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**Please cite the original version:** Lintilä, T. & Marstio, T. (2022) Higher Education Working Life Projects Call for Guidelines, INTED2022 Proceedings, pp. 2609-2615.

doi:10.21125/inted.2022.0771

# HIGHER EDUCATION WORKING LIFE PROJECTS CALL FOR GUIDELINES

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## Abstract

Higher education institutions seek to supply the job market with competent professionals who have good working life skills, such as critical thinking, complex problem-solving, creativity and emotional & social intelligence. Competence develops best in an environment in which students can apply their skills and knowledge in practice. Therefore, it is common that universities seek to engage in active collaboration with working life partners.

A model based on the learning taking place in an authentic working life context produces competencies needed in working life and promotes efficiently the 21<sup>st</sup> Century Skills. The development of these future skills remains, however, often unnoticed.

This paper discusses work-oriented project learning in the higher education context. The purpose is to deepen understanding of the knowledge and skills needed in work-oriented learning projects from the point of view of the different actors: teachers, students and working life partners. Through our experience, we have learnt that the key players of these projects (students, teachers and working life partners) often do not know what to expect and how to proceed. In this article, we want to point out the need for systematic guidance for all three parties and present some ideas for it.

The theoretical part frames the concept of 21<sup>st</sup> Century Skills and the model of working life-oriented projects (Learning by Developing) developed at Laurea University of Applied Sciences, Finland. The article suggests a framework for the learning process of a work-oriented project to guide an HEI student through its various stages.

Keywords: work-oriented project learning, LbD-model, meta-skills, 21st Century Skills, higher education.

## 1 INTRODUCTION

Laurea University of Applied Sciences responds to society's future competence requirements with the Learning by Developing (LbD) Action Model. Its principle is that working life development projects are embedded in the studies, in which students solve concrete challenges in working life and take part in the development of new products and services. The LbD approach is based on project-based learning and provides an ecosystem where students, workplace partners and teachers learn together. It emphasizes genuine working life projects, research and partnership, and thus combines the basic tasks of a university of applied sciences: education, regional development and applied research.

Laurea has gained a long experience in incorporating work-based projects into higher education. A development-based learning course of study includes a developmental task related to real working life development or the higher education RDI project, in which teachers, students and representatives of working life work together as equal partners and also learn from each other. It is essential in the LbD model that the object of learning is authentic and someone is genuinely interested in the result of the development work [1]. It enables students to network with working life partners already during their studies, ensuring that the professional skills that emerge meet the changing needs of working life. For the student, close co-operation with the working life and the networks created during their studies ensure good employment and career development.

For this model of teaching to work in the best possible way, everyone involved must have a clear understanding of the principles and practices of the LbD. Without a systematic introduction to the LbD approach, it may in some places be understood unilaterally only as project-based learning, or it may be seen as a narrow frame of reference in which teaching must be organized in a certain way, ignoring the teacher's creative process [1]. According to Laurea's experts, the absolute prerequisites for using the LbD approach are cooperation with working life, understanding the LbD's pedagogical approach, mapping the needs and requirements of the organization, appropriate training and enough time to

internalize, continuous development and work, and interest in working with companies that understand the importance of cooperation. In addition to this, both teachers and students, need to be prepared to act in roles they have not played before. [2].

## **2 THREE APPROACHES TO WORK-ORIENTED PROJECT LEARNING IN HEIS**

The following presents the knowledge and skills needed to implement a work-based course of study in higher education from the perspective of different actors: the teacher, the students and the working life partners. In addition, we call for practical guidance for each actor so that it is clear to all parties what is happening at each stage of the working life project, what is expected of them and what kind of skills will be created from it. It is especially useful for the student to make visible what kind of challenges are associated with each phase of a work-based project and what kind of meta-knowledge is accumulated from them.

### **2.1 The knowledge and skills a teacher need to work in the LbD-study**

The successful implementation of the pedagogical thinking model according to the LbD presupposes that the teacher must be familiar with the principles and ideology of the LbD. The LbD can be applied to teaching in many ways and this can be challenging for the teacher. The LbD cannot be applied without internalising it in its entirety. The LbD is not just about students doing genuine customer projects during the course, it is a much broader scope. It is based on the development and evolution of competence. In addition to developing students' skills, this almost always means developing teachers' skills. From a teacher's perspective, the LbD pedagogy means a new way of thinking compared to traditional teaching. In the LbD approach, a teacher can play a variety of roles, depending on the situation or project. A teacher's job may include leading and organizing, mentoring, planning projects, and participating in various phases of the project. Central to developmental learning is that the teacher needs to be open-minded, bold and creative. The teacher must also dare to go outside his or her comfort zone and dare to choose project topics for which he/she may not be an in-depth expert. The LbD requires a genuine partnership and the ability to work together, as well as resilience to uncertainty and incompleteness. [3].

The competence objectives for the different courses of studies are defined in the curriculum. The task of teachers is to identify the competencies that the course that they are teaching is intended to develop. Teachers should then design the courses in such a way that the chosen teaching and learning methods best support the development of these competencies. Together with working life experts, the teacher plans a project to develop working life that provides the goals related to the competence of the study period. The LbD, therefore, requires teachers to have good networks for working life, to maintain them and to build them continuously [3].

The LbD course of study typically has many different learning tasks and different assessment methods. In assessment, it is important to ensure that development-based learning produces a high level of competence and that it also supports the student's professional development [3]. Usually, the client project is only part of the course. During the course, students study theory, seek new information, do individual and group assignments, etc. There are also many different assessment methods used in the evaluation of the course of study. It may include traditional individual examinations, group assignments, self-assessments, peer reviews, teacher evaluations, and client evaluations related to project work. When planning the implementation of a course of study, the teacher must think holistically about how students will best achieve the Competence Objectives defined for each course of study. Teachers participate in research and development projects with working life, and after the implementation of the project, teachers assess how well the students achieved the Competence Objectives described in the curriculum [3].

As a teacher accumulates teaching experience, a so-called LbD-related tacit knowledge develops, including unwritten practices or non-articulated skills that contribute to the guidance and assessment of the LbD course of study. Making this tacit knowledge explicit would allow it to be shared, for example, with a new teacher who is not already familiar with the approach to work-based learning. [4]. Laurea experts believe that organizations that use the LbD model need a clear strategy, a strong will, a positive atmosphere, and a willingness to try new approaches. Teachers should not be left alone but should have adequate training and support available when needed. Teachers need to be instructed to discover the purpose of the LbD so that they understand their role and why the LbD is a good way to develop competence. [2].

### **2.2 Students need manifold and multilevel competence in working life projects**

A course of study designed together with a working life partner differs in many ways from a traditional execution method of a university course. When facing new situations and ways to act both the student

as well as the teacher may have to operate outside their competence zones. The LbD approach strives for authentic situations where there are no predictable solutions [5]. This kind of scene for learning may offer inspirational motivation to students who call for challenges, intellectual tuning, and possibilities to foster creativity and skills for critical thinking [6].

The different stages of working life -projects from the student's perspective are presented in Figure 1. Typically, the project kicks off with a joint appointment of the students, working life partner and the teacher. It is often followed by initial embarrassment: the student may not have a clear vision of the scope and expected results of the task they are undertaking [7, 5]. The roles of the team members also are not defined unless it is a matter of an already established team. It may also be that the terms of reference are expressed loosely which makes it difficult for the students to know where to start. However, the students may also benefit from terms of reference defined at the general level as then they can choose their approach to the challenge [7, 8].

The most challenging phase of the project work starts once the project has been initiated and the students have perceived the big picture of it. This stage requires a critical, research-oriented approach as well as independent and determined work. At this stage, the student builds a knowledge base needed for implementing the project. However, adopting theoretical information from the literature or the lectures is not enough – the student also needs to know how to apply this information. At this point, the challenge given by the working life partner may appear distant and difficult to achieve. No wonder this stage is at times named as a valley of death. The student is expected to build and share his/her expertise with other members of the team which calls for collaboration and problem-solving skills, the ability to think critically as well as creativity.

The student can experience empowerment once he/she has, together with the team, produced a solution that is by the terms of reference: they have managed to apply theory into practice. The presentation of project results is often preceded by a reflection of the different project stages. When presenting the project results to the working life partner the student team shows its competence and the project work ends with feeling like a winner.

This illustration depicts how the student accumulates as if unnoticed, various meta-skills as the project progresses: time management, organization, data management, networking, group working and creative problem-solving.

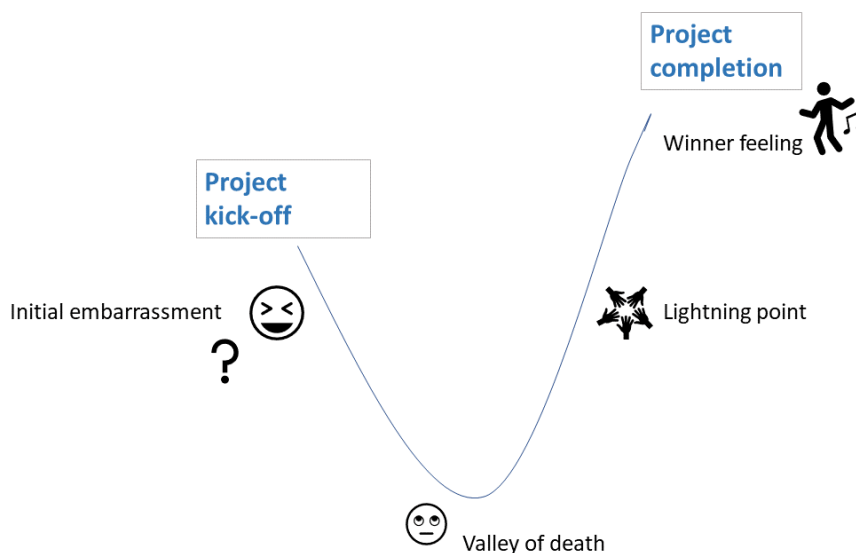


Figure 1. Stages of working life -project from student's perspective.

### 2.2.1 Learning in work-oriented projects – a call for a practical student's guide

Soft skills, such as social and generic skills are in high demand in today's workplaces. The generic skills are also defined as meta-skills, and they include among other things innovativeness, resilience and self-management [9]. Both concepts form part of the internationally used term 21<sup>st</sup> Century Skills. They are wide-ranging skills that are independent of study subject or discipline. Binkely & al. [10] divide them into four categories: ways of thinking, ways of working, tools for work and living in the world. It is interesting to contemplate the development of these competencies in the context of a working life-oriented university course.

Even though each working life -project is different, their way of progression is compatible by and large. Certain knowledge and skills are needed at each stage. Especially the students would benefit from recognizing the various challenges of professional development and the working life skills needed as the project progresses. Without them being pronounced and made visible to the student he/she may not become aware of the accumulation of the meta-skills. Students may not, for example, perceive skills of thinking such as creative ideation and problem solving as working life skills and consider them forming a part of substance knowledge [11]. In the same way, they do not always consider skills of collaboration and communication as working life skills because these skills have been adopted earlier [12].

At Laurea, the accumulation of meta-skills was studied among information technology students in 2019, before and after a course where the LbD model was applied. The survey questionnaire included a list of working life skills to be assessed on the Likert scale, for which the students assessed the level of their competence at the beginning and the end of a course. According to this survey, many of the students estimated that their competencies had developed in working life skills, such as life management and well-being, as well as the wording of their skills and the ability to learn continuously, although these things are not learned in the course. [13]. This observation is very supportive of LbD's ideology that, in addition to substance-related content, students also learn a lot of other skills needed in working life during LbD-compliant courses.

There is plenty of literature and guides available on leading and facilitating working life-based learning projects [3, 14, 15]. From a student's perspective, it is more difficult to find such guides and articles that open up the different stages of the project-based learning process. A guide to work-oriented project learning could help the university students to understand the learning that takes place at each stage of the learning project, as well as from the perspective of working life skills related to expertise as well as generic skills. Table 1 describes the different meta-skills that a student can develop by participating in a course that applies work-oriented project learning. It utilizes the breakdown of future skills according to Binkely & al. [10].

Table 1. Future skills developed during a course based on work-oriented learning. Modified on basis of breakdown presented by Binkley & al. [10].

<b>Stages of the learning process</b>	<b>Ways of thinking</b>	<b>Ways of working</b>	<b>Tools for work</b>	<b>Living in the world</b>
Project kick-off and team grouping				Interaction skills with different actors
Building the knowledge base and framing the challenge		Planning skills	Skills in information search and ability to utilize different methods	
Problem solving and formation of solution (s)	Critical thinking and problem solving Knowledge building skills Ability to apply knowledge, Decision-making skills			
Presenting solutions and reflection on the lessons learnt	Development skills and creative ideation skills	Presentation skills	Presentation techniques	Identifying one's expertise
Skills to be developed at all stages	Learning to learn Decision-making skills	Time management Stress tolerance Project management skills Teamworking skills	Digital skills and digital literacy	Interaction skills with different actors Emotional intelligence Personal and social responsibility

In a working-life based learning project, the student may contemplate the development of his/her skills and competence from four different contexts: student, team, project and working life [14]. Using these parameters, we have built a framework for a work-oriented project learning process, combining them with the different project stages. Each stage contains things to consider and makes the learning of

generic skills visible. Table 2 describes the framework on basis of which a student guide could be built for the implementation of a work-based learning project.

Table 2. An outline of the learning process of a work-oriented project

<b>Stages of the learning process</b>	<b>Me (What do I learn)</b>	<b>My Team (team-working skills)</b>	<b>Project (project working skills)</b>	<b>Working life context (Working life skills)</b>
Project kick-off and team grouping	Interaction with different actors Define your own learning goals. How will you reach them as well as the results the working life partner expects?	You get to know your team members and define together the learning objectives for the project	With your team, you will create a thorough project implementation plan You agree on roles and responsibilities within your team Critical: commitment	You get to know the working life partner and investigate the backgrounds of the project and the expectations of the project partner
Building the knowledge base and framing the challenge	You learn about information search. Remember source criticism	Leveraging the strengths of different members of the group Critical: Even division of labour	Skills in project work and project management Critical: Coordination of the teamwork	You improve critical thinking skills
Problem solving and formation of solution (s)	Your problem-solving skills will evolve. You can enhance your creativity	Critical: Reconciliation of different perspectives and aspirations		You gain the ability to apply theoretical knowledge to the working environment of the project partner
Presenting solutions and reflection on the lessons learnt	You reflect your and your team's activities and learning in light of the learning goals You develop your presentation skills	Critical evaluation of the solution to be presented Practising the presentation	Elaboration of the project report	You can speak expertly in questions related to your field of education
Skills and competencies to be developed at all stages	You can identify your competence. Your trust in your competence is strengthened	Development of teamwork skills	Project management skills in practice: how to have meetings, schedule work and agree things with others	You gain the ability and confidence to work with people from different backgrounds

### 2.3 Knowledge and skills of a working life partner participating in a study module by the LbD

Working life partners are needed so that students can apply what they have learned in real working life projects during their studies. In the LbD course of studies, students' skills develop in many ways and many different areas. In addition, students are involved in developing business operations. The involvement of working life partners in LbD projects often differs much from their other project assignments. In the LbD project, working partners need to understand that their involvement and commitment is particularly important. The idea of the LbD is that all parties, representatives of working life, students and teachers, are equal. However, working life representatives need to remember that students are learning new things and therefore working life representatives need to be able to support, guide and perhaps also teach new things to students.

Typically, the LbD projects have pre-agreed roles for each member involved in the project. However, the division of labour between roles may change during the project depending on the situation. This is usually because participants in the project are constantly learning new things and deepening their previous skills, and thus they can take on new tasks and responsibilities for themselves. In the LbD projects, the customers are the clients and if, for example, the agile development approach is used, the customer is typically in the role of a product owner, the students are the Scrum team and one of them acts as the Scrum master. The teacher or teachers are usually in the role of mentor and assessor, but they can also be involved in the Scrum team in some roles.

Representatives of working life must also understand the ideology and backgrounds of the LbD and the fact that students usually have other tasks related to the course of study, in addition to carrying out their

project assignments. The LbD is not the same as Learning by Doing, but it also involves the internalisation of theoretical knowledge, which requires a deeper understanding of theoretical knowledge.

One important skill of working life representatives is that they could also share their skills with students. The role of the representatives of working life is to acquaint, provide enough information and be accessible so that the students can start planning the implementation of the project together with them and at the same time think together about the best solution to be developed for the client. The partner's task is to be actively involved, give feedback and comment, and steer the project in the direction they want, so that the result is desired. Without a strong commitment from the client, projects usually do not meet the client's needs very well, nor do students learn what they could learn at best. Insufficient customer engagement and poor participation in the project tend to reduce student motivation as well. Clients should also be able to assess how well students performed on the project and how the final output of the project will meet their expectations.

### 3 REFLECTIONS FOR FUTURE DEVELOPMENT

A successful course of study based on work-oriented project learning or an RDI project requires a lot of prior knowledge and understanding from all parties: students, teachers and working life partners. However, Laurea's experience shows that often neither the students nor the working life partners are familiar with the ideology and principles of the Learning by Developing model. Teachers' knowledge and skills may also be deficient due to insufficient briefing [16].

Laurea's LbD Guide [3] supports the work of teachers and needs updating. The article "*Work-oriented project learning model in higher education*" [17] provides a framework that includes the stages of a work-oriented learning project at a practical level from the perspective of teacher, student and working life partner. By considering digitalisation and competency development, this framework could well serve as a backbone for a guide to work-oriented project learning by the LbD model. This kind of guide could make the tacit knowledge related to the LbD visible and establish it by the document. It could guide the teacher on how the Learning by Development model bends to online learning. It is also important that the teacher identifies the development of the student's competencies and skills at different stages of the project, which will help him/her in the guidance work as well as in the assessment of the course of study.

There is also a need for a guide on work-oriented project learning for students. The framework presented in Table 2 could support its design. Also, it is important to introduce the idea and methods of project-based learning to the student well in advance of the start of the course of study. Although each learning project implemented in co-operation with working life is different, the working life partners would also benefit from it and from the LbD guide explaining the principles of the work-oriented project learning as well as the role and tasks of each actor as such a project progresses. We find it important to constantly develop work-oriented project learning to keep it vibrant and provide sufficient conditions for the development of students' working life competency and for the renewal of working life.

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