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Connecting businesses, emerging creative talents and learning environments in an entrepreneurial university setting: the case study of the Creative Steps, Arkko-Saukkonen, A., Teoksessa J. Cunningham, M. Guerrero & D. Urbano (toim.), *The world scientific reference on entrepreneurship volume 1: Entrepreneurial universities: Technology and knowledge transfer* (s. 297–340). Copyright @ 2017 World Scientific. [https://doi.org/10.1142/9789813220591\\_0010](https://doi.org/10.1142/9789813220591_0010)

Artikkeli julkaistaan uudestaan väitöskirjan osana artikkelin alkuperäisten tekijänoikeuksien haltijan ystävällisellä luvalla.

# Connecting Businesses, Emerging Creative Talents, and Learning Environments in an Entrepreneurial University Setting: The Case Study of the Creative Steps

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## Abstract

For entrepreneurial universities, creating new learning pedagogical approaches that support the learning and knowledge transfer among student cohorts is essential. Creating new learning environments and experiences that reflect a worklife orientation is one of the challenges facing entrepreneurial universities. Creating such learning environments for learning and knowledge transfer with international partners is challenging and complex. Using the case study of the Creative Steps, a worklife-oriented, creative, and innovative learning process aimed at students seeking professional careers in the creative and cultural industries highlights the learning and knowledge transfer challenges. This chapter's findings focus on learning with respect to creative methods, teamwork, skills, client feedback, and the model of Creative Steps. Well-designed programs in entrepreneurial universities can improve working life skills, widen the collaboration and networking opportunities, and embrace online tools that encourage knowledge transfer, learning, and collaboration that benefit participants, entrepreneurial universities, and the regions they inhabit. Such programs are a must if entrepreneurial universities intend on sustaining their relevance and the economic impact of their teaching mission.

## Introduction

The conditions of sparsely populated areas bring challenges to many areas of life and in particular to local economies. Thus, supporting of regions, strengthening of know-how, and especially technological development contribute to growth and preservation of these areas. Technological infrastructure supports the possibility to function despite the distance. By managing distances, it is possible to create functional networks and cooperation partnerships. Collaboration and sharing of ideas can increase the development of society. For example, the Living Lab concept of this can be achieved in peripheral and rural areas. It offers a new innovative practice which provides efficient and reasonably economical collaborative spaces for all the actors in a region (Jäminki & Saranne, 2013). Collaboration can create new innovations of products and services. Entrepreneurial universities are central actors in providing technological infrastructures, human capital, and knowledge and expertise that can be used to support the economic and social progress of a location (Guerrero et al., 2015).

Within an entrepreneurial-university-environment setting, the ability to combine different learning environments to support knowledge sharing and acquisition is critical to peripheral regions for supporting their longterm survival. New learning environments supported by new learning technologies such as social media offer a flexible platform for collaboration (Jäminki & Saranne, 2013). More broadly within the European Union is to support employment in all types of territorial regions and the overall goal is to increase Europe's smart, sustainable, and inclusive growth (EUROPE, 2020, 2010). For regional and peripheral regions the creative and cultural industries are a key sector to contribute to employment and growth across Europe (Creative Europa, 2014). The commission's priorities in the field of CCIs include: "responding to changing skills needs by promoting innovation in education and supporting the mobility of artists." To realize the potential of this sector and to support the skills and knowledge development, entrepreneurial universities are core institutional actors to provide underpinning support that can enable the potential realization of this sector. The challenge for entrepreneurial universities is how best to respond particularly with respect to teaching activities and programs.

Set against this background this chapter, using the case study of the Creative Steps, examines how an entrepreneurial university responded to the needs of the sector, students, and employers that contribute to the skills and knowledge development of the creative economy in peripheral regions. This chapter begins by considering entrepreneurial universities, teaching, and learning before outlining the context, the case study of the Creative Steps, some findings before concluding with some reflections and implications for entrepreneurial universities.

## Literature Review

### Entrepreneurial university

Higher education institutions have an important role by working as an institutional agent in societal development. The regeneration of economic structure challenges universities to participate in regional development through innovative working in concise collaboration between business life and other innovative actors (Cunningham *et al.*, 2012). This shows especially in entrepreneurial universities that have actively changed their organization and way of functioning in order to enable university business collaboration (Kirby, 2006; Guerrero *et al.*, 2012). Major progress in university–business collaboration has occurred in the last decade, which has shown itself both in results and change of culture (Wilson, 2012, p. 4).

In addition to teaching and research, universities have a third task which can be called entrepreneurial mission (Nelles & Vorley, 2009). Research and development are means of creating a strong collaboration in various sectors of society. In order to achieve it, a university must assimilate the concept of entrepreneurial education in their actions and curriculum (Gibb & Hannon, 2006). Guerrero *et al.* (2012) state that "entrepreneurial universities are involved in partnerships, networks and other relationships to generate and umbrella for interaction, collaboration and co-operation." Because of the development, research and innovative work contributes to regional development. Its effects extend to increasing employment in addition to growth of competitiveness. On the other hand, entrepreneurial universities aim at strengthening entrepreneurial thinking on an individual level. Students and staff are encouraged to do actions that aim at entrepreneurship.

Nelles and Vorley (2010) argue that universities: “embeddness therefore is the product of the effective entrepreneurial architecture, with effective strategies, systems, structures, culture and leadership in place to create a successful third mission and realise institutional development.” As to the third mission, this is seen in those universities that have been able to develop and change their actions and policies. This is crucial for influencing societal development and strengthening of Europe’s market economy through university–business collaboration. The role of entrepreneurial universities is to function in an entrepreneurial way and by doing so contribute to increasing the competitiveness of local companies. The teaching activities of entrepreneurial universities through knowledge transfer can have an impact on local economy and society. Some of this knowledge transfer through the teaching mission and activities can have more immediate impacts on firms.

In Finland, one of the tasks for universities of applied sciences is regional development, which is enhancing and accelerating collaboration between the actors of the region (Ministry of Education and Culture, 2014). For teaching and research, applied research and developmental activities is frequently attached to studies as different kinds of assignments. In this way it supports individual professional growth toward working life and also furthers regional development, economical structures, and working life. These include “Innovation Work” which is being done for regional development benefits in Unelmatehdas (“Dream Factory”) implementations, which brings together students from different fields in the development work (Lempiäinen & Jänkälä, 2014). Development environments have been created to meet the labor market activity such as LiikeAkademia (Business Academy), where orders are sought from companies of the area and learning environment is students’ team company (Lauri, 2014). Onni car brings a new model of open learning environment, where students offer health and wellness services, and at the same time it works as a place to practice practical work. With the help of Onni car — the new model of multidisciplinary — the production of welfare services has been created (Meinilä, 2014). The Learning and Competence Creating Ecosystem (LCCE model) is an example of a more holistic working-life-oriented competence development in open dynamic connections of relationships between different parties and internal and external networks (Lindeman, 2015).

## **Teaching and learning**

Teaching activity is one of the core missions of entrepreneurial universities. According to Etzkowitz et al. (2000), “The assumption of an active role in economic development leaves existing academic missions in place, but it also encourages them to be carried out in new ways.” Nelles and Vorley (2009) point out that “the integration of this new mission with teaching and research provides the basis to reinforce and enhance institutional development beyond the third mission itself.”

## **Community learning**

The theoretical framework relies heavily upon socio-cultural point of view. Social status is a place of learning, where learning takes place every day at all levels communally. Individual learning is attached to the community in which a person works.

Learning is seen as part of a social phenomenon and can be examined from a social, cultural, or historical reference point of view and plays a major role in socialization (Helakorpi, 2005, p. 178). Lave (1993, p. 64) believes that learning is a “social phenomenon,” which converts into a variety of contexts through the operation. Lave and Wenger (1991) have introduced the idea of a practical community

(community of practice), which refers to an individual's active involvement in the community and which is one of the common target or targets of interest. On the other hand, the community may be formed around a particular topic or entity whose working members of the community work. Work can be done either face-to-face or by means of various information technology tools. Community members through knowledge and the sharing of responsibilities aim to achieve a goal. Social community form common standards according to which the action takes place (Lave & Wenger, 1991; Wenger, 2009).

All learning and knowledge acquired is attached to the environment and the opportunities it offers, where the learning process is mirrored in the cultural context in hand. Individuals observe the existing reality through a very comprehensive socio-cultural frame of reference in which knowledge and skills are shaped up according to the picture (Siljander, 2014, p. 232).

For Rauste von-Wright *et al.* (2003, p. 161), from the perspective of the role of action, learning is emphasized when the individual is participating in a target-oriented learning process and at the same time builds on what has been learned in the data structure. This is strengthened by the knowledge to skillsfront new challenges. Vygotsky (1978) shows the zone of proximal development where the individual challenges to raise the level of performance, because the individual will confront his or her own knowledge with the most demanding tasks. This intermediate state is a zone of proximal development in which new learning takes place with the assistance of guidance.

To create an interactive community space, where there is both face-to-face and online workspaces, Wenger (1998) speaks of minimalist design, which Barab *et al.* (2004, p. 63) utilized in constructing interpersonal communal space in the work of the network. The minimalist mode works on a preliminary application platform, which provides opportunities to support the growth of community development. However, this mode enables the community to self-build and grow its own content by its members (Barab *et al.*, 2004, p. 63).

Learning cannot be removed from the community. It can be seen, particularly today, that students are on the internet as part of the various communities where they share different content about themselves and the community, or a community is formed around the content of interest (Wenger, 2009, p. 212). At the same time, learning takes place as part of these communities. This will help generate new knowledge, with the perceptions and experiences of individuals distributed through social interaction with others. Often the background of a common purpose, shared values, or it can be built around a common content.

## **Meaningful learning**

Collaborative learning may be an intrinsic value, which is why it is placed upon the conclusion of a working-life-oriented project work. Jäminki (2008) emphasizes the high quality of e-learning activities to include work closely with the challenging tasks to train the innovative and creative activities. Customer-oriented way of working is not always coincidental; therefore, communication skills and collaboration skills in addition to group activities made possible self-direction and self-working periods (Jäminki, 2008; Tynjälä, 1999). Interaction weaves through technological platforms used in web-based learning into practice. The aim is to meaningful learning and environment which it confirms (Novak, 1998; Helakorpi, 2005; Ruokamo *et al.*, 2003).

Meaningful learning can be understood as significant learning, which is a profound aspiration to realize what one has learned and to act in meaningful learning environment. Learning can be built through a meaningful challenge as the authentic task, but high on the agenda is the active operation of the student, where he strives to create meanings of the discovery. Approach emphasizes the social nature and students work collaboratively through interaction, and reflection is built on an understanding of what you learned on the matter. The transfer of impact, from the perspective of the students, is being able to transfer the skills and knowledge to new situations and to apply what they have learned in new kinds of contexts (Ruokamo *et al.*, 2003). From the viewpoint of Helakorpi (2005), the meaningfulness varies in different situations, so there is not only a single correct solution; therefore, methods, tools, and learning environments should be applied as necessary. In a network, function is one part of the whole. Furthermore, Jonassen's (1995) work suggests criteria for meaningful learning that includes activity, constructiveness, sense of community, intentionality, contextualization, conversation, and reflectivity.

## Design

Design studies are increasingly popular when examining learning environments and particularly when studying the use of IT and communication technology for teaching purposes (Heikkinen, 2006). The study method is used when designing a product or method and often when planning learning environments and is also suited for creating learning contexts, that is, realistic conditions (Brown, 1992; Edelson, 2002; Collins *et al.*, 2004; Poikela, 2009). Design research aims to answer the question "what are the learning environment where the learner's activity, counselling and the creation of knowledge is made possible?" (Poikela, 2009). One area is the cooperation of creative experts and the interaction around an assignment from actual working life using different methods. Another is the experiences and drawing inspiration from meeting businesses and visiting cultural locations in order to widen one's perspective about the needs of working life. The third is the testing of the possibilities of online teaching. The knowledge interests of Habermas (1973) can be seen from different perspectives in the different parts of the implementation of the model. The technical interest lies within the online teaching environment. The practical interest is seen in the creation of definitions through interaction in a social environment.

Different teaching methods have been widely tested through the design method (Brown, 1992; Kärnä, 2011). Brown (1992) brings experiments from the laboratory and onto the field of practical application, which means learning takes place under natural conditions that enable the researcher to step into the role of a planner (Edelson, 2002; Collins *et al.*, 2004). Social media have been used as tools in online teaching and several different models connected to networking have been developed (Ihanainen & Kiviniemi, 2010). In the dialogical method, a blog functions as a teaching application (Aarnio, 2010). Through the innovative and creative attitude of the students, pedagogical models and methods were created communally to Wikipedia through problem-based learning (Kuivalahti & Kähkönen, 2010). The development of social competence was improved through the use of the second life-learning environment, blogs and Skype (Myllylä & Teräs, 2010). Collective work was tied to the development work of online learning environments where social media were widely used in addition to the Moodle platform (Aarreniemi-Jokipelto, 2010). In the aforementioned study, it was found that it is possible to use social media in an online-based implementation even in formal learning as, among other things, collective work changes the manner in which people interact and tools are needed for that interaction, which means that the environments created through social media are essential (Aarreniemi-Jokipelto, 2010).

A design research is suited as a support for phase-based development where you are attempting to, through customization, create a model in a more student- and worklife-friendly direction, where interactivity is active, collective, and representative. Poikela (2009) shows that the job of a design research is to spot, recognize, plan, implement, and assess all the factors necessary to create the required abstract environment. When developing a learning environment, a design study provides a good methodological basis for the construction of a model and the environments present in that model in their turn define what is to be the focus of the implementation and what elements are going to be the integral ones for the generation of knowledge.

## **Learning environment**

### ***Reflection***

When reflecting, a person looks within himself/herself as if through the eyes of an outsider and reflects on his/her own actions and experiences. Learning is tied to the ability to reflect as this is the means to deal with experiences and actions (Kolb, 1984; Poikela, 2009; Herrington *et al.*, 2010). According to Mezirow (1991) reflection is a prerequisite for learning. The subject is secondary as it is more important to be able to see straight into the core of your own actions and recognize your experiences and thought patterns. In the study, the importance of reflection can be seen through the recognition of successes and problem areas. Through experience, understanding is deepened during the cycle of the design research. From the journals and the feedback of the students, relevant information is gained, with the help of which the model can be developed. The ability to reflect is a part of developing professionalism helping improve the content of the models and processes (Heikkinen, 2006).

Poikela (2009) has devised a formula to support experience-based learning and the understanding of reflection. This formula refers to Schön's (1983), Boud's (1985), and McAlpine's (1999) ideas. The different forms of reflection can be understood in different ways during the different phases of the process (see Figure 1). It is all based on experience and recognition is a start for reflection, which can be seen in action (reflection in action) and can change the course it. Reflection that follows action (reflection on action) is deeper and entails the examination of the experiences born from the action and the recognition of the importance that emerge from these. Reflection that proceeds action (reflection for action) has to do with understanding the learning process and careful planning, which means that the content can only be perceived through abstract concepts and assumptions. The cyclic form brings out the reflectiveness. Especially when planning the model, reflection plays an important part to concretize the information during the planning and the implementation, so it can be used as a tool to improve the cycle.

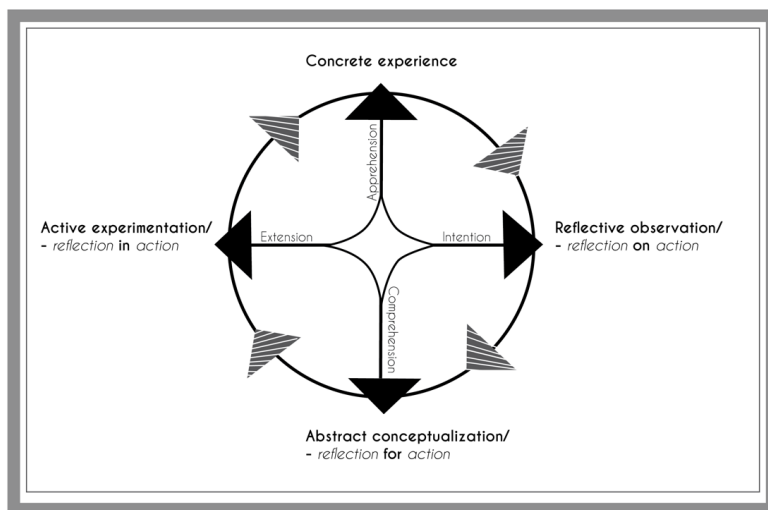


Figure 1. Experimental and reflective learning (Poikela, 2009).

Source. Adapted from Poikela (2009). Image created by Ella Käyhkö.

### ***Learning spaces***

According to Poikela (2009), education should produce integrated and sustainable experience-based knowledge. He compares “learning by doing” to “learning by making” and points out that the acquisition of verbal and mental skills requires discussion, interaction, the production of collective and individual knowledge, and the combining of theory and practice.

Working-life-oriented functioning naturally produces an authentic learning environment where one can work with both challenging and rewarding assignments, as Jäminki and Saranne (2013) state in their study. In online learning environment, too, authentic learning tasks can be included in collaborating group work and learning (Oh & Reeves, 2013). However, concise collaboration with working life produces authentic worklife-related challenges through which an entrepreneurial university enables the strengthening of learning and know-how with the help of developing assignments. Universities of applied sciences in Finland are responsible for collaboration with working life, and hence the goal is to build as many working-life-oriented, authentic assignments as possible that are part of the studies (Jäminki & Saranne, 2013). The profits will be seen in both educational institutions and working life.

Poikela (2009) stresses that “learning by making” better enables the generation of knowledge and professional development than “learning by doing” (see Figure 2). Through the assignments, the students in Creative Steps solved problems straight from working life in cooperation and in interaction with their group and reflected on their work together with the other groups. In their work, the students had to acquire information, utilize their skills and knowledge, and develop them by creating new perspectives and solutions. The objective was to enhance both individual and collective learning through action (Poikela, 2009). Learning spaces have expanded to virtual environment. Vision should guide the planning of virtual learning environment. The clearer the vision is, the more productive the implementation can become (Brown, 2005; Jäminki & Nijbakker, 2013).



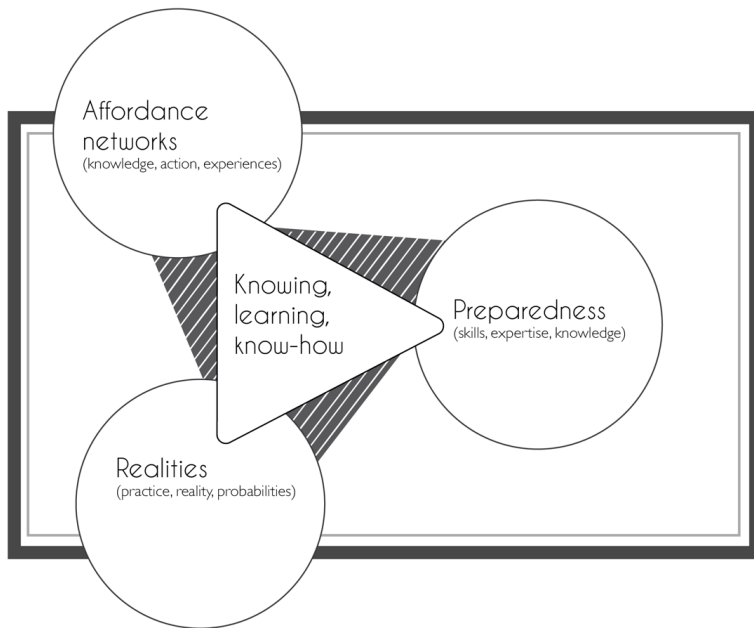


Figure 2. Knowing and know-how ecological dimensions (Poikela, 2009).  
 Source. Adapted from Poikela (2009). Image created by Ella Käyhkö.

**Learning zones**

Poikela (2009) has developed an ecological way of learning environment-thinking (see Figure 3). The central tenants are formed within an ecology-based production through affordance networks (knowledge, action, and experiences), preparedness (skills, expertise, and knowledge) and realities (practice, reality, and probabilities) which enable knowing, learning, and know-how. According to Poikela (2009), the pedagogical centre of an affordance network is to support the learner’s participation in the actions of the network and help the learner recognize the information provided by the network as well as provide opportunities for the acquisition of knowledge. Through the aims and design of the model, the content of the model was customized to meet these requirements and to, through practical work, transfer knowledge into practice.

Lefebvre’s (1991) environment-thinking lies in the background of Poikela’s theory where the physical dimension, the mental dimension, and the social dimension are reflected in the social interaction of the learning environments forming a pedagogical trifecta. They work in constant interaction with each other.

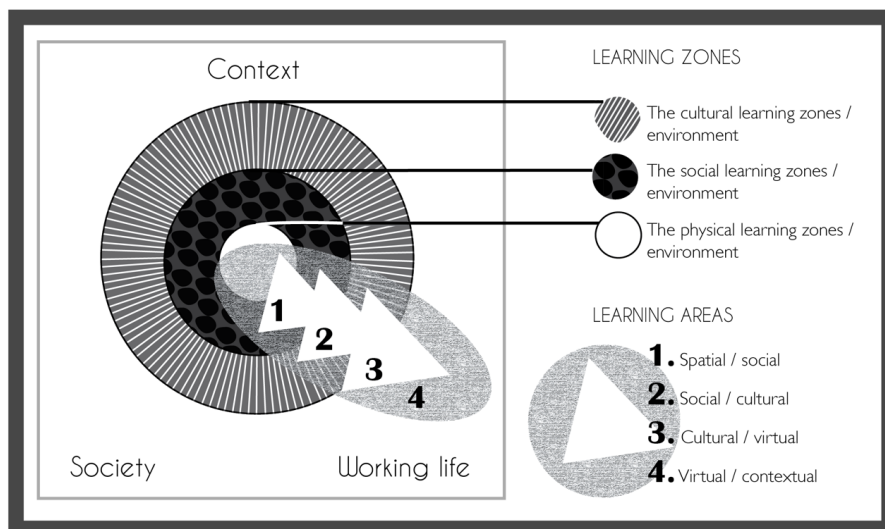


Figure 3. Learning zones and spaces (Poikela, 2009).  
 Source. Adapted from Poikela (2009). Image created by Ella Käyhkö.

### **Online learning**

Ubiquitous learning, which is based on ubiquitous computing, has already shaped the daily operations of educational institutions and thereby changed the role of the teacher and the school (Hautamäki, 2008). Through pedagogical support, interaction sprung from trust may be created in a virtual environment.

Mere possibilities of virtual learning are not sufficient. Furthermore, one needs well-educated staff and a student-oriented approach which is combined to working-life-oriented learning. Virtual state of learning has been firmly developed in Lapland University of Applied Sciences (formerly Kemi-Tornio UAS). One reason is sparsely populated area and the willingness to provide services for all the residents of the area and for international actors ( Jäminki & Nijbakker, 2013).

Through the use of IT and communication technology, it is possible to create an active work culture among students. At the same time, this technology solves distance issues, which is a clear benefit in international cooperation cost effectiveness-wise. In online communication, both real-time and asynchronous applications are used. In addition to this, various social media applications are used increasingly in online communication (Kalliala & Toikkanen, 2009; Jäminki & Nijbakker, 2013). Often, social media are used in teaching either because the teacher has planned it thusly (Niinimäki & Tenno, 2010), or because the students have chosen it as their working environment themselves due to its familiarity, which in turn makes it easy to use (Arkko-Saukkonen & Saukkoriipi, 2013).

Contacts with the clients are made easier by online connections as they allow you to gather around the same virtual table and work with your common challenges. Social media enable the building of an equal and open collective process in which the matter is shaped by active participation in an interactive environment. Contents are constructed through social networks and the creativity of the members (Myllylä & Teräs, 2010). According to Toikkanen and Kalliala (2009), when social media are defined

as part of teaching, they appear as processes where common matters and definitions are built individually or in groups through the use of online technology.

Social media are defined as free, easy to learn, internet-based communal applications that help group work and group activity (Hintikka, 2008). Jussi- Pekka Erkkola (2008) defines social media as an aftermarket phenomenon which influences society, economy, and culture through production and distribution. Meanwhile, it is also a process which is tied to technology where individuals and groups produce material through comparison and user-based experience using available content, communities, and online tools.

Tynjälä (1999) points out that a benefit of collaborative learning is the discussion, argumentation, and negotiation that takes place within a group as it brings out different perspectives and makes the members think more widely. The support of group members generates a positive atmosphere which, with the encouragement of the teacher, increases the motivation of the students. In addition to developing interaction skills and cooperation skills, the members of the group are able to govern themselves in their work (Tynjälä, 1999). Interaction becomes, through the various technological platforms used in online communication, practice.

Moreover, Vuopala (2013) has studied the interactive-collaborative online learning, which created a comprehensive review of the conditions of collaborative learning. She found research success requires a smooth teamwork, learning environment conducive to learning, as well as the individual's own activity and Mäkelä (2010) highlights the interaction between actors crucial element in e-learning.

Keats (2007) outlines the three different generations of education which he calls Education 1.0, 2.0, and 3.0. In the one-way communication sharing of information (1.0), in which the possession of knowledge was a central aspect, traditional methods of teaching were joined by the enhanced use of web applications and social media, albeit using very traditional methods. The future is addressed when speaking about Education 3.0, a concept first used by Keats. It entails self-governing, socially wired, communal student groups of active students with diverse work methods. Self-governing students, the "knowmads," seeks their own inspiration for their work. They travel the paths of social media with ease searching for material to support their learning and interactivity. IT is used in online learning, so open and accessible material is used and produced. Social media are widely used in a networked educational institution with a work culture that spans across geographical borders (Keats, 2007; Ihanainen & Kiviniemi, 2010). In Education 3.0, collective working is sought in different educational institutions with different work cultures that bring forth a diverse and rich interaction (Keats, 2007; Keats & Schmidt, 2007; Ihanainen & Kiviniemi, 2010). The challenges for entrepreneurial universities in peripheral regions is embracing Education 3.0 that will support effectively knowledge acquisitions and transfer and skills development that benefits the local economy and society.

### **Work-life-oriented model**

There has been a growth in providing learner with opportunities to experience working environments as part of their learning experience to enhance their learning and prepare them for future employment, self or within a firm. This activity is usually twofold: it is about developing and supporting working life (Erkkilä *et al.*, 2013), while on the other hand it is also about enhancing the professionalism of the student/learner (Lausas, 2008; Leinonen, *et al.*, 2002). Professional support means increasing

knowledge and widening the context of the student's expertise, which can be accomplished for instance through cooperation between different fields as in the InnoMaraton concept (Lausas, 2008).

Good linkages and business collaboration with higher education institutions is also an important factor in supporting and providing student learners with meaningful and worthwhile work experiences. New models of optimal workplace learning are evolving. For example, Tiimiakatemia (comp. LiikeAkademia at Lapland UAS) is a good example of adopting a different approach that focuses on learning as a support for entrepreneurship (Leinonen *et al.*, 2002). The model becomes an arena where to show your professional skills and where you draw strength from communal work. The vision is to create the workplace of your dreams already during your studies in the form of a learning community where individual growth happens as a result of a joint enterprise. The aim is to guarantee the individual development and professional growth of the students. Pedagogical models form a path toward understanding working life through practical work.

### ***Silent knowledge***

Professional knowledge is in part silent knowledge, the harnessing of which brings out invisible skills. A team made up of members from diverse fields enables the team to make silent knowledge known, thereby creating new creative opportunities. According to Nonaka and Takeuchi (1995), silent knowledge is an integral part of social interaction. Silent knowledge is thought patterns and methods learned during the course of one's life. This is why silent knowledge should be made to flow between people (Nonaka & Takeuchi, 1995).

Reflection is one way of conceptualizing what has been experienced thereby making learning possible through understanding (Mezirow, 1999). Discussions and the sharing of mutual experiences make that which has been learned visible by showing methods and revealing underlying thought patterns, values, and conceptions (Poikela, 2009). The creation of knowledge, learning, and the application of new things are collective processes (Nonaka & Takeuchi, 1995; Leinonen *et al.*, 2002). Silent knowledge is brought out by discussion, collective action, and experience. In a network society and within information networks, silent knowledge made visible through active action: through words, images and sounds. When one is talking about sociality in networks, silent knowledge stem from networks and from the dynamic interaction that happens in those communities (Jäminki, 2008). Entrepreneurial universities as key institutional actors have a role in supporting the development of all types of knowledge including silent knowledge.

### ***Creative thinking***

Professional skill and knowledge is created through experience. It gives you the ability to see and analyze matters in light of your expertise. Creativity is often thought of as connected to the arts, which is why artistic people are regarded as creative. Creativity and creative thinking are seen as general qualities in this study, however. It is the putting of your thoughts in the communal basket. These thoughts then function as the embers that light the fire of innovation. A team made up out of people from different fields will view matters from different perspectives. When these perspectives meet, new combinations and perspectives are found. These then become ideas. Amabile (1998) divides creativity into three components: creative thinking skills, expertise, and motivation as shown by the Amabile's creative circle. Amabile's model was as a guide for the teams.

Creative thinking is a vital part of innovation work. Creating new ideas requires some effort. Imagination is an essential part of creative work, which is the starting point of innovation. Amabile (1998) points out that "creative-thinking skills determine how flexibly and imaginatively people

approach problems.” The diversity of thoughts and ideation is better served by the meeting of several people that are different from each other. Producing great ideas and usable thoughts requires diligence, commitment, and dedication from the team. If you come up with a great idea, which is not yet an innovation, it is merely a step toward innovation. According Rogers (2003), innovation can be seen as an idea, method, or object that an individual sees a new despite the fact that it is not. Innovation is the born from an active, dynamic process and is usually the result of development work. By, for instance, thinking about new possibilities that stem from the challenge at hand, fresher alternatives may be processed (Arkko-Saukkonen, 2013a). It is also important to create an atmosphere that allows for failure, because it is a part of learning through trial and error through creative thinking (Helakorpi, 2001). The challenge for entrepreneurial universities is to develop creative thinking not alone in teaching activities but across all activities and that it is part of the institutional culture of entrepreneurship.

Entrepreneurial university can support learning and knowledge transfer by using different kinds of learning environments, both face-to-face and virtual in authentic and creative way. With appropriate learning supports and knowledge transfer students can work collaboratively that embraces working life and share silence knowledge and use creative methods to working process, which enables them to grow working life skills, expertise and equip them to meet challenges in the future. The diverse fields and the extension of networks is a critical element of collaboration, and this brings meaningfulness to learning.

## **Study Framework**

The focus of our study is the Creative Steps program which formed part of the Creative Edge project funded by the Northern Peripheries Program. The Creative Steps concept works on the basis of cooperation between new creative talents and established businesses. Creative Steps matches emerging creative talent with existing business needs and helps creative talents gain much needed experience in the business world. In addition to this, it helps businesses to connect with, and harness the expertise of students and new graduates. The initiative is designed to encourage innovation, where businesses present a problem for students to solve, providing new challenges, but also opportunities for creativity to flourish and grow. The study uses a qualitative research approach and data analysis consisted of discourse analysis. Discourse is seen as a methodological frame of reference, in particular with regard to the texts and of the emerging meanings (Eskola & Suoranta, 2001; Ilmonen, 2007).

## **Data collection**

Data collection consisted of semi-structured interviews and questionnaire as well as learning diaries with 15 students from Finland, Sweden, Northern Ireland, and the Republic of Ireland.

Creative Steps wanted to get a group of participants with a large variety of skills for the workshop in order to be able to create teams with heterogeneous skill sets. Newly graduated students, or future graduates, in other words future professionals, were selected for the project. In total, 15 participants were chosen for the workshop: five from Finland, three from Sweden, three from Ireland, and four from Northern Ireland. In the realization of the project, the participants were divided into four international multi-talented teams.

There were three ways of gathering information from the students: learning diaries, group feedback in iLinc, as well as written feedback handed in by the teams based on the discussions. 11 out of 15 learning diaries were handed in and each group was represented at the feedback session, however only three out of four teams handed in their written feedback. The areas evaluated in the feedback from the students were: content and working methods, the workshop, collaboration with customer, and “virtual world” experience. Reflection played an integral part as it helped us get valuable information about the successes and the problem areas of the implementation of the model. Through analyzing these results, an improved model can be developed (Heikkinen, 2006).

In the feedback gathered from the clients (firms and organizations), a form was created online which enabled the clients to either write answers or simply assign numbers and grade the different parts of the content. The objective was to gather reflective responses in the client’s own words. Where a simple grading was possible, a short answer as to “how well the clients thought specific parts of the implementation worked” was sought.

### **The Creative Edge Project**

The Creative Edge project, directed at experts in the creative field, was planned and implemented 2011–2013. The main aim of the Creative Edge project has been to introduce local organizations and business in the creative field on international market while simultaneously striving to increase the skills, competitiveness and future opportunities in working life of both young people as well as other actors in the creative field (Creative Edge, 2013). The central parts of the project can be summed up in five points as follows: (1) management, (2) performing research work and mapping out existing talent, etc., (3) creating an export platform, (4) creating an employment bank, and (5) providing creative places.

Five different partners from four different countries have participated in the Creative Edge project. From Ireland these were the National University of Ireland Galway and the Western Development Commission (WDC). From Northern Ireland, the Creative Edge partner has been the organization called South Eastern Economic Development (SEED). From Northern Sweden and Northern Finland, the partners were Film I Västerbotten and Kemi-Tornio University of Applied Sciences, respectively (Creative Edge, 2013; The Creative Edge Project Partners, 2013). The main aims of the Creative Edge project were taken into consideration in the Creative Steps model. These can be summed up by the three pillars of the creative economy: people, production, and place. The main aim of the project was

[...]to promote the active participation of local creative organisations and businesses in global markets, while also aiding them in their ability to attract and utilise local emerging creative talent in these markets. The activities of the project enable the further commercialisation, and support the sustainable development, of the creative economy. (Creative Edge, 2012)

### **Creative Steps Model**

The Creative Steps model is a worklife-oriented, creative and innovative learning process aimed at students seeking professional careers in the creative and cultural industries. Within the model there is a strong international emphasis and the different parts of the innovation process with respect to the Creative Steps is outlined in Figure 4. The aim of the model is to serve both the economy and the

students in two ways. One-way is the form of the innovation process, which is meant to support the knowhow and professional development of the creative students and prepare students for the challenges of working life. The other is the enhancement of the professional skills and interactivity of the students through the use of various worklife-oriented learning methods meant to prepare students for working life and create opportunities for networking with representatives from the business world or working life in general. University of Applied Sciences (UAS) led the development of Creative Steps as part of the Creative Edge project. Creative Steps model focused on the challenge of working life, teamworks, knowledge acquisition, and internationalization (Arkko-Saukkonen, 2014). The Creative Steps model in the context of an entrepreneurial university has enabled engagement by students and participating firms by “explore, evaluate and exploit ideas” which can lead to “entrepreneurial initiatives” (Guerrero *et al.*, 2012).

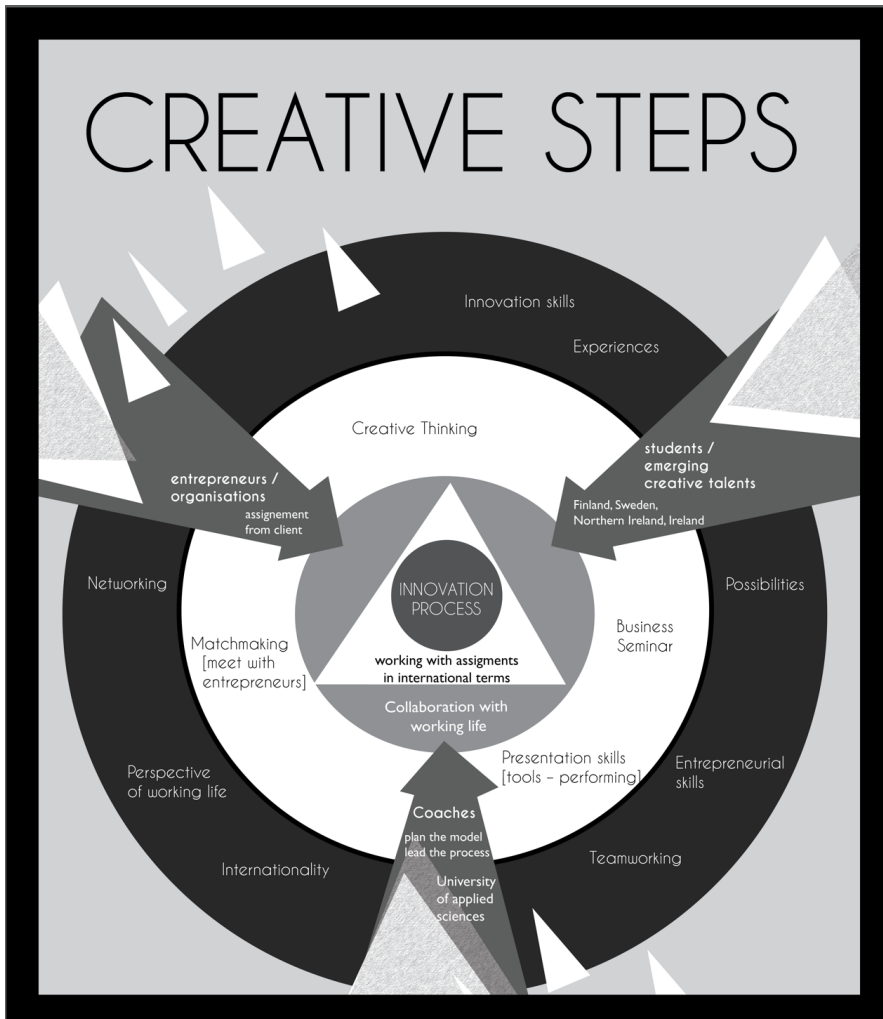


Figure 4. The Creative Steps model.

Source. Idea Anitra Arkko-Saukkonen. Image created by Ella Käyhkö.

## Creative Steps, collaborative approach, and aims

The development of skills, knowledge, and professional expertise is the central aim of education at a UAS, as defined by education policies at a national level (Ministry of Education and Culture, 2014). The personal aim of the student is to achieve a level of professional skills which enables him/her to manage work in his/her field and develop further in his/her profession. Part of the role of an entrepreneurial university is to prepare students for employment with a firm or self-employment (Guerrero and Urbano, 2012). UAS as an entrepreneurial university strives to predict the changing needs of working life and emphasize interactivity between the student and working life. For the Creative Steps the ideal collaborative model is to be able to work interactively as a wheel where every part helps further the fulfillment of the needs of working life, the educational range, and the learning and professional development of the students as illustrated in Figure 5.

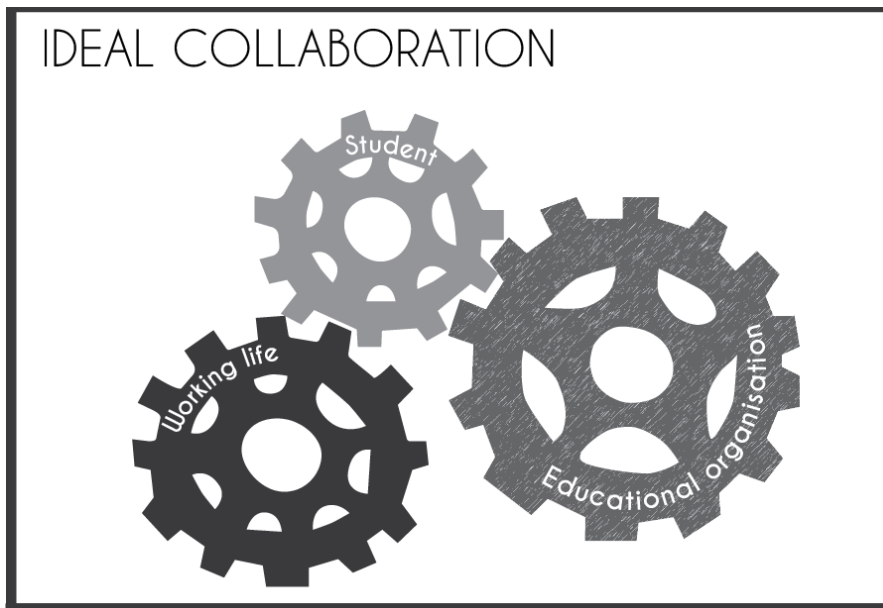


Figure 5. Creative Steps ideal collaboration.

Source. Idea Anitra Arkko-Saukkonen. Image created by Ella Käyhkö.

By enhancing entrepreneurial skills, UAS's aim is to meet the demands of working life. Entrepreneurship is applied to a number of processes such as innovation work and company cooperation. An informal learning environment provides the best venue for learning the ways of working life through practice (Vaherva, 2002). In practice, this often means processbased cooperation, where students face the challenges presented by working life together and work with assignments, generating suitable content. Knowledge and skill develop through practice, after which a practical, experience-based way of doing things is realized through reflection (Poikela, 2009) and leads to learning (Mezirow, 1999).

The Creative Steps outlined key aims and benefits for students as learners, businesses or organizations as clients and educational actors (see Figure 6).



## The Aims of Creative Steps for the Different Stakeholders

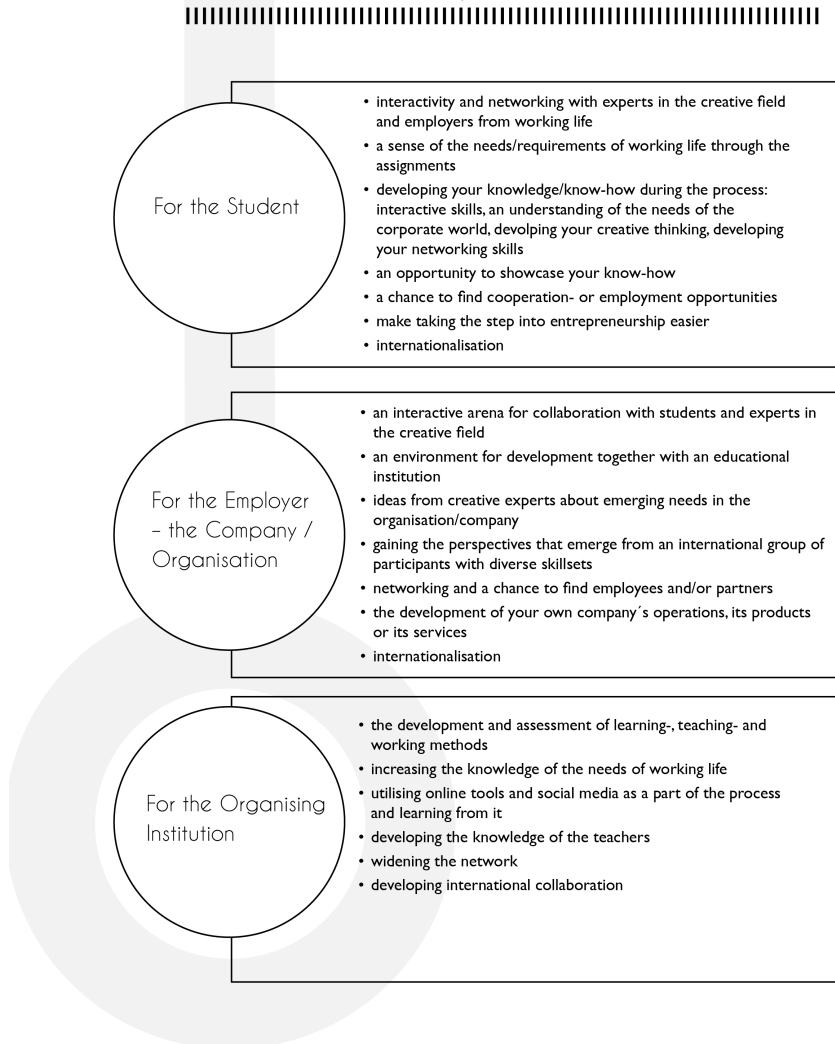


Figure 6. The aims of the Creative Steps.

Source. Idea Anitra Arkko-Saukkonen. Image created by Ella Käyhkö.

By getting worklife-oriented tasks from businesses of different fields, student teams get an authentic learning environment to develop of new business ideas to products and services. The tasks gave an arena in order to make an implementation and improve students' knowledge and skills. At the same time, working life sector could find new innovative ideas and potential skills from the students to work to them.

## Implementation

The Creative Steps process became, through ideation, planning, and development, a model that is illustrated in Figure 7<sup>1</sup>. Creative Steps was implemented as a workshop and divided into two parts, the on-site part was the actual workshop and the online communication part. During the workshop, the role of the teacher was to be a coach and encourage, motivate and guide groups of students during the implementation of the model. In the Creative Steps concept, the teacher's role expanded into that of a process planner and all the way up to that of a manager. The field of operations was thus not only the implementation of the workshop, but also the planning of the model, organizing the contents and documenting the results. According to Keurulainen (2006), a teacher needs to be creative and flexible in learning situations and interactive management-related situations, where there is room for interpretation of the curriculum from the point of view of professional learning. The professionalism of the teacher is based on an understanding of learning and the learner, which means that he/she is able to make practical decisions in various learning situations (Keurulainen, 2006).

Creative Steps aim was to get a group of participants with a large variety of skills for the workshop in order to be able to create teams with heterogeneous skill sets. Newly graduated students, or future graduates, in other words future professionals, were selected for the project. In their applications, the students had to demonstrate a motivation and interest in working in an international environment and thereby gaining new experiences. Employers were sought from different fields in order to gain a comprehensive view of the needs of creative expertise and possibilities in different lines of work during the implementation of the model.

The students practice business skills and help businesses develop new ideas for products and services, as well as existing policies or respond to challenges in which the perspective of a creative expert is called for. The Creative Steps pilot project strove to support networking and point out the opportunities to match creative know-how to a number of different needs through experiences (benchmarking, matchmaking). Furthermore, one of the most important objectives was to create opportunities for employment (Arkko-Saukkonen & Merivirta, 2013).

The criteria based on the InnoMaraton-concept were also used during the innovation part of Creative Steps, where the assignments were assessed:

- based on the innovativeness and novelty of the product- or service idea;
- based on the possibilities for further development and realization of the idea;
- based on the needs of the clients and the definitions of the market;
- based on the realistic business potential;
- based on the quality of the presentation, how interesting it is and its general impression (Lausas, 2007).

The development of the Creative Steps model started with a stream of questions based on the experiences from a similar workshop called "Kulttuurimaraton" ("The Culture Marathon"). A clear function for the model was sought so the methods chosen, the model and the concrete issues connected with it could be constructed in a way that would support the implementation of the model. The questions eventually lead to ideas that emerged at the planning meeting.

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<sup>1</sup> The comprehensive description of the model is documented in the publication Creative Steps — On the Way to an Idea (Arkko-Saukkonen & Merivirta, 2013).

## THE PROGRESS OF THE CREATIVE STEPS WORKSHOP STEP BY STEP

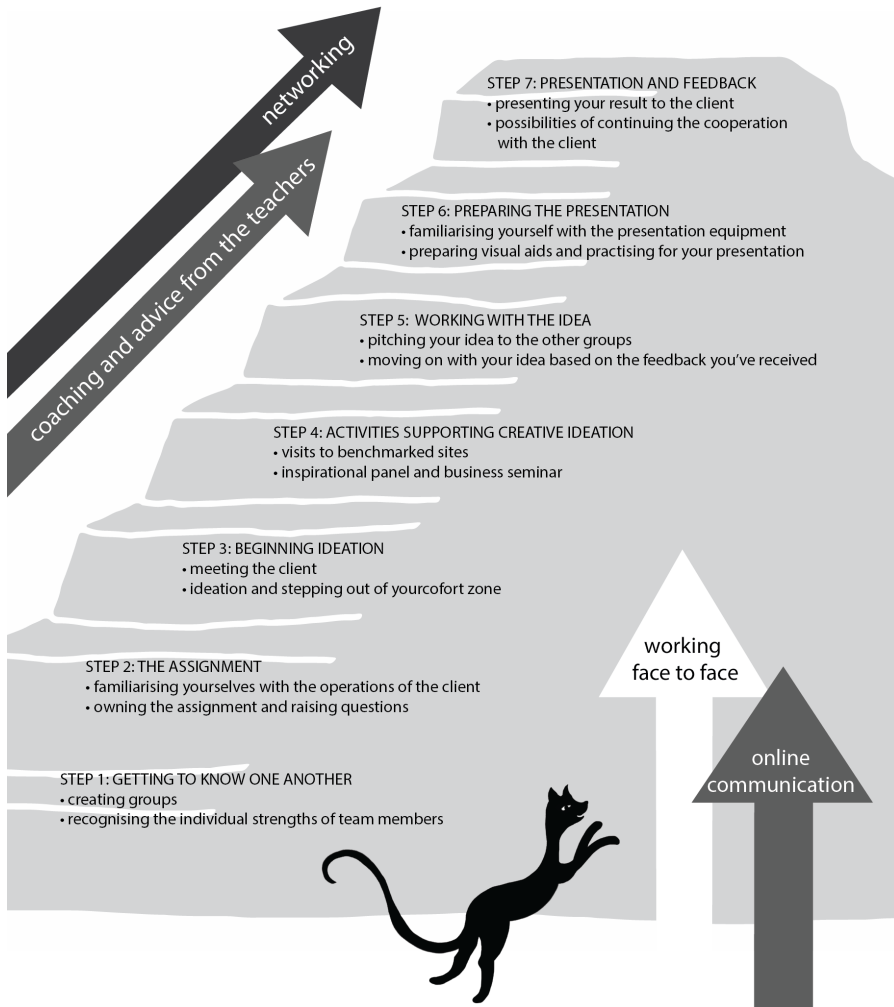


Figure 7. The step by step progress of Creative Steps (Arkko-Saukkonen & Merivirta, 2013).  
Source. Idea Anitra Arkko-Saukkonen. Image created by Ella Käyhkö and Anna Koivukangas.

## **Encouraging creativity**

The first working environment of the workshop was face-to-face working that took place in two different countries; the first week in Finland and the second in Northern Ireland. An important starting point was forming groups and creating rapport in order to lay a solid foundation for the creative work. During this part of the process, team building led to working with the assignments as the groups met their employers and specified the contents of their assignments.

Using Amabile (1998) three areas of creative expertise, creative-thinking skills, and motivation this formed the basis as encouraging students to think in different ways and use different methods. By using creative methods, teams were able to get to know one another and familiarize themselves with their assignments. Some of the methods supported ideation while others helped the students build content and plan their work. The different methods used were turned into a toolbox (Arkko Saukkonen 2013c) for the students to use in the future. The ideation methods used were divided into four categories, icebreaker, team building activities, energizers, and ideation methods (Arkko-Saukkonen, 2013c).

## **Using online communications for collaboration and learning**

In the second phase of the process, work continued through online communication. Online communication as a part of the innovation process requires a well-thought-out plan in order to ensure that work proceeds without problems. An integral part of the planning is defining the content and designing the model using smart, usable online solutions. Also, establishing a working time schedule is vital in order to make sure that each application is introduced in time and the participants are taught how to use it smoothly.

In Creative Steps, both open and closed communities were used. According to the students, the social media used as online tools were Skype and Facebook. For real time meetings, iLinc was used, whereas asynchronous work was done using the Moodle platform. Prezi was used for the presentations and Google Docs was used as a means of collecting the feedback (see Figure 8).

An introduction to the tools used in the online section of the process was arranged for the students. Lessons were held in iLinc which was also used for support. Each group had their own room in iLinc as well that was used when the entire team was gathered for coaching or guidance. The students contacted each other and their employers via Skype and e-mail when necessary. Moodle was used as a storage space for material and all of the material used during the course was gathered there so the students would be able to access it at their leisure (Arkko-Saukkonen & Saukkoriipi, 2013).

Working requires being familiar with the tools needed in order to be mutually beneficial. According to Mehtälä & Pruikkonen (2011), the proper and functional use of online communication tools requires the training of the users and proper support services. During the entire process, eOppimiskeskus (the eLearning Centre) provided a support person to help plan the teaching, train people to use the tools and act as support during the implementation.

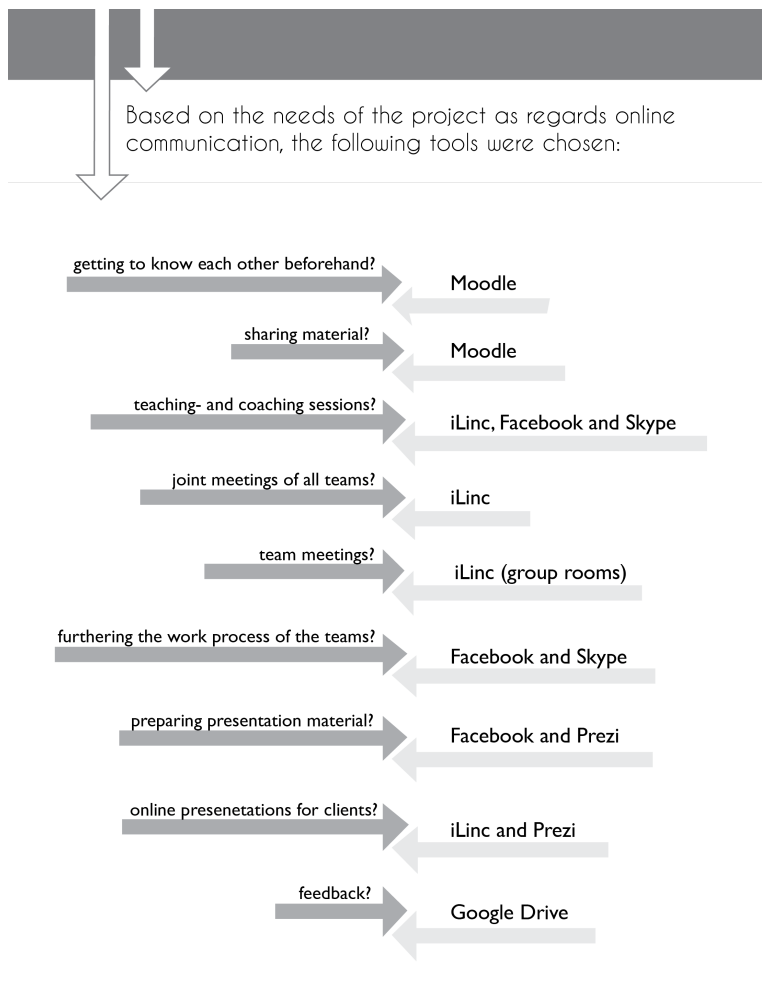


Figure 8. Use of online communications (Arkko-Saukkonen & Saukkoriipi, 2013).  
 Source. Idea Anitra Arkko-Saukkonen. Image created by Ella Käyhkö.

The online communication was divided into two parts. The first phase was the creation and development of ideas and creating demo material. Prezi was new to most participants, so an introduction was arranged for that particular tool. Presentation coaching was part of this phase as well and the main points of what makes for a successful presentation were addressed while paying special attention to the challenges that online communication means. The second phase was assembling the material and practicing the presentations with the coach and the support person present.

The actual presentations were done in iLinc and, apart from the employers, a number of other people were invited to listen. The teams were given a chance to rehearse their presentations before giving them in order to make sure sharing applications and such worked without glitches. The presentations were reviewed and technical issues were addressed.

## Some Key Findings

By participating in Creative Steps workshop students got a chance to improve their knowledge of innovating, networking with other students and working life. Working in an international multidisciplinary group provides versatile perspective for tasks. Similarly, an open innovation use cooperation in several areas that is typical when the purpose is to produce a new kind of content hence the best ideas are created in cooperation (Keränen & Haase, 2007).

Their experience taught that collaborative work enhances their work result and encourages their inner entrepreneurship, group working and creative skills. At the same time students got a better understanding of corporate life, entrepreneurship in creative field and knowledge transfer by working with tasks and using online tools especially in international arena. "Cooperation opens doors to places that alone entrepreneur may have difficulties finding" (Arkko-Saukkonen, 2013b). Using different kinds of creative methods and online tools supports work processes even though online work can be problematic and demands an even better plan for the model. The entrepreneur university environment needs to support this kind of collaboration that combines working life that gives good learning environment to develop students' expertise.

## Program experiences

Other activities that support innovation were an important part of the aims of Creative Steps, as they presented participants and representatives from businesses from the creative field with an opportunity to network. One source of inspiration in Creative Steps was the visits to various locations where each participant then drew some inspiration out of their personal perspectives. During the weeks in Finland and Northern Ireland, the participants got to benchmark, among other things, some local businesses. By getting to know different cultural sites, the participants were given a chance to observe the way businesses in the field operate (Creative Edge, 2013). Students noted what they have learned and experienced:

I feel now that I have a better grasp of the whole industry of business, enterprises and working with real cases and people. I also realized how much creativity can give and make happen. It can be used professionally as a tool to improve or create almost anything.

The last 4 weeks have been a very busy, but also the most fun weeks I have ever had. I have gained so much valuable experience and knowledge in the creative business world.

## Students' perspectives

### *Experiences of online communication*

The students were quick to turn to familiar working environments that they used in their free time. Facebook and Skype quickly surpassed iLinc and Moodle that were offered during the course as online tools. These applications created a fast, interactive space that, due to its flexible nature, its familiarity, and the fact that it was more aesthetically pleasing, felt like a more appropriate working environment. The coaches adapted to the students' choices and found Facebook to be a very good platform for an innovative work process. Facebook provided a better overview of the project and the dialogue and

reflection that took place during the process was visible due to the comment fields and the real-time nature of Facebook. The collective problem solving took form through images, words, sounds, and animations. Skype became the students' medium of choice when direct real-time discussion was called for. It enabled them to discuss matters with their clients, as well as with each other during the different stages of the process. The students found Moodle to be too cumbersome a tool for interactive work due to its asynchronous nature as reflect by two students "The online weeks were a success as I learned how to communicate and build a successful product with a team of very talented and creative people with ease by using programs such as Skype, Facebook and iLinc." And "Skype and FB were the best for us, sorry have to say, Moodle and iLinc are not our favorites."

Mutual meetings and presentations were organized through iLinc which enables real-time discussion, individual interaction and the sharing of material. Prezi was found to be an exciting tool when creating an impressive and dynamic material for presentations. Unfortunately, Prezi does not work in iLinc, which meant that the dynamic nature of Prezi was lost due to slowness and incompatibility. It is possible to use Prezi together with iLinc, but it requires special preparations on the presenter's part as he/she will have to make some arrangements in order to be able to guide the listeners to the right place and make sure everyone knows what to do once the presentation is over.

The study showed that conventional face-to-face work cannot be completely replaced despite the fact that several functional applications to support online communication exist. The students appreciate the face-to-face interaction and it creates a much tighter bond between the team members. It provides the students with an opportunity to get a better overview and better interpret the other members' opinions through words, expressions, and body language. Still, the creation of a common Facebook group shows that the students saw it as a way of maintaining the network and keeping in touch with the other team members in the future:

The benefit of online work is that you don't have to be there in person in order to do the work, but a drawback is problems with connectivity, which in turn slows down the process. In my opinion, it is much easier to work face to face. When technology comes between people, a part is always lost and communication slows down.

And

The online weeks were a good experience but were very hard. We had to work in our free time and work around everyone's schedule. Even though we could see each other on Skype I still felt it was hard to get your opinions across to each other especially if your opinions were opinions the team didn't want to hear or they had to make changes.

As regards international cooperation, online communication also presented some challenges as participants found themselves in different time zones, trying to make room for meetings with the problems of everyday life throwing spanners in the works. A better plan for how to deal with this was to be accomplished, as well as more guidance and time for project work was asked for.

### ***Creative methods***

The methods that were used for team building, ideation and breaking the ice were considered especially good. The methods helped the students get to know one another and the also helped speed up getting started with the work. Some were found odd at first, but as people participated, they turned out to be fun and functional ways of furthering the collective work process and creating a relaxed atmosphere.

The ideation methods used in the beginning of the process were mentioned in the journals and a majority of the students found that they jump started the work process and helped working together. In particular the assignments that called for reflection were found useful and important. The teams got support from the other teams by sharing their experiences while simultaneously honing their cooperation skills. The pitching assignment was also seen as an important way of getting an idea about where they were at the time with their assignments, how well the ideas had developed and whether they were going in the right direction. On the other hand, the teams felt that the assignment was good practice for the meeting with the client and the presentation they were going to have to give. Quite many journals also mentioned the tin foil sculpture assignment, the aim of which was to help the members get to know one another and work together. During the feedback discussions with the teams, the students felt this assignment had successfully helped team building. In a network society, group working skills are appreciated. In this exercise, the groups stepped right onto the path of collective work, which made getting started with the actual assignment easier:

When we were split into teams, the tin foil modelling project was great. I thought it was a great way to break the ice in the team and show how creative we could be. It was a great way to get the team working together instead of jumping straight into projects.

And

Pitching to others made us realize and understand our own project's state more — we had to set up goals and clarify our plans. It was a self-reflective “reality check.” Others gave perspective to our project.

### ***Teamwork***

Working in an international implementation and in a team from diverse fields was seen as an important work method as you will be forced to cooperate with a variety of people in working life. Teamworking was seen as important from the perspective of communal working: “Teamwork in creative process will develop not only the product but the team members.” Different cultural and knowledge backgrounds widen the perspective when you are working with a project. An important matter for ensuring the best possible result is the forming of good teams. Well-formed teams were better able to achieve the objectives. The participants were for the most part satisfied with the way teams were assigned and teams bonded more during the process. Some felt the assignments should have been known beforehand so the students could have chosen teams depending on what interested them while at the same time increasing their knowledge and skills. On the other hand, the students said in their feedback that any assignment would have been just fine, so being able to choose was perhaps not that important after all: “Teamwork can really help you in the creative process. The team can help you to find new sides to things and expand your point of view. Different cultural and educational backgrounds enrich the ideas.”

### ***Improving skills***

The students felt taking part in the Creative Steps workshop had increased their skills in terms of knowledge acquisition and use of technology. Some of the applications were completely new to the students, so the students' skills at using these, as well as their online communication skills were both enhanced during the implementation of the workshop. The presentation coaching and training was also seen as a good part of the workshop. Students reported that their organizational skills were also improved as the process continued and that a theory section was a good addition to the practical work. The students were appreciative of the reviewing of matters, even though some feedback indicates that



the content was already familiar to some: “Theory lessons and tasks were inspirational. I got new thoughts and a spark to get working and innovating right now and in the future too.”

### ***Model feedback***

The feedback from the students was almost all of it positive as far as the experience of taking part in the implementation of the Creative Steps workshop goes. The feedback emphasized the experience side of the workshop with the meeting of different cultures being together and visiting different locations. The inspirational panel that enabled the students to get to listen to and meet businesses and creative experts was also received well and seen as useful. Many felt that the fact that the assignments from actual working life was rewarding and presented them with a chance to showcase their skill and knowledge. The complete experience made the workshop a memorable event, as reflected by the feedback of all the participants.

Creative Steps definitely improved my organization and presentation skills. I also think I became more confident in relation to talking in front of other people. If I had a chance to take part in such project once again, I would definitely go for it. It was a really good experience and I enjoyed every day of the programme.

And

Creative Steps also showed that you really should take advantage of every opportunity that comes to you. And hard work does reward you in the end.

### **Client feedback**

The clients — business and organizations — overall reported that the teams had grasped the challenges presented by them well despite the fact that the students themselves felt that the assignments were not specific enough and would have preferred more clearly defined ones from the clients.

The clients reported that model was seen as very important way of cooperation. Cooperation was found to be good and the way it was incorporated across international teams from diverse fields was seen as especially positive by clients. Feedback showed that clients were generally happy with the students’ work. The ideas brought new perspectives on the content and in some cases the solutions were found to be very innovative. Some were not seen as that innovative even though they too had some new ideas. In the main, the ideas presented by the students took the clients by surprise. The solutions held usable ideas for the future. Time and money were reported by clients as the two main factors as to why the cooperation did not continue directly after the workshop. This required some internal discussion and negotiation within the companies before they would be able to move on to the next phase. However, the feedback clearly showed that the companies involved were willing to work with one or more of the people involved in the future: “We plan on taking the design concepts and discussing this with our executive management committee to see if we implement some or all of their recommendations.”

All in all, the cooperation with the students was found to be easy and to work well. The Creative Steps model was seen as a useful cooperation environment. One of the clients expressed a desire to get to know the students’ fields of expertise beforehand in order to be able to utilize their knowledge and relate it to their needs. On the other hand, the teachers felt that the diverse knowledge of the students better served the client and, through its diversity, allowed for new ways of thinking.

## **Discussion**

The basic structure of the Creative Steps concept is, according to the findings from participants, a functioning one. The workshop was first and foremost an experience and, as such, stuck in the minds of the participants in such a way that they are certain to recommend it to others. Online communication provided an opportunity to work across borders with Facebook as the most efficient tool as it makes the process visible due to its real-time structure. Facebook is also a pleasant and familiar community and working environment where to discuss, share and comment on the content produced. From the coach's perspective, it is a way of tying people to the process with no attention needed to time, which means that the coach is easily aware of the progress of the process and able to comment on it at any time. On the other hand, it is always present and one needs to think about how to include it in one's everyday life in order to cope.

## **Innovativeness and creativity**

With creative ideas, one needs to think about their usability and purposefulness, their practicality, in order for the companies to be able to put the ideas to use in practice. The solutions presented in Creative Steps are possibilities for future cooperation and illustrate how a potential model that meets the innovation and creativity needs of both students and businesses. Even though innovativeness is required and new ideas are sought in order to develop products and processes, companies and organizations are concerned with the actual practicality of the ideas. From the client's perspective, some credible options were produced, but the process also requires the mapping out of the practical reality by the clients. As Amabile (1998) states "to be creative, an idea must also be appropriate — useful and actionable. It must somehow influence the way business gets done — by improving a product, for instance, or by opening up a new way to approach a process." The thoughts presented by the creative experts open new thought patterns and opportunities through new ideas. Through the ideation taking place at the workshop, the clients gained new perspectives to their challenges which can lead to new things, despite the process often being slow.

## **Reflectiveness**

When striving to increase professional skill and expertise, the ability to reflect and rational thinking are central issues. This is also true in teamworking where an atmosphere that allows for discussion and the critical evaluation of experiences both help to shape new perspectives and frames of reference on a personal level. Mezirow (1996) sees frames of reference as tying a person to the past, something no one is completely free from. Change is possible through understanding gained from critical evaluation.

During the group discussions, the aim was to create an atmosphere where each voice was meaningful when evaluating both the process and the meaning gained from the realization of the process. The feedback discussion produced the most information for the development of the model as the interactive situation helped the team members clarify their thoughts. The written feedback handed in after the workshop contained significantly less information and more subjective in nature. The findings of the Creative Steps model illustrates what the program had given the students individually as well as as a group in terms of knowledge and skills.

After observation and recognition, feedback becomes, through reflection, new knowledge. It is a key to the development of innovative teaching that can be used to improve cooperation with working life. According to Poikela (2011), reflective processes refine the reflection of individual and collective experiences and the intuitive knowledge gained into a practical form. This requires the increasing of interactive, experience-based learning on a practical level, in order to ensure that the work life oriented teaching at the UAS is learning and innovative activity which develops working life in practice as well.

## **Engagement and learning**

From the perspective of the changing needs of working life, Pelli (2011) — see also Lindeman (2014) — presents the creative working environment of ecosystem of learning and innovation, where teachers, students, and representatives from working life meet around real problems. Key is the different learning and innovation environments that enable interactive cooperation between education and working life. Van Loony emphasizes (2009) that universities have a big role of innovation activity of “producing information and ideas upon which the development of new products, processes and services can build.” He continues that universities are relevant actors but it need to comprehension of innovation system. The teamworking in Creative Steps frequently brought out how a team produces more ideas than an individual and teamworking was seen as a good method where different perspectives and content is produced. This knowledge then culminates in practical development and innovation work. The ecosystem is a channel to the shaping of practical knowledge, which, according to Pelli’s (2009) definition, means the experience-based knowledge used for solving problems and formed through activity and reflection. Learning is connected to regional development in an ecosystem. According to Poikela (2011), education should produce integrated, sustainable experience-based knowledge.

An ecosystem producing learning and skill enables, according to Pelli (2011), the refinement of experience-based knowledge through problem solving, action and reflection. Work life-oriented learning would better bring out this experience-based knowledge if the clients were made more part of the realization of the model.

## **Learning environments**

Cooperation with working life brings with it some challenges to learning. Poikela (2011) believes educational institutions should consider themselves a part of working life. Students ought to feel as part of working life as future professionals. Universities of applied sciences as providers of education make practical know-how a part of their teaching in order to make the knowledge transfer as fruitful as possible. Virtual learning environments are another venue where this takes place; however, it is not enough, as these learning spaces all interlock. During the implementation, learning spaces where in the form of experiences, face-to-face sessions, as well as virtual spaces, each with its own value for the end result, according to the feedback. The field of interaction, the social/cultural space was important and the methods used by the coaches in creating this space had a large impact on it. Expertise in online communication and support staff is advisable when working with this. The field of operations of the teacher should, according to Poikela, be extended to include not only teaching, but the guiding of learning. This leadership role was evident in Creative Steps. The planning, practical arrangements, and working as a coach formed an innovative process that the teacher leads.

Online communication requires self-reliance, an active approach to work, transparency, reaction, as well as functioning tools in order to support interactive work. The tools used by the students were chosen according to their preferences. The students created tight communities through their own Facebook groups and the workshop as a whole formed tight bonds between all participants. During the common feedback session in iLinc, they formed a Facebook group for all the participants called Creative Steps Reunion which has helped them keep in touch after the workshop as well.

## **Motivation**

When work is worthwhile and brings a sense of achievement and satisfaction, we are talking about internal motivation. This is when people are willing to work very hard for what they feel is important. The participants in Creative Steps were extremely motivated, which was also one of the criteria when selecting participants. The largest factor why people applied was the chance to get to work internationally and go abroad. Another big issue brought up during the discussions was the development of one's own knowledge and showcasing one's skills. People's creativity is best brought out when they are internally motivated (Amabile, 1998). Here is where we can talk about internal entrepreneurship, an attitude that the work is being done as if you are doing it for yourself.

Meeting new people and working together with the assignments were ways of increasing the internal motivation as this creates contacts that can lead to future activity and cooperation. It is rewarding, as evidenced by the network created by the students in the form of the Facebook group. Increasing motivation brings faster results than increasing expertise or creative skills (Amabile, 1998). Teamworking has its benefits as it generates interaction, the exchange of ideas and collective work. It is like a wheel that makes the entire process move forward.

Creativity is, according to Amabile (1998), best supported by letting people decide "how to climb the mountain," but the objective needs to be clearly defined. An idea rich activity is induced by a clear goal (Amabile, 1998). Freedom also ensures a better development of the participants' skills and creative thinking abilities.

The students were given various methods and were allowed to choose which ones they wanted to use. They were encouraged to plan a schedule by themselves and assign duties within their team. The coaches supported, encouraged, and guided the work as the process moved on. The coaches' job was to set a goal, discuss and plan the implementation, and talk about the objectives with the clients. The team was responsible for the actual cooperation with the client. The coach supported the process when necessary and provided the necessary tools. The freedom of the students culminated in the online communication section of the workshop.

## Conclusions

In this study, the aim was to find out how to design a work life-oriented learning process with both traditional and online work. A great deal of emphasis was placed on the construction of virtual learning spaces. The model was realized through the Creative Steps workshop which helped show how the model furthers the collective work process and interactivity of the students.

Recent research by Guerrero *et al.* (2015) highlights the economic impact of knowledge transfer of entrepreneurial universities in the UK. For this to effectively happen, the Creative Steps Model highlighted how important it is to ensure students, companies and faculty have the right kind of process and tools for innovation work. This is critical in achieving knowledge and technology transfer results that benefit all parties and that are sustainable. Service design methods provide the tools to support the achievement of such outcomes. Co-design can be used to get the entrepreneurial university actors involved in the development of effective knowledge transfer models such as the Creative Steps Model. In addition, more research on effective use of distance working tools can provide some empirical insights on how to work in an international environment where a number of entrepreneurial universities and actors seek to collaborate for knowledge transfers. Further research on the processes and the outcomes of knowledge transfer collaborations between entrepreneurial universities is necessary. Creative Steps Model presents just one way of undertaking international knowledge transfer between entrepreneurial universities and actors.

Moreover, the Creative Steps highlighted for entrepreneurial universities there needs to be a focus on consistently of improving working life skills, widen the networking opportunities for students and embracing online tools that facilitate learning and knowledge transfer. With respect to broadening networking it widens collaboration possibilities with other students and entrepreneurs and may open up work options in the future. At the same time entrepreneurs get help to improve their businesses that also benefits the company and region. Online tools open more possibilities to collaboration and knowledge and technology transfer in international settings even though it brings learning environment challenges that require careful planning to be implemented effectively. The various tools and social media used in the online communication enable the management of distances and international cooperation. An innovative learning environment makes collective work possible through online communication as well. The student is here able to gain courage and prepare himself to face a variety of challenges. The use of IT- and communication technology and making use of social media can, with better planning, bring new opportunities of experiencing, relating and learning (Kalli, 2010) in entrepreneurial universities. For entrepreneurial universities that are willing to be truly innovative and creative with international orientated learning and knowledge transfer, the possibilities are infinite and the benefits are tangible. To realize such possibilities requires leadership, flexibility, and experimentation to realize the possibilities that are enable through effective learning and knowledge transfer in an entrepreneurial university environment.

## References

Aarnio, H. 2010. Blogi avuksi dialogin oppimiseen ja soveltamiseen opetuksessa. In *Sosiaalinen media ja verkostoituminen*, P. Ihanainen, P. Kalli, & K. Kiviniemi (eds.). OKKA opetus-, kasvat- ja koulutusalojen säätiö, Helsinki, Finland, pp. 42–57.

Aarreniemi-Jokipelto, P. 2010. Kohti yhteisöllisen ja henkilökohtaisen oppimisen tilaa sosiaalisen median välinein. In *Sosiaalinen media ja verkostoituminen*, P. Ihanainen, P. Kalli & K. Kiviniemi (eds.). OKKA opetus-, kasvat- ja koulutusalojen säätiö, Helsinki, Finland, pp. 25–41.

Amabile, T.M. 1998. How to kill creativity. *Harvard Business Review*, September–October, 77–87.

Arkko-Saukkonen, A. 2013a. Creativity is action! In *Creative Steps. On the Way to an Idea*, A. Arkko Saukkonen & M. Merivirta (eds.). Publications of Kemi-Tornio University of Applied Sciences. Serie B. Reports 18/2013, Kemi, Finland, pp. 40–49.

Arkko-Saukkonen, A. 2013b. The power of the network — international cooperation in the realisation of Creative Steps. In *Creative Steps. On the Way to an Idea*, A. Arkko-Saukkonen & M. Merivirta (eds.). Publications of Kemi-Tornio University of Applied Sciences. Serie B. Reports 18/2013, Kemi, Finland, pp. 32–35.

Arkko-Saukkonen, A. 2013c. A toolbox for innovation methods. In *Creative Steps. On the Way to an Idea*, Arkko-Saukkonen & Merivirta (eds.). Publications of Kemi-Tornio University of Applied Sciences. Serie B. Reports 18/2013, Kemi, Finland, pp. 58–73.

Arkko-Saukkonen, A. 2014. Meeting point for businesses and emerging creative talents — Creative Steps as a networking platform. *UAS Journal* 3/2014, International issue. <http://uasjournal.fi/index.php/uasj/article/view/1607>

Arkko-Saukkonen, A. & Merivirta, M. 2013. *Creative Steps. On the Way to an Idea*, A. Arkko-Saukkonen & M. Merivirta (eds.). Publications of Kemi-Tornio University of Applied Sciences. Serie B. Reports 18/2013. <http://urn.fi/URN:ISBN:978-952-5897-86-9>

Arkko-Saukkonen, A. & Saukkoriipi, S. 2013. Online working at the Creative Steps workshop. In *Creative Steps. On the Way to an Idea*, A. Arkko-Saukkonen & M. Merivirta (eds.). Publications of Kemi-Tornio University of Applied Sciences. Serie B. Reports 18/2013, Kemi, Finland, pp. 83–91.

Barab, S.A., MaKinster, J.G. & Scheckler, R. 2004. *Designing System Dualities: Characterizing an Online Professional Development Community*. Cambridge University Press, Cambridge, UK.

Brown, A. 1992. Design experiments: theoretical and methodological challenges in creating complex interventions in classroom settings. *The Journal of Learning Sciences*, 2, 141–178.

Boud, D., Keogh, R. & Walker, D. 1985. What is reflection in learning? In *Reflection: Turning Experience into Learning*, D. Boud, R. Keogh, & D. Walker (eds.). Billing & Sons, Worcester, UK.

Collins, A., Joseph, D. & Bielaczyc, K. 2004. Design-research: theoretical and methodological issues. *Journal of Learning Sciences*, 13(1), 15–42.

Creative Edge. 2013. Project's Webpage. <http://www.creative-edge.eu>. The Creative Edge Project Partners. 2013.

Creative Europa 2014. Creative Europe program, Supporting cultural and creative industries. [http://ec.europa.eu/culture/policy/cultural-creative-industries/index\\_en.htm](http://ec.europa.eu/culture/policy/cultural-creative-industries/index_en.htm) (accessed November 15, 2014).

- Cunningham, J., Reilly, P.O., Kane, C.O. & Mangematin, V. 2012. The inhibiting factors that principal investigators experience in leading publicly funded research. *Journal of Technology Transfer*, 39(1), 93–110.
- Cunningham, J.A. & Link, A.N. 2014. Fostering university-industry R&D collaborations in European Union countries. *International Entrepreneurship and Management Journal*. doi:10.1007/s11365-014-0317-4.
- Edelson, D. 2002 Design Research: what we learn when we engage in design. *The Journal of Learning Sciences*, 11(1), 105–121. EUROPE 2020. 2010. A European strategy for smart, sustainable and inclusive growth. Brussels.
- Europa 2020 Strategy. 2013. Finlands national programme. Economic outlook and economic policy, Ministry of Finance Publications. 10c/2013. [http://ec.europa.eu/europe2020/pdf/nd/nrp2013\\_finland\\_en.pdf](http://ec.europa.eu/europe2020/pdf/nd/nrp2013_finland_en.pdf) (accessed November 15, 2014).
- Erkkilä, J., Petterson, C. & von Brandenburg, C. (eds.). 2013. *Art Goes Work*. Novia publication och production, serie R: raportter 4/2013.
- Eskola, J. & Suoranta, J. 2001. *Johdatus laadulliseen tutkimukseen*. Vastapaino, Tampere, Finland.
- Etzkowitz, H., Webster, A., Gebhardt, C. & Cantisano Terra, B.R. 2000. The future of the university and the university of the future: evolution of ivory tower to entrepreneurial paradigm. *Research Policy*, 29, 313–330.
- Gibb, A. A. & Hannon, P. 2006. Towards the entrepreneurial university? *Int J Entrepreneurship Education*, 4, 73–110.
- Guerrero, M., Cunningham, J.A. & Urbano, D. 2015. Economic impact of entrepreneurial universities' activities: An exploratory study of the United Kingdom, *Research Policy*, 44(3), 748–764.
- Guerrero, M., Urbano, D. 2012. The development of an entrepreneurial university. *Journal of Technology Transfer*, 39(3), 415–434.
- Guerrero, M., Urbano, D., Cunningham, J. & Organ, D. 2014. Entrepreneurial universities in two European regions: a case study comparison. *Journal of Technology Transfer*, 39(3), 415–434.
- Habermas, J. 1973. *Knowledge and Human Interests*. Beacon, Boston, USA.
- Hautamäki, A. (eds.) 2008. Kansallinen ennakointiverkosto. Oppimisen muuttuva maasto, taloudellisesta taantumasta nousuun oppimista kehittämällä. Oppiminen ja koulutus tulevaisuustyöryhmän raportti. *ForeSight.fi*, Helsinki. <http://www.foresight.fi/wp-content/uploads/2009/08/Oppimisen-muuttuvamaasto-Taloudellisesta-taantumasta-nousuun-oppimista-kehittamalla.pdf> (accessed March 7, 2014).
- Heikkinen, H.L.T. 2006. Toimintatutkimuksen lähtökohdat. In *Toiminnasta tietoon. Toimintatutkimuksen menetelmät ja lähestymistavat*, H.L.T. Heikkinen, Rovio & Syrjälä (eds.). Kansanvalistusseura, Helsinki, Finland, pp. 16–38.
- Helakorpi, S. 2005. *Kohti verkostoituvaa ja verkottuvaa koulutusta*. HAMK Ammatillisen opettajakorkeakoulun julkaisuja 9/2005, 1.
- Herrington, J., Reeves, T.C. & Oliver, R. 2010. *A Guide to Authentic e-learning*. Routledge, New York and London.

- Hintikka, 2008, K. A. 2008. Sosiaalinen media aktivoivan oppimisen välineenä -hankkeen loppuraportti. Jyväskylän yliopisto. Yhteiskuntatieteiden ja filosofian laitos. [http://kans.jyu.fi/tutkimuksia/copy\\_of\\_aineistot/esitysaineistoja/JY-Sosiaalinen-media-2008-loppuraportti.pdf/at\\_download/file](http://kans.jyu.fi/tutkimuksia/copy_of_aineistot/esitysaineistoja/JY-Sosiaalinen-media-2008-loppuraportti.pdf/at_download/file) (accessed May 5, 2014)
- Ihanainen, P. & Kiviniemi, K. 2010. Kohti ammatillista opettajankoulutusta 3.0. In *Sosiaalinen media ja verkostoituminen*, P. Ihanainen, P. Kalli, & K. Kiviniemi (eds.). OKKA opetus-, kasvatustieteiden ja koulutusalojen säätiö, Finland, Helsinki, pp. 158–169.
- Ilmonen, K. 2007. Muuan diskurssianalyysi esimerkkinä Chydenius-instituutin vaikuttavuustutkimus. *Ikkunoita tutkimusmetodeihin 2. Näkökulmia aloittelevalle tutkijalle tutkimuksen teoreettisiin lähtökohtiin ja analyysimenetelmiin*, J. Teoksessa, J. Aaltonen, & R. Valli (eds.). PS-kustannus, Jyväskylä, pp. 126–141.
- Jonassen, D.H. 1995. Supporting communities of learners with technology: a vision for integrating technology with learning in schools. *Educational Technology*, July–August, 60–63.
- Jäminki, S. 2008. *Ohjaus- ja opiskeluprosessit samanaikaisessa ja eriaikaisessa verkkoympäristössä. Etnografinen tutkimusmatka verkotutkimuksen maailmaan*. Acta Universitatis Lapponiensis 148. Akateeminen väitöskirja. Lapin yliopisto, Rovaniemi.
- Jäminki, S. & Nijbakker, P. 2013. Efforts to implement new learning spaces in higher education. The case of Kemi-Tornio university of applied sciences. <http://www.openeducationeuropa.eu/fi/node/125866> (accessed November 16, 2014).
- Jäminki, S. & Saranne, M. 2013. “Living Labland” — co-creative innovation lab integrating cross-border co-operation of service to research, development and innovation in higher education. *Full paper. A collection of proceedings published from the 4th ENoLL Living Lab Summer School in Manchester (UK)*, August 27–30.
- Kalliala, E. & Toikkanen, T. 2009. *Sosiaalinen media opetuksessa*. Finn Lectura, Helsinki, Finland.
- Keats, D. & Schmidt, J.P. 2007. The genesis and emergence of education 3.0 in higher education and its potential for Africa. *First Monday*, 12, 3–5. <http://firstmonday.org/ojs/index.php/fm/article/view/1625/1540>.
- Keats, D. 2007. Challenges for quality assurance in an Education 3.0 world. Paper presented in *Third Global Forum on international quality assurance, accreditation and the recognition of qualifications in higher education*, Dar es Salaam, Tanzania, September 13–14. <http://www.dkeats.com/userfiles/users/1563080430/Papers/paper-0.2.pdf> (accessed February 12, 2014).
- Keränen, H. & Haase, A. 2007. Ammattikorkeakoulu yrittäjyyttä ja innovointia edistämässä. In *InnoMaraton — Startti tulevaisuuteen*, P.M. Lausas (eds.). Kemi-Tornion ammattikorkeakoulun julkaisuja. Sarja A: Raportteja ja tutkimuksia 9/2007, Finland, pp. 49–56.
- Keurulainen, H. 2006. Opettajan osaaminen opettajankoulutuksen suunnittelun lähtökohtana. In *Opettajan työ ja oppiminen*, Anna Raija Nummenmaa & Jouni Välijärvi (eds.). Koulutuksen tutkimuslaitos, Jyväskylä, Finland, pp. 221–232.
- Kirby, D. A. 2006. Creating entrepreneurial universities in the UK: applying entrepreneurship theory in practice. *Journal of Technology Transfer*, 31, 599–603.
- Kolb, D. 1984. *Experiential learning. Experience as the source of learning and development*. Englewood Cliffs, N. J.: Prentice-Hall.



- Kuivalahti, M. & Kähkönen, K. 2010. Oppimisen menetelmät tuikkivat tähtivaivaalla. In *Sosiaalinen media ja verkostoituminen*, P. Ihanainen, P. Kalli, & K. Kiviniemi (eds.). OKKA opetus-, kasvatus- ja koulutusalojen säätiö, Helsinki, Finland, pp. 58–63.
- Kärnä, M. 2011. *Virtuaalisen tiedonrakennuksen tila ongelmaoperustaisen oppimisen tukena*. Acta Universitatis Lapponiensis 211. Lapin yliopistokustannus, Rovaniemi, Finland.
- Lausas, P.-M. (ed.). 2007. InnoMaraton — Startti tulevaisuuteen. Kemi-Tornion ammattikorkeakoulun julkaisuja. *Sarja A: Raportteja ja tutkimuksia 9/2007*, 7–25.
- Lauri, J. 2014. Innostusta, luomisen tuskaa ja onnistumisen riemua LiikeAkatemiassa. In *Unelmatehdas — Oivalla Porukalla!*, A. Harju-Myllyaho, M. Hirvaskari, M. Lempiäinen, & J. Ojuva (eds.). Lapin ammattikorkeakoulun julkaisuja, sarja B raportit ja selvityksiä 22/2014, Finland, pp. 40–43.
- Lave, J. 1993. The practice of learning. In *Understanding Practice*, S. Chaiklin & J. Lave (eds.). Cambridge University Press, New York, USA, pp. 3–32.
- Lave, J. & Wenger, E. 1991. *Situated Learning: Legitimate Peripheral Participation*. Cambridge University Press, Cambridge, UK.
- Lefebvre, H. 1991. *The Production of Space (La Production de l'espace 1974)*. Blackwell Publishing, Oxford.
- Leinonen, N., Partanen, T. & Palviainen, P. 2002. *Tiimiakatemia. Tositarina tekemällä oppivasta yhteisöstä*. PS kustannus, Jyväskylä, Finland.
- Lempiäinen, M. & Jänkälä, R. 2014. Opiskelijat Napapiirin matkailualueita kehittämässä. In *Unelmatehdas — Oivalla Porukalla!*, A. Harju-Myllyaho, M. Hirvaskari, M. Lempiäinen & J. Ojuva (eds.). Lapin ammattikorkeakoulun julkaisuja, sarja B raportit ja selvitykset 22/2014, Finland, pp. 17–26.
- Lindeman, A. 2015. In search of university-wide entrepreneurial action. In *The Entrepreneurial University: Context and Institutional Change*, L. Foss & D.V. Gibson (eds.). Routledge, Oxon, London, UK. pp. 167–188.
- McAlpine, L., Weston, C., Beuchamp, J., Wiseman, C. & Beuchamp, C. 1999. Building a metacognitive model of reflection. *Higher Education*, 37, 105–131.
- Mehtälä, M. & Pruikkonen, A. 2011. Kuokasta kuulokkeisiin — Syntyikö satoa? In *Lapin etäopetuksen tukipalvelut. Omalla tyylillä, samoilla välineillä, kohti yhteistä maalia*, S. Kokkonen & M. Mehtälä (eds.). Kemi-Tornion ammattikorkeakoulun julkaisuja Sarja B. Raportit ja selvitykset 4/2011, pp. 85–90. <http://urn.fi/URN:ISBN:978-952-5897-14-2> (accessed August 27, 2013).
- Meinilä, A. (eds.). 2014. Mitä ONNI on? Terveys- ja hyvinvointiauto ONNI — uudenlainen oppimis- ja työympäristö. Lapin ammattikorkeakoulun julkaisuja. *Sarja B. Raportit ja selvitykset 7/2014*.
- Mezirow, J. 1991. *Transformative dimensions of adult learning*. San Francisco: Jossey-Bass.
- Mezirow, J. 1996. Kriittinen reflektio uudistavan oppimisen käynnistäjänä. In *Fostering Critical Reflection in Adulthood. A Guide to Transformative and Emancipatory Learning*, J. Mezirow et al. (eds.). Uudistuva Oppiminen, kriittinen reflektio aikuiskoulutuksessa, Jossey-Bass, San Francisco, CA, pp. 17–38.
- Mezirow, J. 1999. Transformation theory — Postmodern issues. *1999 AERC Proceedings*. <http://www.edst.educ.ubc.ca/aerc/1999/99mezirow.htm> (accessed September 10, 2014).

Ministry of Education and Culture. 2014. Polytechnics education in Finland. <http://www.minedu.fi/OPM/Koulutus/ammattikorkeakoulutus/?lang=en> (accessed October 20, 2014).

Myllylä, M. & Teräs, H. 2010. Muuttunut opettajuus, sosiaalisen median mahdollisuudet ja tasapainoisen sosiaalisen kompetenssin rakentuminen. In *Sosiaalinen media ja verkostoituminen*, P. Ihanainen, P. Kalli, & K. Kiviniemi (eds.). OKKA opetus-, kasvatus- ja koulutusalojen säätiö, Helsinki, Finland, pp. 64–72.

Mäkelä, L. 2010. *Verkkokurssi opetuksen ja oppimisen kompleksisena toimitilana*. Acta Universitatis Tamperensis 1490. Akateeminen väitöskirja. Tampereen yliopisto, Tampere, Finland. <http://uta32kk.lib.helsinki.fi/bitstream/handle/10024/66570/978-951-44-7947-2.pdf?sequence=1> (accessed April 4, 2015).

Nelles, J. & Vorley, T. 2009. From policy to practice: engaging and embedding the third mission in contemporary universities. *International Journal of Sociology and Social Policy*, 30 (7/8), 341–353.

Nelles, J. & Vorley, T. 2010. Entrepreneurial architecture: a blueprint for entrepreneurial universities. *Canadian Journal of Administrative Sciences*. 341–353, Wiley.

Niinimäki, J. & Tenno, T. 2010. Sosiaalisen median edut ja haasteet ammatillisessa opetuksessa. In *Sosiaalinen media ja verkostoituminen*, P. Ihanainen, P. Kalli, & K. Kiviniemi (eds.). OKKA opetus-, kasvatus- ja koulutusalojen säätiö, Helsinki, Finland, pp. 111–127.

Nonaka, I. & Takeuchi, H. 1995. *The Knowledge-Creating Company. How Japanese Companies Create the Dynamics of Innovation*. Oxford University Press.

Novak, J.D. 1998. *Tiedon oppiminen, luominen ja käyttö. Käsitekartat työvälineinä oppilaitoksissa ja yrityksissä*. PS-kustannus 2002, Keuruu, Finland.

Oh, E. & Reeves, T.C. 2013. Collaborative group work in an online authentic learning environment: an educational design research study. In *Educational Design Research*, T. Plomp & N. Nieveen (eds.). SLO Netherlands institute for curriculum development, The Netherlands, pp. 993–1011. <http://international.slo.nl/publications/edr/> (accessed September 7, 2014).

Pelli, R. 2011. Työelämän muutos ja LCCE-konseptin syventäminen. In *Oppimisen ja osaamisen ekosysteemi, Ecosystem — LCCE*, R. Pelli & S. Ruohonen (eds.). Kymenlaakson ammattikorkeakoulun julkaisuja. Sarja A. Nro 24, Kotka, Finland, pp. 12–23.

Pelli, R. 2009. Oppiminen ja osaamisen tuottaminen — Vastaus ajan haasteisiin. In *Kohti osaamisen ekosysteemiä. (Learning and Competence Creating Ecosystem — LCCE)*, S. Ruohonen & L. Mäkelä-Marttinen (eds.). Kymenlaakson ammattikorkeakoulun julkaisuja. Sarja A. Nro 24. Kopijyvä Oy, Jyväskylä, Finland, pp. 28–33.

Poikela, E. 2009. Oppimisen design. In *Kohti osaamisen ekosysteemiä. Learning and Competence Creating Ecosystem — LCCE*, S. Ruohonen & L. Mäkelä-Marttinen (eds.). Kymenlaakson ammattikorkeakoulun julkaisuja. Sarja A. Nro 24. Kopijyvä Oy, Jyväskylä, Finland, pp. 10–17.

Poikela, E. 2011. Oppiminen, työ ja osaaminen — haasteena asiantuntijuus ja yrittäjyys. In *Oppimisen ja osaamisen ekosysteemi (Learning and Competence Creating Ecosystem — LCCE)*, R. Pelli & S. Ruohonen (eds.). Kymenlaakson ammattikorkeakoulun julkaisuja. Sarja A. Nro 24, Kotka, pp. 24–35.

Rauste von-Wright, M., von Wright, J. & Soini, T. 2003. *Oppiminen ja koulutus*. WSOY, Juva, Finland.

- Rogers, E.M. 2003. *Diffusion of Innovations*. 5. Painos. Free Press, New York, USA.
- Ruokamo, H., Tella, S., Vahtivuori, S., Tuovinen, H. & Tissari, V. 2003. Pedagogiset mallit verkko-opetuksen suunnittelussa, toteutuksessa ja arvioinnissa (HelLa projekti). In *Aineenopettajankoulutuksen vaihtoehdot ja tutkimus 2002. Ainedidaktiikan symposiumi 1.2.2002*, V. Meisalo (ed.). Helsingin yliopiston opettajankoulutuslaitos. Tutkimuksia 241, Finland, pp. 404–420. <http://www.edu.helsinki.fi/malu/tutkimus/adsymposium/artikkelit/VK%20Ruokamo.pdf> (accessed May 4, 2014).
- Schön, D.A. 1983. *The Reflective Practitioner. How Professionals Think in Action*. Basic Books, New York and Finland.
- Siljander, P. 2014. *Systemaattinen johdatus kasvatustieteeseen. Peruskäsitteet ja pääsuuntauukset*. Vastapaino, Tampere, Finland.
- Toikkanen, T. & Kalliala, E. 2009. *Sosiaalinen media opetuksessa*. Finn Lectura, Helsinki.
- Tynjälä, P. 1999. Konstruktivistinen oppimiskäsitys ja asiantuntijuuden edellytysten rakentaminen koulutuksessa. In *Oppiminen ja asiantuntijuus. Työelämän ja koulutuksen näkökulma*, A. Eteläpelto & P. Tynjälä (eds.). WSOY, Helsinki, Finland, pp. 160–179.
- Van Loony, B. 2009. The role of entrepreneurial universities within innovation systems: an overview and assessment. *Review of Business and Economics*, 2009/1, 62–81.
- Vaherva, Tapio 2002. Opettajuuden muotoutuminen aikuiskasvatuksen perinteessä. In *Opettajuus muutoksessa*, P. Sallila & A. Malinen (eds.). Aikuiskasvatuksen 43. vuosikirja, Helsinki, Kansanvalistusseura, pp. 264–277.
- Vuopala, E. 2013. *Onnistuneen yhteisöllisen verkko-oppimisen edellytykset Näkökulmina yliopisto opiskelijoiden kokemukset ja verkkovuorovaikutus*. Acta Universitatis Ouluensis. Series E, Scientiae rerum socialium 133. Akateeminen väitöskirja. <http://herkules oulu.fi/isbn9789526202259/isbn9789526202259.pdf> (accessed September 5, 2014).
- Vygotsky, L.S. 1978. *Mind in Society: The Development of Higher Psychological Processes*. Harvard University Press, Cambridge, MA, USA. Wenger, E. 1998. *Communities of Practice: Learning, Meaning, and Identity*. Cambridge University Press, Cambridge, UK.
- Wenger, E. 1998. *Communities of Practice: Learning, Meaning, and Identity*. Cambridge University Press, Cambridge, UK.
- Wenger, E. 2009. *Communities of Practice: Frequently Asked Questions*. Available from author at <http://wenger-trayner.com/map-of-resources>. (accessed March 16, 2015).
- Wilson, T., February 2012. *A Review of Business-University Collaboration*. <http://www.wilsonreview.co.uk/review/>.