Introduction

According to OECD (2016), learning to learn and flexibility are the key competences in the future work. Education should train students to manage in a world, where they continuously need to adapt to new working methods, new technologies and new business models. The job description of young people can change approximately 25 times during their lifetime. According to OECD research about 65% of young people today will work in jobs which do not even exist now. The most important competences to success in working life will be skills for life-long learning, ability to recognize and assess own learning and ability to develop it. (OECD Forum 2016)

Education needs a change in direction, from traditional knowledge-based to mosaic-like competences, which in addition to knowledge emphasize skills, attitudes and qualities as well as the ability to self-evaluate to which direction to focus one's learning. Also teacher roles need to be renewed. It is not possible to forecast exactly anymore which skills and knowledge to provide students with. Teaching profession is renewing towards coaching, but still the daily core of teaching profession is to promote learning. The task of a coaching teacher is to support, encourage and guide in order to make life-long learning, collaborative working methods, combination of different expertise, and utilization of feedback possible. The key ways to promote lifelong learning Finland are supporting the individual continuum of competence and self-development, extending careers by reinforcing recognition of prior learning and flexible transition between forms and levels of education and the world of work, promoting digital learning and making efficient use of new learning environments, developing the competences of teaching personnel, and reinforcing motivation and joy of learning. (Finnish National Board of Education 2011,2016; Penttilä 2014).

In this article we discuss how the changes in surrounding world requiring changes in higher education will require changes in teaching profession as well. Innovation pedagogy, a learning approach aiming to answer for the needs and expectations of changing world and working life, provides the framework for this change and involves new teacher roles as one cornerstone in elements of innovation pedagogy. We will also give some empirical evidence how teaching profession is changing in higher education in Finland and draw conclusions for further development. By more varied ways of teaching we can ensure better learning and thus develop our students' competences to benefit both their own future and career, and organizations and societies they will work for.

Theoretical foundations of innovation pedagogy

Innovation pedagogy refers to an approach to learning and teaching that corresponds to the needs of working life while emphasizing R&D expertise. In the approach, learning and teaching methods are applied creatively and in a value-adding way so that the students take responsibility for their learning and actively strive to reach their learning goals. After graduation, the students are innovative and oriented towards various kinds of development tasks, which means that they have acquired, in addition to the expertise on their own field, innovation competences required by all working life environments. (Penttilä et al. 2013) Innovation pedagogy is based on the socio-cultural theory and the constructivist view of learning and it extends traditional individual based learning used in many contexts to include collaborative and networking based learning in order to support innovations. According to innovation pedagogy, learning cannot be separated from the surrounding world, as the cultural operating models always steer learners and their activities (e.g. Vygotsky 1982; Walker 2004) Through collaborative learning, different actors are able to work together in dialogue in such a manner that their own expertise can be efficiently shared and combined in novel ways resulting in something more than the sum of its parts. (Vygotsky 1982; Wenger 1998)

Innovation pedagogy aims, as stated earlier, at enabling the development of innovation competences, alongside with the study field specific -competences, providing students the ability to participate into the innovation processes in working life. The working life expects not only individual but also interpersonal and networking competences. The innovation competences drawn up at TUAS follow the European Qualifications Framework and comprise three levels: individual, interpersonal and networking competences. (Kairisto-Mertanen et al. 2012; Kettunen et al 2013.) These include abilities in creativity, critical thinking, team-work, initiative, and networking (FINCODA 2017).

The figure 1 describes innovation pedagogy in a nutshell, i.e. which are the aims, process and tools of innovation pedagogy. The aim of innovation pedagogy is to educate graduates who can succeed in their future working positions. In other words, they will be able to participate in innovation processes in their future jobs so that innovations are created. To reach this aim they have to develop their innovation competences alongside with their study field specific competences during their learning path in the university. Different phases in the innovation process emphasize different knowledge and skills so it is necessary that the learning process itself is planned according to the innovation process.
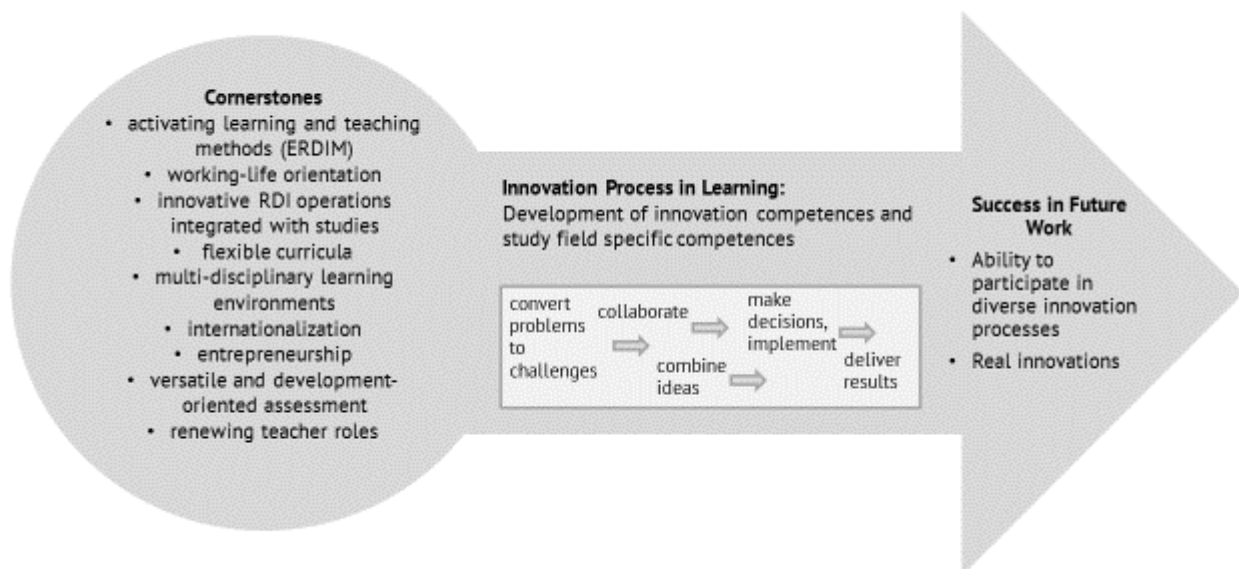
Figure 1. Innovation pedagogy in a nutshell

The cornerstones, or tools, of innovation pedagogy are presented in the beginning of the arrow. *Activating learning and teaching methods (or ERDIM methods)* mean that learning and teaching methods are applied creatively and in a value-adding way so that the students take responsibility for their learning and actively strive to reach their learning goals. Educational Research, Development and Innovation Methods (ERDIM) is a term that covers all teaching and learning methods related to the implementation of Innovation Pedagogy (Kairisto-Mertanen et l. 2012). Thus, teaching and learning methods include also *working-life orientation* and *integration between studies and applied RDI activities*, i.e. ERDIM methods offer students enhanced professional growth as well as improved social skills to be employed in working life. Constant application of knowledge and skills in authentic projects and research and development activities deepens and accelerates learning. *Flexible curriculum* makes optional study paths possible. The flexible curriculum is close to the concept of a postmodern curriculum, referring to a curriculum which aims to react in a flexible way on the changes in the society and in the working life and to add a student's opportunities for elective

studies, presented earlier e.g. by Young (1992) and Penttilä (2012). A social and *multidisciplinary* learning environment is formed by people with different talents and competencies and by the interaction enabling collaborative learning. In an innovation process, different types of knowledge are needed and used. When boundary crossing in a social learning environment is included to this process the ability to innovation creation is improved. An *international* learning environment gives readiness for international operations and encourages and enhances *entrepreneurship*. The *assessment* methods are *versatile*, e.g. continuous and not focus only on learning outcomes, and *development-oriented*, i.e. students are able to assess their own competences and know how to develop them. And finally, *renewing teacher roles* support, encourage and guide students in order to advance learning.

Renewing teaching profession

The teaching profession is being renewed. Teaching is no more sharing knowledge and skills but guiding and encouraging students in life-long learning and in communal and collaborative way of working. New pedagogic and didactic competence expected from a teacher means, for example, competences in activating teaching and learning methods, competence in planning and implementing successful teaching and the learning processes and utilization of online learning opportunities. It includes also competence in co-operation and networking with working life organizations, in flexible study paths, in internationalization and entrepreneurship. (European Commission 2014; Sursock 2015) In the Learning by Developing Action Model at least five roles of the teacher evolve: motivator, challenger, process consultant, information source, and evaluator. These roles are needed in varying levels in different learning situations and rarely the same combination is applicable in two cases (Taatila 2014, p.53). Teaching is getting close to coaching, being interprofessional by nature. Interprofessional teaching is a coaching approach, where the teacher is not an information provider but more like a guide ensuring that the group searches information, shares it, and examines it from viewpoints of several professions. This requires that learning environments include working places, organizations and companies, outside the university. As Einstein has stated: "I never teach my students. I just try to create circumstances where they can learn." (Howkins 2008) However, to advance learning is still at the core of a teacher's everyday work.

Facing the challenges in education requires efforts to cultivate personal and professional growth, i.e. changes in the mindset of teachers and students. According to Dweck's research (Dweck 2006), three are two kind of mindsets or mental models for success. In a fixed mindset people believe that their basic qualities such as talent or intelligence are fixed traits. In t growth mindset people recognize that talent is just a starting point and believe that abilities can be developed. A growth mindset is likely to encourage and creates feelings of empowerment, i.e. people begin to see how they might take action to positively influence their community and their own learning. Dweck's research is applicable to all people, not just students. Therefore developing a growth mindset amongst teachers has impact upon learning among students. An essential tool developing a growth mindset among teachers is providing a chance for teachers to reflect upon their new ideas and consider what they learned from the process, not focusing on whether the idea was a success or a failure. Also formative feedback is crucial, and by inviting participation of the teachers in the process in dialogue and shared discussions, the feedback can be meaningful and applicable to the teacher's daily practice. Developing a growth mindset amongst students is not an immediate process; equally, encouraging teachers to see themselves in the same way will equally take a lengthy period of time. However, there are significant benefits achieved. A growth mindset is necessary to recognize opportunities for improvement and to believe that one can successfully improve. (Dweck 2006; Fadel et al 2015)

Learners learn in different ways in different contexts which requires flexibility and acceptance of difference from a teacher as well as continuous dialogue with students. According to Sartes (2013) dialogue is the major vehicle for the transmission of culture. The role of the teacher is to use dialogue with students to explore the learnt behavior and to be able to inspire them to learn and change. Finally, the concept of social learning must also be widened to cover the learning in social media. Digitalization is one of the major social drivers to change also the practices in education. The teachers have to adapt the teaching practices bearing in mind that the next generation in constantly in multimodal social environments. We talk about the blurred boundaries between formal and informal environments and learning (Scheinin 2016, p.18).

Towards new teaching profession – experiences and lessons learnt

In following, the theoretical framework is described in practice with authentic examples from Turku University of Applied Sciences (TUAS) in Finland, where innovation pedagogy has been implemented for the last eight years. TUAS has multidisciplinary faculties with almost 10 000 students and 700 staff members. The change process/ the implementation of innovation pedagogy covers the whole university, i.e. all the faculties and is targeted to the whole staff. The part of the change process focusing on the teaching profession at TUAS is described first as a synthesis based on qualitative data gathered in years 2008-2016 by interviews, observations and staff and student enquiries. Second, the change is discussed as a consequence from teacher and staff trainings, the results being based on oral and written feedback after the trainings as well as on the survey conducted among training participants in late 2016.

The change process of the teaching profession at TUAS

When innovation pedagogy and its new requirements set for the teaching profession first were introduced at TUAS it was not automatically accepted by the personnel. A teacher's profession has traditionally been very independent. Cooperation or sharing of teaching material or other ways of delivering it has not been common among faculty members. As innovation pedagogy calls for interaction and networking among students it was evident that there must be interaction, cooperation, sharing and networking among faculty members as well. Further, connections to working life organizations needed intensification as assignments for student work were expected to represent real world situations and problems. The process of implementing innovation pedagogy at TUAS actually meant introducing a totally new culture to the staff members. According to Schein, organizational culture can be divided into three levels: in artifacts which are visual organizational structures and processes; in espoused values such as strategies and goals and in basic underlying assumptions which are taken as granted beliefs, unconscious perceptions and feelings and thoughts (Schein 1999). When the culture is seen like that it is quite evident that the change cannot take place without resistance.

When the first ideas of innovation pedagogy were launched the artifacts which had to be questioned were the ways how people worked. As stated, the teaching profession has traditionally been very independent requiring only individual input. Innovation pedagogy challenges the individual way of working and instead emphasizes interprofessionalism, the importance of interaction and networking among faculty members, students and the surrounding economy. The new way of doing things was experienced first as a threat among the staff members. The espoused values concerned mostly producing graduates of good quality which meant that the teacher had to make sure to lecture all necessary and important topics in front of the class. Learning was understood to be guaranteed when the subject matter to be learnt had been mentioned and handled during a lecture. The everyday discussion among the faculty teachers used expressions like "have you already explained this subject matter to the class?" or "the students have learnt

the topic because I have given a lecture on that to them". Almost all the interest was put to the teachers' actions. Learning was understood to take place as a consequence of what the teacher did or did not. The learning process of the student was not that much emphasized.

The change of curriculum structure helped remarkably in developing understanding of learning and it increased also co-teaching, including co-planning and co-implementation. A module based curriculum used by TUAS refers to wide study modules, not based on traditional subjects or disciplines but being more working life based, and therefore requiring the expertise of several disciplines. This prerequisites co-planning and co-teaching, because many real life organizational issues are not to be solved with the expertise of one discipline. This forces, or encourages, the teachers of different disciplines, to co-operate more closely than earlier, but it is good to remember that to understand the language of other disciplines can take time and the change cannot be done overnight. This change in co-operation between disciplines concerned also all development work done; the pedagogic and curriculum development work has to be learned to conduct in cross-disciplinary teams. The module based curriculum has generated good feedback from the students. The student feedback is discussed on a systematic basis annually together with student representatives, and the suggestions generating improvements to curricula are communicated.

The most important thing in the early stage of the development process was to create forums where people could meet and learn to know each other. There must be space for criticism but there must be space for innovative and solution oriented thinking as well. The faculty members were encouraged to get acquainted with other faculty members unfamiliar to them and this gradually helped in realizing what the new ideas were all about. These open discussion forums encouraged to share ideas, to try new methods, and to accept that failures can be useful learning situations for both students and teachers. The students were represented in all these forums. Teachers were also encouraged to integrate working-life co-operation, e.g. projects and business assignments, to their study units and modules, which supported them to learn new kind of teaching in practice.

Staff trainings challenging the mindset of the teaching profession

Innovation pedagogy trainings for staff members have been another valuable tool in adapting and espousing to new teaching roles. TUAS has organized these trainings for all its staff members including student union representatives, i.e. trainings are not targeted only for teachers and other staff members. The training includes an advance assignment and readings, two intensive training days, and a development assignment. The aim is to generate common understanding about the pedagogical strategy of TUAS, its aims and implementation and to share best practices on how to provide competences expected in working life, and bring new resources to manage and develop one's work. The training emphasizes collaborative and experience based methods as well as the participants' readiness to bring their own thoughts and experiences to the common discussion. By the end of 2016 approximately 170 staff members (75 % of them being teachers) have accomplished the training. By the end of 2017 the figure is expected to be approximately 300.

The impact has been positive in several ways. Based on the oral and written feedback immediately after the trainings, increased co-operation, improved team spirit, encouragement to try new teaching methods, empowerment, open atmosphere, growth of shared understanding are examples of good impacts of the trainings. Open discussion, sharing experiences and learning from others were mentioned as the most fruitful methods used. About the contents the assessment has been mentioned to be one of the most useful and valuable topics by providing practical new tools and ideas to everyday work. Especially the development of the assessment culture mentioned; the emphasis in assessment has developed from the summative assessment of the outcomes more towards process assessment and self-assessment. Pursuing

deep learning includes assessment of development of e.g. initiative, reflection, problem solving, and team working skills. When the assessment is targeted more on these kind challenging skills, it proves clearly how the assessment has developed, serving students' future development opportunities.

The electronic survey was conducted among the training participants in late 2016, the sample being 170 and the response rate 61% (104). The respondents by sex were 75% female and 25% male, by age the majority belonging to groups 51-60 years (40%) and 41-50 (38.5%), and by profession 70 % being teachers and 30 % other staff members. The impacts of the trainings were encouraging also according to the survey. The major outcome seems to be the impact on supporting the growth mindset. The growth mindset implies, as stated earlier, the capability for reflection, dialogue and self-development. Our study show that the training programme can support these features and their development. The majority (90.4%) thought that the training generated common understanding about the pedagogical strategy of TUAS, its aims and implementation, the same number of respondents (90.4%) felt that the training encouraged them to develop their work, and the discussions and learning from others was useful (94.3%). 65.5 % of the respondents said that the topics covered during the training were previously familiar, however, 93.3% felt that they learnt new. Almost all respondents have got acquainted with new colleagues (99%) and 83.7% felt that the team spirit among university staff improved due to the training. The responses about the empowerment were partly divided. The respondents felt they were encouraged and empowered (90.4%) but still only 49% stated that they got new tools to manage their everyday work. It was stated in open answers that even the training is empowering, it also adds pressures to further develop your work, which in current hectic teaching profession can wear out diligent teachers.

The trainings seem to have impact not only on the mindsets but on the actions of everyday work among the staff. 74% of the respondents have put to use new methods and work procedures perceived during the training. The development assignments, often implemented in groups, have brought a lot of good practices e.g. in co-teaching, assessment methods, and in project working.

Conclusions

In the present study we have discussed innovation pedagogy as an approach to support learning and teaching in a multitude of ways. The changes in education cannot be expected to be quick. We have to understand that the changes concern several different areas, e.g. the strategic approach, institutional support, curriculum design as well as the training of the academic staff – not to forget the changes in learning environments both physical and virtual. The change process is still in progress at TUAS. However, encompassing innovation pedagogy in the core of the university strategy gives institutional support, which has made it possible to implement changes in all essential university operations, such as in curriculum design, learning environments and methods, and staff training.

Within the umbrella term of innovation pedagogy we have in this article brought into discussion the new dimensions of the teacher profession. Firstly, we have explained how the process of change at TUAS was first initiated by creating forums for the academic staff to meet the colleagues from different disciplines and discuss the change and the expectations. Secondly, based on the oral and written feedback immediately after the innovation pedagogy trainings, increased co-operation, improved team spirit, encouragement to try new teaching methods, empowerment, open atmosphere, growth of shared understanding are examples of good impacts of the trainings. Further, open discussion, sharing experiences and learning from others were mentioned as the most fruitful methods used. The core of the teacher profession is still to promote learning but the methods are changing and the responsibility of learning is also given more to the students than before. Thirdly, our electronic survey conducted among the training participants show that one of the main outcomes of the programme seems to be the impact on supporting

the growth mindset, i.e. the capability for reflection, dialogue and self-development. At this stage our study shows that a training programme for the academic staff acts as a trigger for the change in the climate and attitudes in teaching and the teaching profession. The teachers need forums to meet the colleagues and to discuss the challenges. The support must be available, which helps to take the courageous steps forward.

References

Dweck, Carol S. (2006). Mindset: The New Psychology of Success. New York: Random House.

European Commission 2014. New modes of learning and teaching in higher education. Luxembourg: Publications Office of the European Union.

Fadel, C., Bialik, M. & Trilling, B.(eds.) (2015) Four-Dimensional Education. The Competences Learners need to Succeed. The Center for Curriculum Redesign, Boston.

Fincoda (2017). The FINCODA Project. http://www.fincoda.eu/ Visited 9.2.2017

Finnish National Board of Education (2016). Renewing teaching profession. At AmmattiPeda http://www10.edu.fi/ammattipeda/?sivu=uudistuva_opettajuus . Visited 27.6.2016

Finnish National Board of Education (2011). Learning and Competence 2020. Information materials 2011:68.

Howkins Elizabeth (ed.) 2008. Preparing for Interprofessional Teaching: Theory and Practice. Radcliffe Publishing.

OECD Forum 2016. Paris May 31st -June 1st, 2016. http://www.oecd.org/forum/home/. Visited 12.6.2016.

Kairisto-Mertanen L., Penttilä T. & Lappalainen H. (2012). Fostering Capabilities for Continuous Innovation in University Education. Proceedings of 13th International CINet Conference 16–18 September 2012.

Kettunen Juha -Penttilä Taru – Kairisto-Mertanen Liisa (2013). Innovation pedagogy and desired learning outcomes in higher education. On the Horizon, Volume 21, Issue 4.

Penttilä Taru (2014) TOWARDS A POSTMODERN CURRICULUM? In THE POLICIES OF INCLUSION, edited by Laurinkari Juhani and Tarvainen Merja. EHV Academic press, October 22, 2014. Pp. 99-112.

Penttilä T. , Kairisto-Mertanen L., Putkonen A. & Lehto A. (2013) Innovation Pedagogy – A Strategic Learning Approach for the Future, in A. Lehto – T. Penttilä eds, Pedagogical views on innovation competences and entrepreneurship, pp.11-23. Reports from Turku University of Applied Sciences 171. Tampere 2013.

Sarles Harvey 2013: Teaching as Dialogue: A Teacher's Study. Trebol Press.

Schein, E. H. (1999) The Corporate Culture Survival Guide – Sense and Nonsense about culture change. Jossey-Bass Inc. California.

Scheinin, M. (2016). Introduction - Future Learning Design. In Tanskanen, I. & Rännäli, M. (eds). Spinning e-pedagogical Nets. Pedagogical development and experiments in higher education. Reports from Turku University of Applied Sciences. Tampere: Suomen yliopistopaino. Available at: http://julkaisut.turkuamk.fi/isbn9789522166371.pdf

Sursock Andrée (2015) Trends 2015: Learning and Teaching in European Universities. European University Association asb: Belgium.

Taatila, V. (2014) Some Experience-based Considerations on the LbD Action Model. In Raij, K. Learning by Developing Action Model. Laurea Publications 36, Laurea University of Applied Sciences. Grano Oy, Espoo.

Vygotsky Lev Semyonovich (1982): Ajattelu ja kieli. Espoo: Weilin & Göös.

Walker, Richard A., Pressick-Kilborn Kimberley, Arnold Lynette S., Sainsbury , Erica J. (2004). Investigating Motivation in Context: Developing Sociocultural Perspectives. In European Psychologist Vol 9(4), Dec, 2004, pp. 245–256.

Wenger, Étienne (1998): Communities of Practice: Learning, meaning, and identity. New York: Cambridge University Press.

Young, M. (1992). A curriculum for the 21th century. In Rauhala P. (1994) Teknillisen alan joustavan koulutusrakenteen kokeilu kehittämishankkeena, 39 Acta Universitatis Tamperensis ser A vol. 397.