge about PBL OR participation in workshop "Want to try out Problem Based Learning?" (day1) (PBL implementation experiences optional)

Background

Problem-based learning (PBL) is due to its many benefits increasingly implemented in engineering education during the last years (Beddoes *et al.* 2010, Galand *et al.* 2012, Strobel *et al.* 2009). In several scientific articles factors were identified which influence effectiveness of PBL (Hung 2011, Hung 2013, Masek *et al.* 2010, Peterson 2004). This hands-on workshop aims on addressing on one of the major factors for effective PBL: the design of ill-structured problems.

Explanation

A well-designed ill-structured problem is one key to a successful implementation of PBL (Hung 2011, Hung 2013, Masek *et al.* 2010, Peterson 2004). Thus, this workshop will contribute to student's activation and increased learning by enabling teachers to design better suited problems for PBL. By using a very activating, hands-on workshop design participants will experience an exemplary problem design process. The workshop is based upon a literature review of recommendations for problem design in PBL (Dolmans 1997, Hung 2011, Jonassen *et al.* 2008). Participants will together create ideas on how to face practical challenges in the problem design process. To increase learning of the participants dedicated reflection time allows them to draw conclusions for their own teaching.

Set-up

When signing up participants are asked to fill out a short, on-line questionnaire about their prior knowledge and practical experiences with PBL. Results will be used for detailed workshop design. They are expected to prepare beforehand with material provided (approx. 30min). The interactive introduction will use concept questions and peer teaching to build a common base. Afterwards participants will design problems in small groups using a form which will be provided by the workshop facilitators. In the plenum experiences on applying design principles will be shared. Ideas of how to face challenges in the design process will be developed. Time for personal reflection allows participants to draw conclusions for their own teaching. A reflective, activating method will be used for workshop evaluation.

Expected outcomes / results

After the workshop participants are able to:
- define principles for the design of ill-structured problems used in PBL,
- apply design principles on one exemplary problem,
- list challenges of problem design and identify possible solutions,
- conclude possible next steps for their own teaching.

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