Learning by Developing in Higher Education

Katariina Raij *

This article describes the Learning by Developing (LbD) action model developed to meet the future challenges. It takes into account the new role of higher education institutes in a world where changes are continuous and today's truth is not competent tomorrow. The article discusses the new ways of 'teaching' by inviting to move from a knower's world to a competent actor's world. It further attempts to rediscover a pragmatic learning theory as a basis for the development of higher education. The article describes the development of LbD by following the changes in the nature of higher education guided by the expectations of the surrounding world. It begins with a competence – oriented approach and concludes by intruducing the LbD action model that integrates competence – producing learning and an innovative research and development project.

Keywords: competence, pragmatic learning concept, Learning by Developing

Introduction

In Finland the dual model of higher education consists of two complementary systems, which are academically oriented universities (16) and professionally oriented universities of applied sciences (UAS) (25). Both of them are connected to one another via the Bologna process as well as several academic disciplines. Though some of their tasks are similar, they have different focus areas and, because of their roles, also differences in their tasks. The mission of the universities is to develop science by conducting scientific research, to provide education based on research and to educate students to serve their country and humanity. When the Finnish Universities Act was renewed the mission of universities with respect to the third task was widened. Universities are expected to interact with the surrounding society and to strengthen the impact of their research findings and artistic activities on society. They should work in cooperation with the surrounding society and promote the social impact of their research findings (*Finnish Law*, Act 558/2009). The UAS Act (*Finnish Law*, Act 351/ 2003) obliges universities of applied sciences to provide research based education, to support students' professional growth[1] and to conduct research and development work that supports instruction and promotes regional development in particular. They are multi-field regional institutes, which focus on contacts with working life and regional development. In spite of the differences between the universities and universities of applied sciences, both of them are expected to have an impact on society. They are obliged to be a part of society and to educate students either to serve their country or to promote regional development. The global viewpoints underpinning these changes also challenge higher education.

We can claim that HE institutes have a role in supporting the development of a sustainable and innovative internal market that will foster competition and support investment, growth and jobs in Europe as stipulated in article 29 of the EC Treaty. The Lisbon Strategy highlights knowledge accumulated through investment in research and innovation to be a key driver of long-term growth, which is reaffirmed in the publication

* Laurea University, Director, katariina.raij@laurea.fi

1. In addition since 2009 (564/2009) universities of applied sciences are responsible for enhancing life long learning.

'Common Actions for Growth and Employment' (COM/2005/330). The question is how to respond to the given challenges.

The expectations address new ways of doing research and development work and of applying research to real- life situations. Some HE institutes have discovered and developed new ways of action by integrating pedagogy, research and development, and regional development and have realized that by acting together with and for users they can be increasingly effective in producing welfare, new competences, and economical and sustainable growth.

Laurea University of Applied Sciences, the fourth largest UAS in Finland, has defined that it has selected a pragmatic philosophy of education as the basis of its pedagogic strategy. The philosophy has been implemented in the form of the Learning-by-Developing (LbD) action model (*Laurea's pedagogical strategy*, 2010). This article describes the principles of the LbD model, which is identified as a competence oriented action model based on a pragmatic learning concept.

Competence as new expectations in higher education

The concept of competence became an essential topic of discussion in higher education particularly after the European Qualification Framework (EQF) (*European Commission*, 2008) was launched to be applied in the various EU countries. How do we understand competence in higher education? In a business context, the concept has been used as parallel to the concept of knowledge, which embraces factual knowledge, skill, experience, value judgement and social networks. It refers to a capacity to act in a situation (*Sveiby*, 1997). *Rychen* and *Salganik* (2000), in turn, argue that competence as a concept means more than knowledge and skills. According to them, we can identify cognitive, ethical, motivational, societal and functional competencies.

We can look at the concept of future expertise by following the analysis of *competence in use* carried out by *Ellström*. According to him, an individual's competence level is formed of school education and the competences demanded by working life as well as formal exams and formal qualification requirements. *Competence in use* is related to an individual's actual competence, formal competence as well as the competence required by a job and an officially demanded competence. *Ellstöm* also emphasizes that a dynamic view point would take into account changing working life requirements (*Ellström*, 1998).

According to Hodkinson and Issit (1995), a more holistic approach was needed, especially in the caring professions, and they describe the concept of competence by integrating knowledge, understanding, values and skills. In line with their thinking, *Cheetham* and *Chivers* (1996) developed a holistic model of professional competence as a framework that comprises five dimensons. They are: 1) cognitive competence, 2) functional competence, 3) personal competence, 4) ethical competences and 5) meta-competences.

Based on my earlier studies (*Raij*, 2000), a holistic model of professional competence was identified as an integration of knowing, understanding, and acting and situation management. In terms of the various types of knowledge, the model is seen as an integrated whole that combines 1) knowledge written in theories and models, 2) knowledge embedded in skills and abilities, 3) moral knowledge and 4) experiential knowledge (gathered by acting and experiencing). The model shares some similarities with *Bereiter* and *Scardamalia* (1993), *Tynjälä* and *Nuutinen* (1997, 184–185.), *Bereiter* (2004), and *Tynjälä* (2008, 124–127.), who use expressions such as formal, theoretical knowledge, practical knowledge, experiential knowledge and self-regulation knowledge. Raij's model, however, represents an action based approach. The above-mentioned findings challenged a new kind of learning environment and new working methods so that all the components within the various types of knowledge could be achieved.

In working life, you are expected, as a professional, to manage changing and unexpected situations, which mean that you have to know, understand what you know and be able to act, in order to find new kinds of solutions. Additionally, it was discovered that students perceive their future work, as a learning object, differently. In other words, they possess various orientations, which were identified based on different ways of action during their proceeding studies, and named as modellers, technicians, empathizers and investigators. They, in turn, include different ways of learning (compare meta-competences and personal competence). The holistic model of competence was constructed based on the components with their types of knowledge, and on the orientations to perceive a future work (*Raij*, 2000).

In 2005 *Delamare* Le Deist and *Winterton* compared the approaches used in five different countries when defining competence. Based on their findings, they argue that a holistic typology is useful in understanding the combination of knowledge, skills and social competences that are required in particular occupations. They present a typology of competence, in which knowledge and understanding are captured by cognitive competence, skills are captured by functional competence and behavioural and attitudinal competences are captured by social competence. Additionally they describe meta-competence as being concerned with facilitating the acquisition of the other substantive competences.

In the European Qualification Framework (EQF) (*European Commission*, 2008)[2] learning outcomes are described as knowledge, skills and competence. Knowledge refers to field- specific facts, concepts and theories; while understanding has not been specifically mentioned, it can be identified in the descriptions of the various learning outcomes. Skills refer to the ability to apply knowledge and to knowing how to do. It covers both the abilities to think in a logical, intuitive and creative way and the capability to use methods, materials and tools.

The EQF defines competence as the ability to use both knowledge and skills as well as personal, social and methodological skills and abilities in different working life or learning situations. It furthermore includes social skills as being able to follow instructions at lower levels and being able to act independently, as well as possessing leadership and management skills at higher levels.

The division used to describe learning outcomes is confusing as such, but the content descriptions can be dealt with as material for finding a model that is parallel to the holistic model of competence.

In conclusion, all the definitions of competence emphasize the meaning of knowledge, but this is not enough as such. Having the skills and abilities to apply knowledge and act and manage situations in an ever changing world of work are of crucial importance. Higher education institutes are part of a society, and the demands (c. f. the *Bologna Declaration*, 1999) to impact on a society are increasing.

Competence oriented Learning by Developing action model

Starting points for a pragmatic learning concept

We can ask what should be the philosophical foundation in higher education if the demand to interact with the surrounding society is taken seriously. From a practice-oriented perspective, the question may seem uninteresting; however, as *Ardalan* (2008) has shown, the differences in educational philosophies lead into major differences in educational practices in higher education. Both pedagogical methodologies and the course goals and contents are affected by differences in basic philosophical assumptions. Whether a lecturer sees her task mainly as providing students with the latest facts of the world or as guiding and facilitating their

2. The EQF was approved as a framework by the European Parliament and Council in April 2008. By 2012, at the latest, all certificates should mention the EQF level of learning outcomes achieved by graduating students.

growth as individuals in the ever changing world is not a question that can be neglected. (c. f. *Taatila* and *Raij*, 2012, 831–844.)

The above described concept of competence as a holistic model constitutes an action oriented approach. It strongly emphasizes having the ability to do something, of being prepared to engage with an ever changing world. The philosophy of science that is defined as action – oriented is pragmatism (*James*, 1907; *Dewey*, 1929; and *Peirce*, 1992; 1998). It studies the link between action and truth, practice and theory. Based on *Dewey*'s (1931, 31) definition pragmatism is 'the doctrine that reality possesses practical character'. As pragmatists say people, at root, are practical beings. The world is seen as a set of practical actions that are born from thinking. There is no dualism between thinking and doing; they are two sides of the same coin. Action requires thinking, and 'thinking is a mental activity: it is a doing' (*Peters*, 2007, 356.). Based on *Peirce*'s view, truth is what comes at the end of an inquiry. An inquiry, in turn, begins when a person does not believe in his or her internal view and struggles to acquire a new belief. James emphasizes the connection between discovered truth and known facts, the interpretation must agree with the known facts (*Haack*, 1976, 232–234.). In pragmatism beliefs are more important than truth and 'the ultimate test of a belief is the willingness to act on it' (*Fendt*, *Kaminska-Labbé* and *Sachs*, 2008). The most relevant is acting on the truth that leads to the conclusion that the foundation of human knowledge is based on the interactions between human beings and their environment. Practical experimentation and intervention are seen as an essential part of studying human practices (*Miettinen*, 2006, 391–400.).

When we consider the meaning of learning in a pragmatic world, the most influential developer of pragmatism is John Dewey. He sees thinking and reflection as a 'means of conducting transformational transactions with the world, a means of changing or reconstructing the world' (*Sleeper*, 2001, 3.). He also argues that 'thought functions in the experimental determinations of future consequences' (*Dewey*, 1925/1988b, 14.). Pragmatist philosophy exists in reality, where change is constantly taking place, and human beings are active agents and conductors of transformations, either by their thoughts or by their actions.

According to Dewey (see *Learning by Doing*) school is of life, not for life, and learning is seen as a tool for producing new habits of action through the continuous interactions between people and their environment. A pragmatic learning concept emphasizes collaboration, the activities that change individuals and the environment, and the role of experiences and interaction. Learning is active and consists of restructuring and building experiences, of handling new situations and of acting in a purposeful way.

The active nature of learning is also stressed in the long-time dominated constructive learning concept, although with different emphases. Constructivists conceptualize learning as the creation of new knowledge and the construction of cognitive structures, whereas an action- oriented, pragmatic learning concept recognizes learning as a tool with the purpose of formation of habits of action. In the pragmatic learning concept, knowledge is linked to the ways of action that assist in getting along with the ever-changing world (see *Kivinen* and *Ristelä*, 2003, 365–366.). Language, words and concepts are used as means of interaction, communication and coordination. Reality is built through interaction between action and thinking. In pragmatism action is related to acting and interacting in a purposeful way in the world. People are, at root, practical beings and find actions rewarding (see *Pihlström*, 2006, 150–151.). People and the environment change through action. Activity is not primarily cognitive; as it is in constructivism but referring to Dewey (1980) learning and knowing are affairs of doing. In a pragmatic learning theory, learning is always active but based on experienced actions and their consequences, which lead to new habits of action (e. g. *Kivinen et al*., 2003, 365–366.).

Philosophy of education categorizes the pragmatic learning concept as an interpretative paradigm, where the social world undergoes constant change and renewal, and the ability to function in a constantly changing world and participate in the change is vital. Learning is understood as a process for changing or reconstructing the world through the development of practices. The interpretive paradigm sees the social world as an ever-changing place which can be constantly improved. A researcher interprets situations, but knows that the rules determined in the first situation are not necessarily true in the next situation. This view, in turn, means that the goals of education are not so much to give students facts about the way the world works, but to make sure that students 'learn the process of discovery and self-sufficiency as much as the facts that are discovered' (see *Ardalan*, 2008).

Towards the LbD action model

The Finnish system of higher education is built on a dual model consisting of 16 universities and 25 universities of applied sciences (UAS). The tasks of the UASs, presented in the UAS Act (2003/ 351), are pedagogy, regional development and research and development. At Laurea UAS these tasks were seen as an integrated whole from the beginning. The decision made led to construct the role of a teacher in a new way as a pedagogue, regional developer, and researcher and developer (e.g. *Raij*, 2003, 42–58.). Furthermore, the holistic model of competence described above (*Raij*, 2000) was applied as the framework for Laurea UAS' pedagogical strategy in 2002. This, in turn, opened the door to looking at a learning environment as an enabler for the development of new activities.

The task of regional development, which is emphasized in the UAS Act, brought authentic working life projects to Laurea, in which teachers as facilitators, working life partners and students work together. Many of the projects were found to be successful. New innovations were discovered and students seemed to be very motivated and eager to develop new ways of action as competences. Based on the collected experiences, a real working life- related R&D project seemed to form a needed learning environment. Initially, the need to impact and renew the working life sector led to project-based education (*Raij*, 2003, 42–58.). Furthermore, the new practice challenged Laurea to develop and construct learning environments that enable the integration of the afore-mentioned tasks in the form of meeting rooms, workshops and laboratories (*Fränti* and *Pirinen*, 2005).

New ways of action in project- based education raised some interesting questions that needed to be studied:

- How did genuine working life-oriented R&D projects change the nature of studying?
- How did working life- oriented R&D projects integrate pedagogy, regional development and research and development?

Recognizing the impact of the changes on the character of learning in projects, steered research work and led to the recognition of the characteristics and stages of the Learning by Developing (LbD) action model. This interest, in turn, led to select phenomenography to be used as a research method.

Phenomenography as a special qualitative research method, initially developed by the Gothenburg group, is not interested in the being of a phenomenon, but in the conceptions that people have of it. It focuses on the ways in which human beings perceive their world. Phenomenography was originally developed for studies on learning and it emphasizes the learner's experience, understanding, and conceptualization and analysis of learning assignments in a specific context. The perspectives of 'what' and 'how', used in relation to a specific cultural context, explain the construction of different conceptions. What we see depends on how we see it (e.g. *Marton* and *Säljö*, 1984; *Marton*, 1995 and *Uljens*, 1993).

The research material was first collected by interviewing lecturers (n=6), who possessed successful experiences in carrying out R&D- projects together with students and working life representatives. The experience and knowledge gained through the process by those participating in the research was made use of by systematically collecting information on how conceptions changed as the result of the observations. The interviews also took into account the lecturers' ideas regarding best practices, i.e. how they would change or modify the next research and development project they participate in. Second, the lecturers (n=25) participating in seminars related to the training programme on innovative teaching described the processes related to the progress of their own development projects, as well as their own learning processes. Finally, participation in two development projects involving lecturers (n=4), students (n=8) and working life partners (n=6) facilitated further the systematic gathering of information. Reliability was all the time checked by the researcher by asking questions and making summaries. While classifying the stages of learning by developing, the participants' conceptions regarding completed and ongoing development projects were taken into account, as well as their experience-based opinions regarding what development projects require and how the process could be improved.

The stages of Learning by Developing action model

Based on the analysis of informants' conceptions, the stages of LbD action model were identified as well as the characteristics of the model (*Raij*, 2007). The LbD action model centres on a development project that is genuinely rooted in the world of work, requiring collaboration. LbD is based on authentic partnerships between lecturers, students, working life partners and clients as end users. A project forms a learning environment, where progress is made through the identified stages and the outcome is learning in individuals that is seen as new ways of action, leading to personal professional growth, as well as learning in a community, and finally the production of new knowledge in the forms of new products, services, processes, working models and working culture.

The LbD action model comprises the following complementary stages: 1) identifying the phenomenon of the R&D project with its concepts and relationships between concepts; 2) reflecting on the meanings of previous research findings and solutions; 3) predictive recognition and description of processes related to the

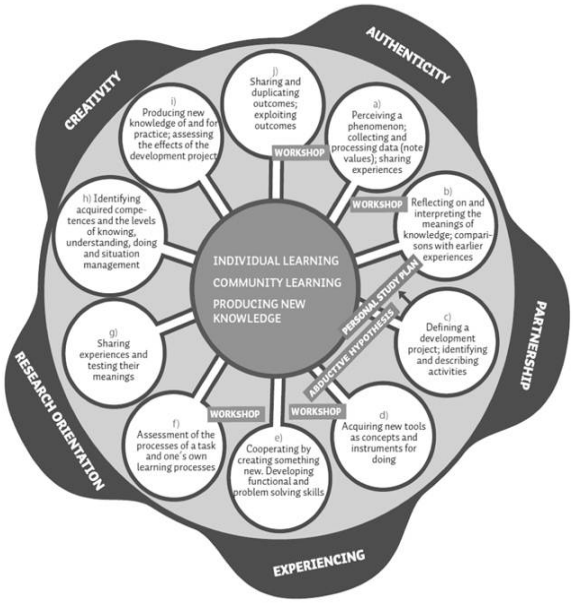

Figure 1. Recognised stages of the LbD model that steer implementation

project, which makes possible both an abductive hypothesis (an initial presumption based on prior clarifications, facts and discoveries) and a personal curriculum; 4) acquiring tools that are existing theories and models, subject related concepts, and instruments for doing; 5) acting together, which encompasses the creation of new habits of action and problem-solving skills; 6) continuous evaluation of the project and personal learning process (the consequences of activities); 7) sharing experiences and creating new meanings, 8) recognizing and evaluating achieved competence; 9) assessing the impact of the project; and 10) sharing, disseminating and productizing the outcomes (Figure 1).

It is important to notice that the stages form an integrated whole but as part of a process they can be identified in different orders depending on the consequences of earlier experiences. Different workshops (laboratories) provide students with the needed tools for R&D projects, including the concepts, theories and models for understanding phenomena as well as different skills for encountering, collaborating and working with one's hands. The tools are developed and applied by students when the project proceeds and students' responsibilities increase. Personal learning, which is demonstrated through new forms of action in the project and the development of the project, are followed by assessment. In this process the types of knowledge can be used as an evaluation tool.

The LbD integrates competence-producing learning and an innovative R&D project. The stages are built by the new learning possibilities that are created as the R&D project progresses. When examining the stages of the LbD, the individual and community learning that form the focal point of the model, comes from building and internalising a new kind of self and group identity, which are the objectives of professional growth. Sharing experiences, mutual reflections, and awarding and testing meanings form the dialectics between the individuals and their environments.

According to the teachers, experienced in the LbD, the defining characteristics of the LbD are authenticity, partnership, trust, creativity and an investigative approach (*Raij*, 2007). Authenticity arises from the genuine working life projects that form the learning environment. Partnerships are built on trust and on a commitment-inspiring agreement. All of the partners participate as equals, sharing experiences and finding meanings for consequences in order to produce new competence in their varying roles and responsibilities. There is room for every partner's creativity, which also leaves room for professional growth. The production of new knowledge and the development of competence become evident as the work progresses.

Authenticity refers to a genuine working life connection. A working life-oriented R&D project is viewed as a learning environment that enables the formation of new habits of actions. The progress of an R&D project opens new doors and creates situations where previous ways of action are no longer sufficient and must be replaced by new ones.

Partnership refers to cooperation among students, lecturers, working life partners and users, and it features mutual commitment. Partnership is built on trust and is characterized by equality. It enables continuous interaction with the learning environment. Joint efforts require that the involvement and different competences of each participant enable the formation of new habits of action and the discovery of solutions that transform practices.

Experiencing can be understood from different viewpoints. First, experiences with given meanings construct competence. Second, experiencing can be examined on the basis of processes that lead to new forms of action. When the consequences of established forms of action turn out to be insufficient in a new situation; the need arises for reflecting on personal experiences and creating new habits of action.

Creativity is vital for bringing forth something new. The starting point of LbD is the ability to function in a constantly changing world; hence, acting within the context of change is a natural approach. As a result, new ways of action require creative and curious involvement in activities that renew the world of work.

The requirement for a research orientation arises within the context of higher education. In a pragmatic approach, truth is linked to inquiry as it transforms in the course of the study. At Laurea, the mission of universities of applied sciences is seen as a comprehensive whole that integrates the tasks of pedagogy, regional development and research and development. Higher education is recognized from the perspective of an investigative approach; in a higher education context, developing working life and producing new types of innovation are closely linked to research (Figure 2).

Figure 2. The characteristics of the LbD model

The LbD shares similarities with certain constructionism-based learning theories and the theory of activity. For example, *Bereiter* (2004) sees learning as a process that transforms an individual's internal knowledge structures, which creates new ideas and thoughts and deepens a community's competence. *Hakkarainen*, *Lonka* and *Lipponen* (2004) have developed a theory of research-oriented learning based on problem-solving by combining elements of *Bereiter* and *Scardamalia*' s (1993) theory of knowledge construction and Engeström's (2001) theory of expansive learning, which is based on the theory of activity. Practical experiences take a conceptualising role when they are tested in practice in order to create 'conceptual artefacts' (*Hakkarainen* et al., 2004, 299–302.). However, the LbD action model focuses on acting together and discovering new ways of thinking and doing in order to be able to manage changing situations. Learning is regarded more as a tool that facilitates the achievement of competences.

New ways of action in higher education addressed by the LbD

In the LbD action model the role of 'a teacher' is multi-faceted. A pragmatic learning concept does not have a place in traditional classroom teaching. A teacher working at Laurea has many roles depending on his or her own responsibilities within the LbD project. In a workshop where students are seeking new tools, a teacher is responsible for transmitting culturally and historically advanced intellectual actions relevant to the various professional fields (c. f. *Engeström*, 2001) and the latest substance-specific knowledge in the forms of

concepts, models and theories. In the projects work, a teacher acts as a facilitator and partner for students and the developer and researcher central to the project's objective. The idea is to give space to students and to facilitate their competence construction processes in relation to practical experiments. The teacher develops tools together with the students. Through all of the interactive processes, she is involved in assessing the achievements of students' learning outcomes. Assessment is challenging because it has been understood and accepted that students can learn and will do so in different ways with different contents.

In the LbD Guide (2011), the model was considered a challenge for the professional development of lecturers. Based on the vast practical experiences since 2005, the lectures' new roles can be identified as follows: 1) as preparers and organisers of the LbD implementation process; 2) as implementers; and 3) as evaluators. At the beginning of a new LbD project, one does not really know what kind of learning will take place. Since the project has connections with authentic working life, the learning outcomes cannot be 'wrong' as such, but they can be something unexpected. Therefore, it is important that learning outcomes are described as competences needed in a complex and ever-changing working life (c. f. *Ardalan*, 2008).

Along the way from identifying the LbD action model towards nominating the model as Laurea's strategic choice and finally as Laurea's trademark (*LbD Guide*, 2011), we can see many developmental phases. At first, it is important to notice that recognizing the impact of changes on the character of learning in projects led to the development of the LbD action model. Thus, the practices at Laurea had already begun to change; these changes were guided by the integration of pedagogy, regional development and research and development. Second, a great deal of attention was paid to training Laurea's staff from the beginning. Separate training programmes were carried out for the whole staff at different campuses. During the years 2004–2006, the Professional Development (PD) training programme was planned and implemented together with Tampere University. There were 25 senior lecturers in the first group, who were supposed to act as the LbD mentors on their own campuses after a two-years' education process. The impacts were seen as transformative teaching, and they were published in the form of a report in 2006. The PD programme was reorganized during the years 2008–2009. The results were discussed in several LbD presentations at the European Conference on Educational Research in Vienna in 2009. Since the year 2008, Laurea has hosted the annual 'Learning by Developing – New ways to learn' international conferences, which makes it possible to share, display and further develop the model. Furthermore, since 2002, annual development seminars for the staff and regular development seminars at the different campuses are used to enhance transformative teaching; at first they were affected by project-based learning, and later by the LbD. It can be seen that the more the LbD model was rewarded the less it has been resisted.

We can say that before the LbD, most of Laurea's staff emphasized the construction of new cognitive processes. Today, it is clear that working and acting together with students, and facilitating their development processes gives students the possibility to develop new habits of action and to participate in the development of new innovations. The statistics (*Laurea*, 2010) partly can be seen as evidences of the success of the LbD.

Developing the LbD model by studying the impact of changes on the character of learning in projects led additionally first to the development of campuses with different workshops, test labs and living labs, and second to the development of a competence- based curriculum. These changes made it possible to successfully implement the LbD. Competence (pp. 2–4), in a curriculum, refers to broad areas of expertise, which describe the ability to function as working life developers and reformers. It emphasizes the development of new habits of action as the results of leaning. The National Qualification Framework, which is based on the European Qualification Framework (levels 6 and 7) serves as the starting point for learning outcomes.

Laurea's learning environments have been developed from the perspective of higher education competence as a working- life oriented R&D project as well as a physical, virtual and psychological space. Learning environments with laboratories and workshops, which are needed in authentic research and development projects, enable joint activities, evaluation and the development of personal ways of action based on experiences.

The LbD offers the possibility to share one's own experiences and conceptions not only with students and their teachers, but also with working life experts and end users. In this way, real dialectics with different opinions and conceptions are tested and situational truths discovered after conducting a series of practical experiments. The LbD also includes abductive reasoning with hypothesis and the building of models in the face of the unknown. The assumptions will be tested and proved in working life-related R&D projects by integrating knowledge, skills, values and experiences in action.

Evaluating of the LbD model

The LbD model is evaluated in several different ways. The Laurea staff regularly collects feedback from students and working life partners. On the basis of conclusions, improvements are made. The impact of R&D work is evaluated by the Ministry of Education and Culture based on the number of credits completed in the R&D projects, the number of project base theses, and the graduates' employment rates. The improvements in these numbers (Laure is at the front of the line) have been seen following the development of the LbD model. Concrete evidence of the successful integration of students into the surrounding society can be seen in the fact that the graduates of Laurea have the highest employment rate (89.9%) out of all of graduates from the universities in Finland (*Laurea*, 2010).

The LbD has been evaluated twice by the international evaluators. In 2007, it was studied and compared with other widely used initiatives in higher education. The fundamental issues that the evaluators considered included a comparison of the LbD and other existing projects and problem- based learning models. Furthermore, they focused on the sustainability and scalability of the model. The evaluators needed to find out about current experiences and gain insights from those who deliver, design and develop the whole programme of activity. The evaluation team got acquainted with the scholarly literature and publications provided by Laurea, and they interviewed stakeholders; students, alumni, staff, faculty and external influencers and policy makers. The evaluation process was conducted during two detailed visits, which consisted first of a planning meeting, followed by site visits and interviews, all of which were organised in a spirit of openness and trust.

The comparison showed that the major benefits of the LbD are based on the sense of ownership of creating the model. According to the evaluators, 'The LbD is values driven and takes a more holistic view of students than would be the case where projects or problems are the focus.

The LbD is also focused on ensuring that students can 'do things' rather than just be able to repeat answers in exams. LbD recognises the need to enable students with investigative and social skills, alongside providing them with knowledge expertise in their chosen fields of study.' In conclusion they identified the following as the strengths of the LbD: the growth of independent thought, self-confidence, a highly experiential atmosphere, a high degree of responsibility, early experiences of personal responsibility for results and duty to colleagues, early experiences of having people relying on you and experiences with equality. In terms of how to further develop the LbD, the evaluators pointed out that the model needs to be made more transparent, more focus should be placed on project management, student guidance and

competence evaluation and that the model should be better institutionalized (*Vyakarnam*, *Illes*, *Kolmos* and *Madritsch*, 2007)

In 2009 a follow up evaluation was conducted. The material was collected by interviewing focus groups; project managers, students, staff, faculty and external influencers and policy makers from all of the Laurea campuses. The evaluators noticed that in two years, the meaning of the LbD had become more unified. However, they also noticed that there is a continuous need to share the conceptions and knowledge concerning the basis of pragmatic learning theories. Further, the users of the LbD should clarify the purposefulness of the model and use clearer language to support the students' learning processes in research and development projects. According to the evaluators, 'finding and confirming a common purpose should be the top of priority. There is no shortage of talented individuals in Laurea but they need clear, supportive structures, operational systems, communication channels within and across sites. They need a well networked community culture based on success stories, sense of pride and collective identity' (*Vyakarnam* and *Illes*, 2009.) The recommendations and development objects stated by the evaluators have been taken into account in Laurea's quality assurance programme, which focuses on the development of practices. Kallioinen (2008) analysed the written feedbacks from Laurea's first-year students during the years 2006–2007. She collected students' feedbacks from the fields of business management, hospitality management, security management, and business information technology; altogether, a total of 1204 respondents. They described their experiences with the Learning by Developing-model and how the model has enhanced their learning. She concluded that the LbD model can advance significantly the general working life readiness of the students, and also enhance the quality of their learning options. The LbD facilitates cooperation and the development of partnerships and also made it possible for students to act as partners. The growth and development of self-directed learning challenged the creation of new guidance practices. Through the LbD model, new competences and collaborative knowledge creation processes were born. Additionally, *Taatila* (2007) found in his study some evidence that students participating in the LbD learning consider themselves to be more competent in practical situations than their peers. The students become more integrated into their surroundings before they graduate, since they have been working with numerous organizations already during their study years. They also know the requirements and pace of modern working life, and will likely require less time for induction than the students with less practical experience.

Laurea has furthermore participated in the project of Quality Teaching directed by the OECD in 2007–2010, and in the FLLEX-project (LLP-KA1SCR) aiming to enhance lifelong learning in 2010–2012. The role of the LbD was at the centre of both projects. With the Quality Teaching project, the focus was on transformative teaching, while the FLLEX project focused on how the LbD enables lifelong learning. Both projects can be seen as examples of Laurea's commitment to the ongoing development of the LbD action model.

Laurea is the most awarded UAS in Finland, with five Centre of Excellence nominations from The Finnish Higher Education Evaluation Council (FINHEEC). Laurea has been nominated as a Centre of Excellence in regional development for the years 2003–2004, and 2006–2007, and in education for the years 2004–2005 and 2008–2009, and as a Centre of Excellence 2009–2012, when the evaluations of regional development and education were integrated. One of the criteria has been the integration of research and development, regional development and pedagogy. We can say that the pragmatic LbD action model has created several benefits in these areas.

The impact of the LbD action model on the surrounding society is multifaceted. Local organizations receive a constant stream of new ideas, and innovations and a developing workforce. R&D projects are

carried out in cooperation between public, private and third- sector organizations, all of which give space to the integration of different competences and make it possible to go forward. Similarly, organizations offer the university a constant stream of interesting research and development subjects and share competences based on their own experiences and the requirements of a job (c. f. *Taatila* and *Raij*, 2012).

Conclusion

This article describes the LbD action model, which has been developed at Laurea University of Applied Sciences as a way to respond to the challenges, which demand that higher education institutes take a more active role in supporting the development of a sustainable and innovative internal market that will foster competition and support investment, growth and jobs in Europe (c. f. The *Lisbon Strategy*, 2000). At the European level, investment in research has been integrated with investement in innovation, which is seen as a key driver of long-term growth.

The LbD action model is competence oriented; building the holistic model of competence can be seen as the starting point for developing the model. Competence has also been highlighted in the European Qualification Framework. Although the division used (knowledge, skills and competence) is problematic, the holistic model of competence can be identified in the descriptions of the learning outcomes.

The LbD is based on a pragmatic learning concept as it was introduced in the earlier study carried out by *Taatila* and *Raij* (2012, 831–849.), which discusses how the LbD model fits the pragmatic philosophy of education. Learning the process of discovery and self-sufficiency, as Ardalan has pointed out, is also evident in Laurea's LbD model, in which real changes in the world of work and new habits of action are the expected outcomes; these same outcomes are the focus of pragmatic learning theories. Competence is expressed as new ways of action. With the LbD a real doubt as an identified problem or a discovered new idea form a starting point for an inquiry, which leads to form new beliefs and new habits of action. Learning can be seen as a tool in this process. This is also in line with *Pihlström* (2006, 150–151.) and *Kivinen et al*. (2003, 363–375.). The LbD model follows the ideas of Dewey, who regards inquiry as an attempt to solve a problematic situation that has arisen as the result of an experience. Learning consists of restructuring and building experiences, handling new situations and acting in a purposeful way. Dewey's view of learning and knowing as an affair of doing, and learning as a formation of new habits of action can be related to the present topic of future expertise. I dare to claim that the LbD has rediscovered Dewey's concept of Learning by Doing within the context of higher education.

If we have an authentic working life- related research and development project as a learning environment, as is the case within the LbD model, acting together with students by developing can be assumed to lead to the types of competences needed in future working life. Aiming to future expertise also challenges the development of curricula in higher education. Formal exams should be based on competences, which make it possible to develop new ways of action, and which in higher education lead to situation management within an ever changing world of work. The need to meet formal qualification requirements presents a challenge when renewing the curricula. The requirements should also be flexible and more future oriented.

The biggest change occours with respect to a teacher's/ lecturer's role. In the LbD, a student is an equal partner, and building a partnership between students at diferent levels of study and working life representatives (public-, private- and third-sector organizations) introduces new challenges for a lecturer. Lecturers encounter a number of development challenges in the LbD model. The traditional teaching role of distributing or processing information is inadequate within the context of a pragmatically-oriented university. It is time to network and co-develop and co-produce creative innovations. To acquire the needed tools for

R&D projects, LbD lecturers function as tutors, and partners as well as recognizers and acknowledgers of competence, developers and researchers in R&D projects, and supporters and mentors in workshops. As Ardalan (2008) pointed out, both pedagogical methodologies and the goals and contents of a course are affected by differences in basic philosophical assumptions, which highlights the meaning of philosophical foundations.

We can ask if project based 'going forward' is too sporadic in nature and question if it offers enough possibilities to achieve the competences needed. A competence based curriculum is an essential part of the LbD model when it comes to achieving the new ways of action described in the learning outcomes. The curriculum plays a role in guiding students and lecturers when they prepare working life- related R&D projects and make decisions to participate in them. On the other hand, we can always wonder if we can be sure that a student who learns about a certain topic and passes an exam, on that topic really understands the subject deeply and will remember it for a long period and be able to use the knowledge later on.

The purpose of a pragmatic learning concept is not to construct cognitive structures and a knowledge base, but to create new habits. Research knowledge and its adoption play an important role in the development of new ways of action, but only as part of whole. The holistic model of competence is seen as an integrated combination of knowing, understanding, doing and managing situations. The lecturer is responsible for creating opportunities to construct this wider entity. Every new R&D project offers a new adventure for participants by presenting a new situation where earlier ways of action are not enough as it will be in an ever changing social world. The question still remains; how to do it in a purposeful way?

The global economy and the need for new kinds of solutions and service innovations also challenge higher education institutions. We can ask how to coach our students for the future, which can be seen as an ever changing world of work and unexpected new situations. It is clear, more now than before that the present solutions are not good enough and that the world, as it is described in study books, will no longer exist tomorrow. Students should be prepared to create new habits and be given the possibility to see how the world is changing around them. The LbD action model enables them to face the future challenges.

References

1. Ardalan, K. (2008): The Philosophical Foundation of the Lecture-Versus-Case Controversy. Its Implications for course goals, objectives and contents, *International Journal of Social Economics,* 35: 1/2,15–34.
2. Bereiter, C. and Scardamalia, M. (1993): *Surpassing Ourselves: An inquiry into the nature and implications of expertise*. Chicago, IL: Open Court.
3. Bereiter, C. (2004): *Education and Mind in the Knowledge Age.* Mahwah, NJ: Erlbaum.
4. Cheetman, G. and Chivers, G. (1998): The reflective and competent practitioner: a model of professional competence which seeks to harmonize the reflective practitioner and competence-based approaches. *Journal of European Industrial Training*, 22 (7), 267–276.
5. Declamare La-Deist, F. and Winterton, J. (2005): What is competence? *Human Resource Development International*, 8 (1), 27–46.
6. Dewey, J. (1929): *The Quest for Certainty: A study of the relation of knowledge in action.* New York: Minton, Balch, and Company.
7. Dewey, J. (1925/1988): The Development of American Pragmatism. In J. Dewey & J. A. Boylston (eds.): *The Later Works of John Dewey*, Volume 2 (3–21.). Carbondale, IL: Southern Illinois University Press.
8. Dewey, J. (1931): *Philosophy and civilization*. New York: Milton, Balch and Company.
9. Engeström, Y. (2001): Expansive Learning at Work: Toward an Activity Theoretical Reconceptualization. *Journal of Education and Work*,14 (1),129–152.
10. Ellström, P.-E. (1998): The Many Meanings of Occupational Competence and Qualification. In W.J. Nijhof and J.N. Streumer (eds.), Key Qualifications in Work and Education 39–50. Dordrecht/Boston/London: Kluwer Academic Publishers.
11. European Commission (1999): Bologna Declaration.
12. European Commission (2000): Lisbon Strategy.
13. European Commission (2005): Common Actions for Growth and Employment (COM/2005/330).
14. European Commission (2008): European Qualification Framework (EQF).
15. Finnish Higher Education Evaluation Council (FINHEEC): *Ammattikorkeakoulujen koulutuksen laatuyksiköt* 2003–2004, 2004–2005, 2006–2007, 2008–2009, 2010–2012.
16. Finnish Law, Act 2003/351, §4. Available at: http://www.finlex.fi/fi/laki/ajantasa/2003/20030351
17. Finnish Law, Act 2009/558, §2. Available at: http://www.finlex.fi/fi/laki/ajantasa/2009/20090558
18. Fränti, M. and Pirinen, R. (2005): *Tutkiva oppiminen integratiivisissa oppimisympäristöissä. BarLaurea ja REDLabs*. Laurea Publications B*10.
19. Fendt, J., Kaminska-Labbé, R. and Sachs, W. M. (2008): Producing and Socializing Relevant Management Knowledge: Re-turn to pragmatism. *European Business Review*, 20: 6, 471–491.
20. Haack, S. (1976): The Pragmatist Theory of Truth. *British Journal or Philosophy of Science*, 27, 231–249.

21. Hakkarainen, K., Lonka, K and Lipponen, L. (2004): *Tutkiva oppiminen* (Porvoo: WSOY)
22. James, W. (1907): *Pragmatism, A New Name for Some Old Ways of Thinking. Popular lectures on philosophy.* New York: Longmans, Green, and Co.
23. Kallioinen, O. (2008): *Higher Education Students Experiencing Working Life related Learning*. *Conference presentation at* ECER 2008.
24. Kivinen, O and Ristelä, P. (2003): From Constructivism to a Pragmatist Conception of Learning, *Oxford Review of Education*, 29, (3), 363–375.
25. Laurea (2010): Pedagoginen strategia. *The pedagogical strategy of Laurea University of Applied Sciences*.
26. Hodkinson, P. & Issit, M. (1995): *The Challenge of Competence*. London: Cassell Education.
27. K. Raij and S. Niinistö–Sivuranta (eds.)(2011): *Learning by Developing LbD Guide*. Laurea University of Applied Sciences.
28. Marton, F. and Säljö, R. (1984): Approaches to learning. In F. Marton, D.J. Hounsell and N.J. Entwistle (eds.) *The experience of learning* (35–56.). UK, Edinburgh: Scottish Academic Press.
29. Marton, F. (1995): Fenomenografien I Fokus. *Nordisk Pedagogik* 3 (15), 166–180.
30. Miettinen, R. (2006): Epistemology of Transformative Material Activity: John Dewey's pragmatism and cultural-historical activity theory. *Journal for the Theory of Social Behavior.* 36 (4), 389–408.
31. Peirce, C. S. (1992): The Essential Peirce: Selected philosophical writings, Volume 1. Indianapolis IN: Indiana University Press.
32. Peters, M. A. (2007): Kinds of Thinking, Styles of Reasoning. *Educational Philosophy and Theory*, 39 (4), 350–363.
33. Pihlström, S. (2007): Pragmatismin Näkökulma Taitoon. In H. Kotila, A. Mutanen and M.V. Volanen, (eds), *Taidon Tieto* (149–163.). Helsinki: Edita.
34. Raij, K. (2000): *Toward A Profession*. *Clinical learning in a hospital environment as described by student nurses*. *Research Report* 166. Helsinki University: Department of Education.
35. Raij, K. (2003): Osaamisen Tuottaminen Ammattikorkeakoulun Päämääränä. In H. Kotila (ed.): *Ammattikorkeakoulupedagogiikka* (42–58). Ajankohtaisia puheenvuoroja. Helsinki: Edita
36. Raij, K. (2007): *Learning by Developing*. Laurea Publications A-58. Laurea University of Applied Sciences).
37. Rychen, D.S.and Salganik, L.H. (2000): *Definition and selection of key competencies. A report to the INES General Assembly.* Switzerland: Neuchatel, OECD.
38. Sleeper, R.W. (2001): *The Necessity of Pragmatism. John Dewey's conception of philosophy.* Urbana, IL: University of Illinois Press.
39. Sveiby, K-E. (1997): *The new organizational wealth: managing and measuring knowledge based assets*. San Francisco, CA): Berrett Koehler.
40. Taatila, V. and Raij, K. (2012): Philosophical review of Pragmatism as a Basis for Learning by Developing Pedagogy. *Educational Philosophy and Theory*, Volume 44 (8), 831–844.

41. Tynjälä, P. and Nuutinen, A. (1997): Muuttuva Asiantuntijuus ja Oppiminen Korkeakoulutuksessa, In R. Kirjonen, P. Remes and A. Eteläpelto (eds), *Muuttuva Asiantuntijuus* (182–195). University of Jyväskylä.
42. Tynjälä, P. (2008): Työelämän Asiantuntijuus ja Korkeakoulupedagogiikka. *Aikuiskasvatus* (2), 124–127.
43. Vyakarnam, S., Illes, K., Kolmos, A. and Madritsch, T. (2007): Making a Difference. *A Report on learning by Developing—innovation in higher education at Laurea University of Applied Sciences.* Laurea Publications B-26, Helsinki: Edita Prima Oy.
44. Vyakarnam, S. and Illes, K. (2009): Second International Review of LbD–If LbD is the Answer, what is the question? Laurea University of Applied Sciences.
45. Uljens, M. (1993): The Essence and Existence of Phenomenography. *Nordisk Pedagogik.* (134–146.).