

# Entrepreneurship and innovations are created through collaboration

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An innovative and interdisciplinary learning environment is full of opportunities and challenges for learning, as it requires creative and executive activity from its group. In such an environment, interdisciplinary interaction is a prerequisite for learning. Utilizing the traits of creative personalities should be taken as part of an interdisciplinary group's innovation activity and crossing its boundaries. In addition, validation and coaching a group interaction should be a conscious activity as well as part of the learning assessment.

Digitalised, entrepreneurial and knowledge intensive society (e.g. Drucker 1993) consists of citizens renewing themselves. Increasingly, the goal of knowledge workers is to develop, identify and weigh the many tolerable solutions rather than one perfect solution. (Engeström, Engeström, & Kärkkäinen 1995.) Among other things, the skills of solving such complex, 'wicked' problems (Rittel & Webber 1973) emphasize, creativity, analytical and critical thinking. Few individuals possess all of the above mentioned features, but entrepreneurs and knowledge workers generally utilise and work in teams, as problem-solving is expected to be most effective and of the highest quality. Multidisciplinary team collaboration across disciplines, called 'interdisciplinary collaboration' (Davies & Devlin 2007), requires team members to possess, in addition to sectoral skills, general skills such as collaboration and interaction skills, border crossing skills and network learning.

During the past decades the role of Internet and communications technology (ICT) in our society has increased significantly. The effect ICT has on businesses and to our daily life is often referred as a digital disruption (Koiranen, Räsänen, and Södergård 2016; Degryse 2016), which often means the use of ICT to create new products and services which might change business models, thus providing new revenue and value to companies and organisations. The digital disruption affects all industries and aspects of life whether it is the use of social media to increase sales or the use of email to stay in contact with business partners and friends. As a summary, ICT is being used in all business sectors to provide added value for the companies. Realising above, the role of ICT in changing industries should be taken into account also in higher education, not just in the fields of computer science and engineering education. Also the opposite, that the computer science and engineering education would benefit greatly by the influence of other disciplines.

Higher education institutions have recently emphasised entrepreneurship as one of their focus areas. As mentioned above, entrepreneurial activity can be seen as a creative problem solving, innovation and team activity (Entrepreneurship gamebook 2019). Problem solving and innovation require a creative and executive effort from the group. The concept of innovation is generally defined to include the following three requirements; it must be new or

innovative; useful and; implemented in practice (Siltala 2009, Vehkaperä, Pirilä & Roivas 2013). Thus, innovation is the activity of putting new and useful products, services or methods into practice. In innovation, creativity is often associated with Solatie and Mäkeläinen (2009) creating something new, which is the ability to create something new and unexpected, and to learn from it. In addition, creativity is the ability to initially develop strange ideas that, when realized, make them appear rational and workable (Vehkaperä et al. 2013).

Genuinely innovative innovation requires creative activity and creative personalities. Such persons according to Uusikylä (2012) typically have the following traits; courage and independence; ability to face hostility and take intellectual risks; sustainability; curiosity; openness; ability to change; and intrinsic motivation. Although innovation requires the ability of creative individuals to see things in different ways, it is not enough in itself. Innovativeness requires knowledge and skills to understand the usefulness of an idea and approach, and to persevere in putting it into practice. Thus creativity is related to the stage of producing new ideas in innovation activities, while innovation is also related to the promotion, development and implementation of ideas (Tuominen & Lindroos 2009). In summary, in multidisciplinary innovation work (team entrepreneurship), it is important to get to know and understand the different personalities of the group, both the know-how and knowledge of different professionals. Getting to know one another requires the ability to cross borders within a group.

In most Baltic countries, higher education has been given a key role to train new knowledge workers. The change in knowledge work described above thus challenge higher education organizations to develop the training of knowledge workers. One of the implications is the work based learning (WBL), which can be defined to “provide students with real-life work experiences where they can apply academic and technical skills and develop their employability”. As a part of their WBL development efforts, universities around the world have established new innovation and collaborative learning configurations (eg. Brandt et al. 2013, Bull & Whittle 2014, Long 2012). These learning environments Savander-Ranne, Lindfors, Lankinen and Lintula (2013) divided into three different categories; preserving, renewing and creating something new. As a result of my doctoral dissertation (Heikkinen 2018), I proposed multidisciplinary learning environment to support the creation of new knowledge and the crossing of professional boundaries in innovation development. In addition, the study found that crossing student boundaries outside the learning environment focuses mainly on sharing knowledge and gaining new knowledge. Students felt that crossing borders was an integral part of the WBL and innovation activities of a multidisciplinary group.

When studying entrepreneurship and creative innovation co-creation, it can be difficult, even impossible, to cross borders between students in different disciplines. According to Akkerman and Bakker (2011), the necessary dialogue between different disciplines in cross-sectoral innovation and collaborative learning environments requires so called ‘border brokers’. Border brokers are recognized as important actors in learning border crossing skills, providing bridges between different practices or perspectives. The role of teachers or coaches as role models in the learning environments described above is likely to prepare students to cross borders inside and outside the learning environment. Teachers entering

new learning environments should therefore be trained to coach and encourage students to cross borders. In addition to teacher training, according to Oonk (2016), the development of students' border crossing skills could be part of the assessment of practical skills. The practice of evaluation would recognize and highlight the importance of cross-border competence as part of the knowledge worker qualification.

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