WORK-ORIENTED PROJECT LEARNING MODEL IN HIGHER EDUCATION

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Abstract

The growing importance of the service sector emphasises service innovation, which is seen as vital in the creation of new service offerings, service business models and service processes in both the private and public sectors. In order to identify new opportunities and design service innovations, new capacity building is needed in the rapidly changing service business environment. Consequently, this requires the development of novel pedagogical approaches and learning methods in higher education. One of these could be work-oriented project learning, which seems to be an appropriate method for accumulating new competencies and working life experiences.

The purpose of this paper is to deepen understanding of work-oriented project learning in Master's degree studies in digital service design. The paper aims to develop a pedagogical model describing work-oriented project learning in higher education based on the work-oriented project learning model by Upola [14] and pedagogic Learning by Developing (LbD) model by Laurea. Work-oriented project learning is "a method for cooperative learning and learning by doing in which knowhow is acquired under the guidance of a teacher in authentic learning environments" [14]. LbD is based on learning through research and developing (R&D). According to both models, expertise and experiences are shared between teachers and students, as well as project partners and other stakeholders. The teacher members of the project team take part by providing their expertise to steer the progress of the work and, at the same time, the progress of the learning. The LbD model describes the theoretical pedagogical framework. However, as such, it does not provide conceptual tools or operational models for analysing project learning. Upola's model could also provide conceptual tools for modelling project learning in higher education. The research data was collected in two digital service design cases during a project called The Finnish Design Academy (FDA). The research data consists of the curriculum implementation plan, teacher diaries, students' self-assessment and feedback, and an assessment of the study unit made in 2019. Case study research was selected because it investigates a contemporary phenomenon within its life context and uses multiple sources of evidence.

The structure of this paper is as follows. First, it discusses service design and digital service design in higher education. Second, the LbD model by Laurea is introduced, the existing work-oriented project learning model by Upola [14] is presented and its suitability for higher education is considered. In addition, the paper briefly explains the EU's standard, the EQF framework, that specifies the quality of education. Third, it presents the development of the pedagogical model of work-oriented project learning in higher education. Fourth, the paper presents the results of the development work and finally, it discusses the main contributions.

Keywords: work-oriented project learning, digital service design, digital service, higher education.

1 INTRODUCTION

This chapter briefly discusses the growth and importance of the services sector and Master's degree education in service design. In 2016, 65.1 percent of the world's gross domestic product comprised of services [15]. The great and growing importance of services further emphasises the importance of service development and service innovation. Thus, service innovations will be essential for the success of society in the future: they increase economic efficiency, save costs, create new operations and open new export opportunities. In the future, versatile and comprehensive services will be in high demand. Although the service sector has become one of the most significant industries in the world economy, it is bound to face the challenges of the ever-changing business environment. Global social challenges, such as digitalisation, increasing inequality and ageing also have a notable impact on service development. Digitalisation is relevant to all social and economic sectors. Technological development has revolutionised many industries, and this tendency will continue at an increasing rate. It is likely that information and communication services, administrative and support services, business and professional services as well as entertainment and recreational services will face the digital

revolution before other service sectors. [10]. On the other hand, consumer behaviour has changed as well. The clients in the digital era use fast communication tools and expect customisable digital content. Services have to be easily approachable and available in the channels that the clients use. The importance of clients' personal service experiences increases; experiences, ideas and opinions are shared both privately and publicly through different social channels. Clients appreciate collaboration and are ready to participate in the collaborative development of the services that they find important. [12]. This has led to a significant change in the nature of services. Modern services are multi-channelled, and digital technology plays a central role in them. Approaches, methods and tools used in the field of design are being applied to service development. In other words, service design. Service design is a developing multidisciplinary field, which has proven to be an extremely efficient and useful approach when placing the service and customer experience at the heart of service design.

Technological development and digitalisation of services have created prerequisites for creating completely new operational processes, business models and services. Utilising these opportunities generally requires a new kind of knowledge from professionals. [13]. Consequently, this requires the development of novel pedagogical approaches and learning methods in higher education. One of these could be work-oriented project learning, which seems to be an appropriate method for accumulating new competencies and working life experiences. Thus, universities providing design education have found it necessary to develop approaches for work collaboration in order to integrate students into working life faster and ensure that their knowledge corresponds to the ever-changing demands of the design sector. Moreover, it is necessary to improve communication and networking between the students and business life, which helps to build the flexible occupational identity of the students and makes it possible to react rapidly to the ever-changing demands of designing. For this purpose, the universities providing design education in Finland have started to collaborate. The Finnish Design Academy (FDA) project (2018-2020) funded by the Finnish Ministry of Education and Culture focuses on developing a new kind of collaboration model that aims to strengthen the role of university-level design education in the Finnish innovation ecosystem. The goal of the project is to develop students' competence to better take into account the needs and demands of working life nowadays and in the future.

One of the pioneering universities in service design education at the Master's level is Laurea University of Applied Sciences (Laurea). Laurea offers two Master's level programs in service design (Service Design and Service Innovation & Design) and one in digital service design (Innovative Digital Services for the Future). The programs approach service design from the theoretical perspective of service marketing and management. New models of service business and design thinking are applied to education in the context of service development and management. Furthermore, the processes, methods and tools of service design will be taught diversely. After the core studies of the training programme have been completed, the students can customise their own paths by selecting complementary courses based on their learning goals. This education is aimed for people who work in management, professional or development positions and want to become future-oriented pioneers of services. The purpose of this paper is to deepen understanding of work-oriented project learning in Master's degree studies in digital service design. The paper aims to develop a pedagogical model describing work-oriented project learning in higher education based on the work-oriented project learning model by Upola [14] and pedagogic Learning by Developing (LbD) model by Laurea.

2 TOWARDS THE WORK-ORIENTED PROJECT LEARNING PEDAGOGICAL MODEL IN HIGHER EDUCATION

The following chapter introduces the LbD model by Laurea (2.1). The existing work-oriented project learning model by Upola [14] is presented (2.2) and its suitability for higher education considered (2.3).

2.1 The Learning by developing (LbD) model by Laurea

Laurea educates, examines, develops, innovates and provides new kind of knowledge by employing the principles of Learning by Developing (LbD). LbD is a pedagogical model by Laurea, in which the premise is real encounters with working life. The background for this model includes exploratory learning [5] and Dewey's pragmatism ([2], [3,] [4]). The characteristics of LbD are authenticity, partnership, experience, creativity and research orientation LbD combines learning focused on building knowledge as well as creating new information in various research and development projects. According to evaluations, the strengths of this model include increased independent thinking skills and

self-confidence, working with real-life problems, building contacts with companies and organisations during the early stages of studies as well as improving employment opportunities. [8].

Education at the university of applied sciences views learning as a process of future-oriented research and development, during which knowledge is built by providing new information and skills for problems that cannot be solved with prior knowledge and skills. Learning is a process of gaining new knowledge and skills, which connects learning to the innovation activity of the field and the region. Education is a personal and collective project in building expertise as well as improving and surpassing oneself, which seeks to combine relevant and practical knowledge from the perspective of future expectations in working life. More specifically, teaching is not focused on presenting, repeating and controlling information, but is rather a process including progressive problem-solving and constant learning as well as improving and surpassing oneself. The aim is to reach a level of knowledge that is practical in knowledge-intensive service organisations, in which the work is increasingly more commonly based on creativity and where the prerequisite for management is having the ability to create a responsible and result-oriented management culture that supports the individual's creativity. Knowledge manifests itself in the form of development knowledge and effectiveness. Consequently, the knowledge is built through dialogue with a community that provides enriching knowledge. The community is an environment of shared expertise, in which the role of the learner is not only to work as an expert, but also to develop and influence. The learner builds knowledge through interaction with the environment and industry. The resources for building knowledge are a creative and goal-oriented learning environment, competent guidance and teaching and a learning environment that encourages learning. The guidance of competence development is participatory. Each teacher supports competence development by the strengthening it by their own expertise and experience. [8].

As a whole, the learning environment constitutes the network of knowledge, the innovation environment, the basis for building knowledge and structures supporting learning. The learning environment is built with a focus on people as well as their enthusiasm and interaction to promote creativity. Research, development and innovation by Laurea (RDI) provides a platform for research, planning, testing, evaluation, design, implementation and mobilisation of the service innovation. Moreover, Laurea's strategic research fields include service business, health and social integrity as well as collective safety. Activities supporting these include human-centred planning and service innovations, entrepreneurship and the use of technology. RDI activity by Laurea serves students, partners and other stakeholders in the region of Uusimaa. The knowledge of both the staff and students is improving and expanding through the RDI projects. Service design as well as inclusive and customer-oriented methods in particular are used in the projects, and new approaches and tools for innovation are developed.

2.2 The pedagogical model of work-oriented project learning by Upola

Upola [14] has developed a pedagogical model for work-oriented learning which aims to create understanding of real working life for students at upper secondary level. The learning process focuses on the challenges of real working life as determined by a collaborative client. The theoretical framework of the pedagogical model is based on a socio-cognitive constructivist concept of learning, and the research has been approached in particular from the perspectives of special education, managerial psychology and motivation theory. Upola [14] divides the nine stages of the pedagogical model of work-oriented project learning into four phases on a practical level: 1) receiving the commission, 2) working on the commission, 3) implementing the commission in a real working life environment, and 4) completing the commission. [14].

Table 1. The practical level of the work-oriented project learning process [14].

1. Commission	Assignment
2. Work on an assignment / orientation	Ideation and design
	Getting to know the project environment
	Purchasing of materials
	Preparations
3. Implementation	Project execution
4. Project completion	Conclusion and evaluation
	Clients' feedback
	Project invoicing

Table 2. *The roles of different actors in work-oriented project learning [14].*

	Student	*Teacher*	*Client*
Tasks	• Acquires skills in a learning environment provided by working life • are involved in decision-making during the project	• Coordinates initial arrangements, curriculum content, cooperation between actors, the progress of the project • Supports and guides the student towards purposeful work • Guides students to the right level of work • Inspires students with creative problem-solving	• Defines the assignment • Provides space as a learning environment • Defines project resources such as task content, time and financial resource. • Creates a good first impression that gives students a good starting point for learning

Upola [14] has observed that work-oriented project learning changes the responsibilities, roles and tasks of both the learner and the teacher. The model also responds to the role and tasks of the work partner of project learning, i.e. the client. The tasks of the three actors in the work-oriented project learning model are summarised in the table 2.

The students participating in project studies are at the heart of the pedagogical model of work-oriented project learning by Upola [14]. They own their knowledge (**autonomy**) and gain more knowledge on an individual level based on their own skills The students have an opportunity to utilise their various competences (**competence**) in work-oriented project learning. The students are motivated to work on a project in which the resources require **resilience** from them. They also show **benevolence** by helping and encouraging others. **Assertive** students have an opportunity to challenge themselves with learning goals that occasionally require them to step outside their comfort zone. The students consider the work-oriented project **motivational** and challenging because the collaboration with the client emphasises expertise. This reinforces the students' sense of responsibility, volition and commitment to the project. The students need to be flexible. The students create and apply various methods to combine and divide things in different ways with cognitive resilience, i.e. flexibility. Resilient students are determined and have a positive attitude, which helps them to proceed in their work despite potential conflicts. This requires assertiveness. Social cohesion and **socioemotional** characteristics become emphasised in a group. **Collegiality in learning** – to which **shared learning**, **shared expertise** and **shared responsibility** are related – increases benevolence in the group during project learning opportunities, which can be seen to stem from the shared goals and limited time resources of the project. The creative problem-solving process is highly practical and it emphasises the positive attitude in the group towards others and the project itself. Suggestions and ideas are discussed as equals, problems are viewed as challenges and the group members commit themselves to solving the problems. Collaborative learning and expertise also promote students' **divergent thinking skills**, which improve creative and unique thinking. The students improve their thinking skills and build knowledge together, which improves their socially shared metacognitive skills. Working together, self-regulation and **socioemotional skills** also improve in the group due to the collaborative nature of project learning. The sense of community, activity, problem-solving and self-awareness of one's skills and emotions have a central role in work-oriented project learning. **participatory atmosphere** encourages students to take up various tasks and take safe risks in tasks that they have not completed before. [14].
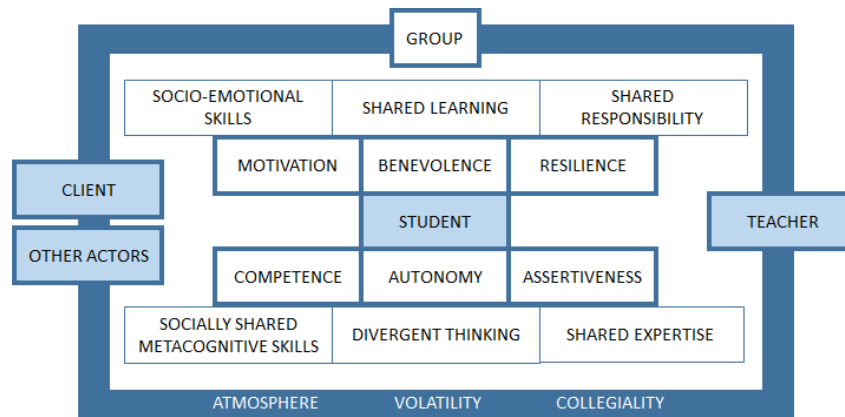
Figure 1. *The pedagogical model of work-oriented project learning [14].*

2.3 Towards the work-oriented project learning pedagogical model in higher education context

Upola's research on work-oriented project learning was implemented in the context of vocational education, so it may not be directly implementable in all higher education settings. The vocational context becomes evident, for example, through the hands-on experiences of the students on a practical level, such as practical events and space visualisations as well as placing items on display and through various promotions. The client are entrepreneurs in the commercial and service sectors, who order designs, constructions and services, which are a daily part of the operational activities of the company, from the educational institutions. At the university of applied sciences, the learning goals are related to expanding and deepening knowledge on development and management. This should always be taken into consideration when defining and evaluating the learning goals of project studies in the higher education context. In addition, the challenges in the model by Upola [14] which are related to the differences between learners seem to be generally linked to the social and cognitive challenges of young people. The teachers in higher education must possess a strong pedagogical knowledge with groups of students in which their knowledge is multidisciplinary and on multiple levels. At the university of applied sciences, these multiple levels become evident in various educational levels (Bachelor's, Master's, Doctoral level education) and working life backgrounds; students may have very different skills and competences in terms of development and management skills from one another for improving their development and management skills. It is a challenge to determine and to take into account the personal and motivational learning goals of different learners.

Although the model by Upola [14] is not fully implementable in the context of higher education universities of applied sciences, it does contain valuable insights and provides conceptual tools to develop the model of work-oriented project learning in the higher education context:

1 The concrete model illustrating the progress of work-oriented project learning (see the previous figure).

2 The actors in project learning and their roles, responsibilities and tasks.

3 Multidisciplinarity: Multidisciplinary groups are more efficient and solve problems faster than homogenous groups. Multidisciplinarity makes it possible to share knowledge and learn together from others in the group. Furthermore, multidisciplinary groups are more creative and innovative. Multidisciplinary groups focus more on the overall goal rather than attempting to reach for the success of a single sector.

4 Project learning requires the following essential characteristics from the students, which are gained through work-oriented project learning: (1) sense of responsibility, commitment, discipline; (2) attitude, flexibility, openness; (3) motivation, enthusiasm, success; (4) emotional dimension. [14].

5 Students' work-oriented project learning can be described with the following characteristics: benevolence, resilience, assertiveness, autonomy, competence and motivation.

3 METHODOLOGY

The research data was collected in two digital service design cases during The Finnish Design Academy (FDA) project in spring 2019. Case study research was selected because it investigates a contemporary phenomenon within its life context and uses multiple sources of evidence. The two digital service design cases took place in the Master's degree study unit context: Service Design Process and Methods (10 cr) and Agile Methods in Service Design (10 cr). The cases were carried out in close cooperation with the client companies: one is an international well-being technology company and the other is a financial company. In both cases, the students also evaluated their own work-oriented project learning. The pedagogical model of work-oriented project learning by Upola [14] was used as the framework for self-evaluation (see Fig. 1). The cases are described in more detailed in Sections 3.1 and 3.2. The research data consists of the curriculum implementation plan, teacher diaries, students' self-assessment and feedback for client companies, as well as assessment of the study unit. The analysis of the research material followed the principles and steps of content analysis: transcription, reduction, clustering and abstracting. Content analysis refers to qualitative data reduction and sense-making efforts that take a volume of qualitative material and attempt to identify core meanings [11]. It can be applied in order to make valid and replicable inferences from texts or other sources relevant to the context of their use [6] and indicates that phrases and words from the text data are extracted into relevant categories [7]. In content analysis the researcher examines artefacts of social communication [1]. The data was analysed both during the data collection phase and when all the data had been collected, which enabled a dialogue between empirically derived knowledge and literature.

3.1 Case 1: Designing a new digital service concept for a wellness technology company

The study unit Service Design Process and Methods (10 cr) focuses on digital services, service design and service business. The aim of the study unit was to provide the students with the following competences: (1) to employ the principles of service logic and evaluate their impact on the development of service business; (2) to evaluate and employ the principles and techniques of service design diversely in the different phases of digital service planning process; (3) to understand the communicative and experimental nature of planning; (4) to guide and analyse the process of generating collaborative knowledge and gathering material in workshops of collaborative development; (5) to plan, facilitate and implement workshops that work independently, analyse the material that has been gathered in workshops and report the results derived from the material; (6) to consider the ethical questions of collaborative development, and (7) to construct a service-centred business model. The student group (30 Master's degree students) is multidisciplinary. The students were assigned to develop a new digital service concept for a Finnish wellness technology company. The assignment had a dual purpose: firstly, to design a new digital service concept based on user insights and future foresights, and secondly, to apply and develop service design methods that support collaboration between users and designers and the formation of common understanding. The student groups worked on three levels: (1) familiarisation with development tools and models and their theoretical backgrounds; (2) applying the theory in practice; and (3) evaluating the theory, practice, development process, tools and their use. All student groups (with three members) followed the service innovation process model grounded on foresight and service design by Ojasalo et al. (2014). The four phases of the process are presented in the table below (Tab. 3). The commissioning company participated actively in the development process: they (1) provided a development challenge for the students, (2) participated in the analysis of the gathered research material and (3) offered feedback on the developed concepts.

Table 3. Service innovation process grounded on foresight and service design [9].

1. phase Map and Understand	Mapping future changes in business environments and understanding and anticipating customers' needs and desires in their contexts are essential in building sensing capability for service innovation purposes. The methods of foresight help to gain a holistic and systemic view based on insights from a range of different viewpoints. Monitoring and scanning the environment are essential in sensing changes in the society, economy and technologies, and anticipating their future developments.
2. phase Forecast and Ideate	Findings from the mapping and understanding phase are taken forward to inspire ideation and to forecast alternative futures. Open-minded collaboration and co-designing with different stakeholders through forming heterogeneous teams is the key to providing divergent thinking for innovation. Foresight fosters alternative thinking in service ideation and allows understanding of not only probable but also possible futures.
3. phase Model and Evaluate	Modeling new service solutions moves the service innovation process from sensing to seizing new opportunities. The intangible nature of service solutions and the uncertainty of the future both require narrative and visual means to propose, communicate and test potential new service solutions. Therefore, service design and foresight create highly visual and anticipatory stories by means of scenarios, prototypes and preliminary concepts, for example. This phase includes zooming in and out, i.e., focusing on details and seeing the holistic picture.
4. phase Conceptual i-se and Influence	The fourth phase of the service innovation process conceptualizes the new service finally influencing the future. This phase aims at transformation, and accordingly, the future is narrowed toward the preferred. This is also the phase where concurrent business analysis is integrated into creative thinking. Illustrative foresight and service design methods and tools that can be used in conceptualizing service innovation and influencing the future.

3.2   Case 2: Designing a new digital service concept for a finance company

The Agile Methods in Service Design (10 cr) course consists of two parts: 1) a five-day intensive period in which one design sprint is executed, 2) studying literature on various Agile methods and writing a reflective essay. After the course, the student will be able to understand the potential of Agile methods in service design and to design and implement an Agile design sprint. During the work-oriented project, students must be able to identify, implement and critically evaluate various alternative design solutions, while developing design solutions based on user information in an Agile and iterative manner. The task of the course was to design a digital service for the bank's private clients which would provide an overview of their own finances. The new service should help users to learn to understand and manage their own finances. At the beginning of the course, three design groups were formed with five to six members each. The teams were multidisciplinary, consisting of students from different degree programs, such as service design, innovative digital services of the future and legal design. The design teams narrowed down the task by the client and conceived of new solutions. The client chose the solutions that they found most interesting, which were then developed into operational prototypes by the design teams and tested by end users during the last day of the sprint. The development work mainly focused on the phase of development for service design (see Tab. 3) and utilised the Agile design sprint approach. The Agile method involves self-steering and highly cooperative teams.

4   RESULTS

This section presents the result of the development work: Laurea's model of project learning in service design training. In addition, project learning in the two cases presented above is evaluated from the student and collaborative client's point of view.

4.1 The project learning model by Laurea in the education of service design

Table 4. A pedagogical model describing work-oriented project learning in service design at Laurea.

	Support Service	*Teacher*	*Student*	*Client*
1. Phase: Receiving the commission	• Maintains connections with customers • Searches for commissions • Manages contractual matters • Contracts and signatures (IPR and NDA) • Potential money transactions (e.g. administrating a cooperative)	• Initial negotiations with a potential client company • Introduces the goals of a study course • Evaluates the applicability of a commission to the study unit (e.g. EQF7 and learning goals)		• Participates in the initial negotiations to understand the learning goals of the project • Presents the demands for development in the organisation • Defines the assignment
2. Phase: Working on the commission	• Reserves and allocates finances for the use of the project team (e.g. through a cooperative) • Material and travelling expenses • External outsourcing services • Reserves the necessary working spaces and tools	• Ensures that the requirements of the study unit and EQF7 are fulfilled		• Modifies the assignment • Defines project resources such as task content, time and financial resources
3. Phase: Implementing the project	• Allocates financial revenues for the use of the project team (e.g. through a cooperative) • Material and travelling expenses • External outsourcing services • Technical support	• Presents the learning goals of the course and project • Supports cohesion in the design teams (lead role) • Supports and guides the student towards purposeful work • Guides students to the right level of work • Inspires students with creative problem-solving • Supports the learning process and helps with problem-solving • Creating a social atmosphere • Creating different ways to familiarise students with each other -> the students will know each other • Providing tasks that encourage interaction	• Works to a schedule • Works in a team and chooses the leader for the team • Conceives of a project plan for the team to reach the learning goals and respond to the design challenge • - Solves the design challenge by Implementing the plan in accordance with the service design process • The team leader manages the schedule and takes responsibility for everything being finished on time	• Feedback provider • Encourager • Co-learner • Presents the design challenge/commission • Creates a good first impression that gives students a good starting point for learning • Provides space as a learning environment • Offers feedback and comments -> at which point is it important for the students to receive feedback
4. Phase: Finishing the project	• External communication • Compiles statistics on RDI points	• Responding to the commission together with the student team • Evaluation (course qualifications, development processes and course results) • Offers feedback to the students and client company • Receives feedback from the commissioner	• Responds to the commission and presents the developed concept • Receives feedback and adds finishing touches to the concept • Submits the documentation for the development work	• Offers feedback and comments on the finished work/process • Participates in the presentation of development work • Receives the finished works of student teams and documentations of the development process • Offers feedback and comments on the finished work/process

4.2 Evaluation of the project learning model by Laurea (in the education of service design)

The evaluation of the project learning model is based on self-assessment of the two groups and comparison of the responses of the groups. In addition, the clients have evaluated the model from their own point of view. In their feedback, students evaluate their project learning as follows. Things that were considered successful were:

- Carrying out a business project, an interesting design challenge and co-development with the client motivates the master's students.
- Visualizing the design team's views helped to make quick decisions.
- The division of tasks and responsibilities between the student team and the student team leader played an important role in maintaining the timetable and structure of assignment.
- Shared expertise and learning, as well as group support, helped students survive even in tough places.
- The students' different educational backgrounds and professional experience were seen as enriching.

There were also areas for improvement:

- There are several actors involved in project learning, so the assignment and scheduling must be clear and consistent.
- More milestones and mid-term evaluation are needed.
- More support should be given to group formation.
- The students with different educational backgrounds and professional experience were initially perceived kind of problematic.

The clients' comments primarily concerned the applicability of the results of the collaborative project to their own product and service development. Both of them were provided with new discrete ideas. On the other hand, got their own thoughts of the desirable features in their services confirmed. They also emphasized the importance of the dialogue enabled by the project model during the collaborative process, e.g. in different workshops. According to them, the cooperation was fruitful with both the students and the teaching staff. The working atmosphere was immediate and inspirational. Both clients also expressed that service design expertise of their staff's increased during the collaboration project.

5 CONCLUSION AND DISCUSSION

The purpose of this paper was to deepen understanding of work-oriented project learning in Master's degree studies in digital service design. The paper aims to develop a pedagogical model describing work-oriented project learning in higher education based on the work-oriented project learning model by Upola [14] and pedagogic Learning by Developing (LbD) model by Laurea. As a results this paper presented a pedagogical model of work-oriented project learning in higher education and preliminary evaluation of the model.

The work-oriented project learning model by Upola is a model for cooperative learning and learning by doing in which knowhow is acquired under the guidance of a teacher in authentic learning environments. LbD is based on learning through research and developing (R&D). According to both models, expertise and experiences are shared between teachers and students, as well as project partners and other stakeholders. The teacher members of the project team take part by providing their expertise to steer the progress of the work and, at the same time, the progress of the learning. The LbD model describes the theoretical pedagogical framework. As discussed before LbD does not provide conceptual tools or operational models for planning and analysing project learning. Although the model by Upola is not fully implementable in the context of universities of higher education, it does contain several valuable insights and provides conceptual tools to develop the model of work-oriented project learning in the higher education context. The main contribution of this paper is first steps towards to create work-oriented project learning in higher education. However, there is need to gain more experience and deepen the model.

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