Engaging with Engineering Education

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This research focuses on the industry partner's perspective when engaging with engineering education through Problem- and Project-Based Learning (PPBL) courses, with the aim of bringing wicked problems into the hands of students

Why focus on partner's perspective in PPBL-courses

Recent research highlights the importance for higher engineering education institutions of master advanced PPBL courses in order to introduce wicked problems, particularly in light of the transition towards more sustainable societies (e.g., Lönngren, 2017).

In these courses, students engage with authentic, context-rich, and complex challenges from the perspectives of multiple stakeholders in collaboration with external partners. To manage the intended learning outcomes for our students and build strong partnerships, we argue that a more nuanced understanding of the partner's perspective is essential — a perspective still largely unexplored (Pan et al., 2023).

The study

The empirical material in this study is based on six in-depth interviews with industry partners who participated in the large PPBL course *Change Project in Industrial Management* (ME2502, 12 ECTS) during the autumn semester of 2024 (Blomkvist and Uppvall, 2012). The five partner organizations represent diverse sectors, including three large industrial companies, one global consultancy firm, and one start-up — all of which were engaged in challenges linked to major societal transformations

Photo Lars Uppvall: Students presenting for senior management at partner's HQ

Why partners engage in PPBL courses

Main motive: Strategic importance of the student's projects outcomes
Other motives: Interaction with the specific student group; continuation with master thesis; exposure to potential employee candidates; opportunity to collaborate with Indek/KTH

Main value: A research-based investigation of a current complex challenge that provides guidance and serves as a platform for further action.
Important aspects of main value: A research-informed investigation providing comprehensive literature support to contextualize the challenge and substantiate recommendations; learning together with students through projects; increased confident of the direction for innovation in the area of the challenge; inspiration from working with students.
Unique values: Compared with research collaborations – speed, flexibility, focus on technology, innovation, and business, as well as higher TRL-levels. Compared with consultants – students' independence and lack of industry/sector bias; ability to engage employees and stimulating leaning while conducting the investigation.

Implications (selected)

Implications for partners: The impact from collaborations through master-level PPBL courses represents significant value for industrial partners in terms of learning and innovation related to transformation.
Implication on PPBL design: In order to manage the dual focus of partner's challenge/needs and the course ILOs, the course should supervise (own) the research process – including seminars and coaching of problem formulation, methodological approach as well as student's relationship with the partner organisation
Implication for students: An effective, stimulating, and rewarding way of reaching ILOs on the highest level as well as build self confidence in approaching "wicked problems" with an external partner
Implications for KTH: Combining PPBL courses and research projects in relations with external partners as well as recognizing the contribution that PPBL courses represents as part of the "third task"

"One of the most effective ways to leverage that you are a Strategic Partner at KTH"

Industry partner, 2024

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