

# Pursuing the good case for innovation learning

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## **ABSTRACT**

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

## **Background**

Innovation projects are rapidly becoming an integrated part of study programmes in Denmark (DEA, 2014) and in other countries (Zhang *et al.* 2013). Government and society at large expect students to be able to transform gained knowledge into business, i.e. value creation, and innovation is seen as the method to accomplish this. This expectation is a relatively new phenomenon. Innovation courses have, for at least a couple of decades, been available to students of especially economics and to some extent engineering. Traditionally those students were taught innovation theory with little or no practical components. This has changed radically. Today innovation courses are very hands-on with very strong elements of experience-based learning. At times these courses are purely entrepreneurial in the sense that students are asked to develop a business plan from scratch. There is a growing realization, however, that most students will end up in existing companies; in other words, they will not become full blown entrepreneurs. The innovation courses are therefore shifting from *entrepreneurial* courses to *intrapreneurial* courses.

The most progressive intrapreneurial courses ask the students to innovate within a company framework, i.e. with real companies' real-life innovation projects. In such settings, where the otherwise somewhat difficult innovation concept comes alive, the students gain practical experience with real-life innovation and value creation (Løje *et al.* 2017). The students are typically presented with a project framework that stipulates the area of innovation interests, any solution constraints pertaining to it and other details important to the students (e.g. expectations regarding data sharing and level of involvement with and by company representatives). The project framework, in our experience, turns out to be a very subtle thing to work with. We have often faced the paradoxical conclusion that projects with project frameworks that we deemed very good in fact were not so good and vice versa.

A project can be successful from the point of view of any one of the three primary actors, i.e. of the students, the company or the teacher, but not the others. A project which e.g. leaves the company dissatisfied by proving the premises formulated by the company wrong through concluding that no solution is possible within the given constraints can be a result of a well facilitated process and lead to deep learning and top grades for the students. A project in which e.g. a company feel deeply inspired by something proposed almost accidentally by a group of students may not result in a satisfactory level of reflection on behalf of the students resulting in a poor learning outcome and a low final grade. A project can e.g. leave a company satisfied by providing the expected delivery and result in satisfied

students who have experienced a process which have not forced them outside their comfort zone but at the same time leave the teacher with a feeling that deep learning was not achieved.

The question arises if it is at all possible to design a project framework that guaranties satisfaction for all three primary actors. Designing the project framework is typically a task that befalls the teacher and a company representative, and this process is by nature highly complex. It implies aligning views on innovation and expectations of outcome, and this is not achieved at a particular moment in time; it is ever an ever-ongoing process. We may have to relinquish the idea of having a fixed project framework from the start of the course and onwards and accept the dynamic nature of the project framework design process and allow for it to change throughout the entire course.

Because of the above, we teachers need to shift focus from optimizing the concrete project framework, presented to the students at the course start, to optimizing the entire project framework design process spanning from the very first company contact to the last student has left the exam room and maybe even after that. What, then, makes that process a good process that will leave all primary actors satisfied in the end? This is the question that we want to explore in this hands-on session.

### **Hands-on session**

The authors will first introduce the research question outlined above and describe why this is both relevant and important and which dilemmas we see (10 minutes). Then the participants will be grouped and asked to discuss questions formulated in advance by the authors. The groups will have time to discuss the group members' own experiences with real-life company innovation teaching and what the good case for innovation learning is (20 min). The group session will be followed by a plenary summing-up session (10 min). Then the groups will continue the discussion but now focusing on designing the good 'project framework design process'. At the end of the session, the groups will present the results of their discussions and this will be followed by a plenary discussion, evaluation and conclusion (20 minutes). The authors will facilitate the discussions throughout the session.

### **Expected outcomes**

The expected outcomes from the session is more knowledge about and ideas for the development of the project framework design process for working with companies in relation to innovation courses. The authors will continue with the development of such a framework, which can be used in courses at our own universities but also at other educational institutes. Furthermore, the framework will be described in relevant papers for engineering education.

### **References**

DEA (2014). Fra forskning til innovation – om virksomheders brug af erhvervsrettede forsknings- og innovationsordninger  
entreprenørskab på universiteterne – fra vision til hverdag  
[https://dea.nu/sites/dea.nu/files/dea\\_-\\_entreprenoerskab\\_paa\\_universiteterne\\_-\\_fra\\_vision\\_til\\_hverdag\\_2014.pdf](https://dea.nu/sites/dea.nu/files/dea_-_entreprenoerskab_paa_universiteterne_-_fra_vision_til_hverdag_2014.pdf)

Løje, H., Andersson, P. H. and Grex, S. (2017). Improving innovation and multidisciplinary competences among bachelor of engineering students, Proceedings of the 45th SEFI Annual Conference 2017, pages: 380-388, 2017, Brussels. Presented at: 45th SEFI Annual Conference, 2017, Angra do Heroísmo

Zhang, F., Kolmos, A., and De Graaf, E. (2013), Conceptualizations on Innovation Competency in a Problem- and Project-Based Learning Curriculum: From an Activity Theory Perspective. International Journal of Engineering Education, vol 29, No1, pp 3-16