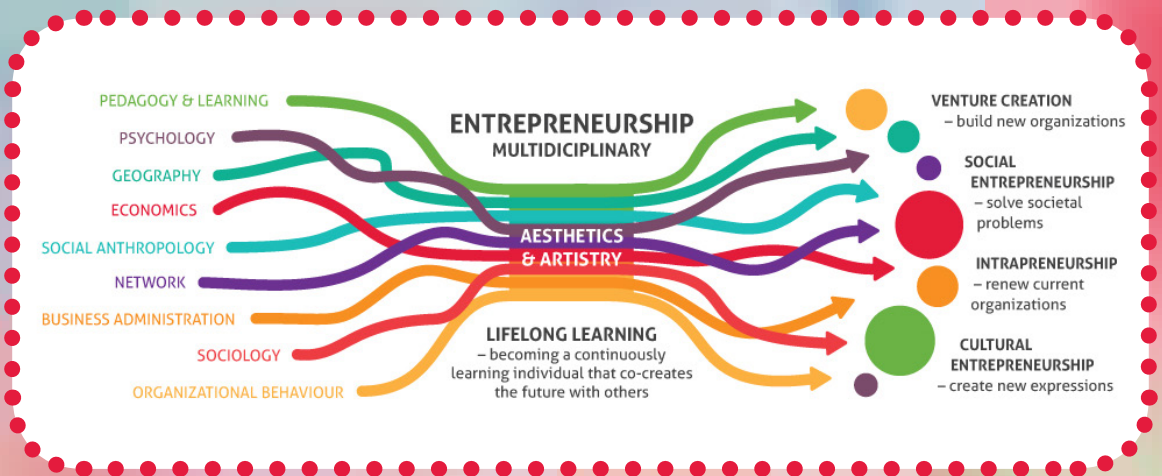


InnoPreneurship 21

Creation of entrepreneurial cross-border competence
in Northern Scandinavia

Interreg IVA Nord FINAL REPORT



InnoPreneurship 21 – Creation of entrepreneurial cross-border competence in Northern Scandinavia

Soili Mäkimurto-Koivumaa • Mats Westerbeg • Pekka Kess

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**Creation of entrepreneurial cross-border
competence in Northern Scandinavia**

Sarja B. Raportit ja selvitykset 9/2015

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FOREWORD

Enhancing entrepreneurship and developing an entrepreneurial mindset and behaviour are a common challenge throughout Northern Scandinavia. According to the latest GEM report (Global Entrepreneurship Monitor 2012), the TEA rate (the percentage of individuals who expect to start a business within the next three years) is fairly low varying from 5.8% (Sweden) to 6.9% (Norway). Several studies have shown that the economy's prosperity and growth strongly depends on the entrepreneurship sector. Even though the general attitude towards entrepreneurship has become more positive, higher education organisations are still struggling in developing ways to increase entrepreneurship among academics and non-business students. At the same time, due to globalization, expectations of the working life are evolving continuously and the time span of decisions is decreasing. Therefore, employers expect that the graduates are to be able to utilise and create opportunities in their profession.

Since 2008, three higher educational institutions (HEIs) in Northern Scandinavia have been working together to promote entrepreneurship education in their institutions and surrounding regions. During the first three years, the HEIs (Luleå University of Technology, Bodø Graduate School of Business at Bodø Regional University College/ University of Nordland and Kemi-Tornio University of Applied Sciences/Lapland University of Applied Sciences) developed activities for increasing the common knowledge of entrepreneurship education. During the second phase (2012-2014) University of Oulu joined the network and co-operation was intensified in Inno-preneurship 21 – project which was financed mainly by Interreg IV Nord programme. As a result of productive collaboration, a virtual learning platform for entrepreneurship education has been introduced. This report concentrates on describing the main results of this collaboration process.

1. Introduction

The consortium of three HEIs, Luleå University of Technology, Bodø Graduate School of Business at Bodø Regional University College and Kemi-Tornio University of Applied Sciences conducted a project InnoPreneurship (2008 – 2011) for increasing the knowledge and understanding of entrepreneurship education in Northern Scandinavian higher education institutions (HEIs). The main focus of the project was on researching entrepreneurship education and building the knowledge base for further activities. The InnoPreneurship project was able to deliver many positive outcomes, but several challenges remained. For instance, the importance of including “soft aspects” to entrepreneurship was realised but it was not possible to contribute in that respect during the first project. Therefore, based on the analysis of the previous results and findings, a new project was started in January 2012 for further developing the cross-border collaboration between participating HEIs, and finding ways to establish lasting co-operation between different actors in practice. The project partners were partly the same: Luleå University of Technology (LTU), University of Nordland (UiN) and Lapland University of Applied Sciences (Lapland UAS, former Kemi-Tornio UAS); one new member, University of Oulu (OU), joined the network. See Appendix 1 for a brief summary of the earlier activities related to entrepreneurship education at each participating HEI. New activities that were defined as instrumental in reaching the goals of the second project were the following:

- To study the activities related to “soft entrepreneurship” (i.e. activities to stimulate entrepreneurial activity not directly linked to venture creation or venture development) in the three countries and identify the similarities and differences.
- Collaborating in creating greater attention and providing better learning experiences for each other in several areas, co-creating courses; collaborating on improving teaching methods.
- Participation in conferences and public events for expanding the understanding of Nordic entrepreneurship education; these events will be directed to different stakeholder groups identified in the current project.

- Create a platform for a vibrant social community in entrepreneurship education for mainly Nordic audiences.
- Setting up task forces at and between participating HEIs focusing on ensuring the continuation of activities beyond the project end.

The second project was defined to include several objectives for developing entrepreneurship education further in the Northern Scandinavia as described later.

1.1 THE PROJECT OBJECTIVES

The beneficiaries of this project can be categorised in two main groups. The primary beneficiaries are the HEIs and other school management, their teachers and staff members. The secondary beneficiaries are students and the region where the HEIs are operating.

The purpose of the project was to create a common entrepreneurial learning environment for the Northern Scandinavia. For meeting that purpose the overall objectives have been defined as follows:

- Increase awareness about the role and significance of entrepreneurship in the participating HEIs and other public institutions in northern Scandinavia.
- Encourage students and teachers to start a business or/and to act entrepreneurially in their daily activities.
- Develop and promote activities that can help incorporating entrepreneurial activities into HEIs' curricula and everyday activities.
- Disseminate the created knowledge among the project partners continuously and to build a platform for disseminating the knowledge to the region – and beyond.
- Affect attitudes and operational culture in the participating HEIs and their regional partners towards a more entrepreneurial mindset and action in HEIs.

For meeting the objectives of the project, all participants agreed to start building an entrepreneurial learning competence centre at each HEI and also a virtual centre that bridges the four HEIs and enable the inclusion of other actors. For building these competence centres, several work packages were needed.

1.2 THE STRUCTURE OF THE PROJECT

The project activities were conducted in five work packages. Their objectives were:

- WP1: To promote entrepreneurship by utilising the integrated theoretical framework in entrepreneurship education: the hard aspects (the creation/ recognition and exploitation of a business opportunity) AND the soft aspects (the creation/recognition and exploitation of a non-business opportunity, e.g. social entrepreneurship)
- WP2: Creation of cross-border teaching and learning environments (virtual) and creation of collaborative courses, actions and events etc. to enhance entrepreneurial competences of students, teachers and other beneficiaries throughout the entire Interreg IV A region.
- WP3: Embed an entrepreneurial culture in each partner HEI both in strategic and operational level, organise a local Task Force (LTF) to coordinate actions at the level of individual HEI, and organise a cross-border Task Force to coordinate interactions between the LTFs in the whole region.
- WP4: To disseminate experiences and practices on theoretical framework (WP1), entrepreneurial educational course experiences and task force activities to local, regional and national level and to assure the sustainability of project outcomes and activities by benchmarking with similar projects in selected European regions and implementing entrepreneurship education as essential part of HEIs learning and teaching practices
- WP5: To lead and control the tasks of the coordinators of the WPs in order to assure the achievement of the settled goals, support the projects activities and collaborations in order to obtain a smooth flow of the WP work towards the fulfilment of the settled goals and to be responsible for the reporting to the managing authorities and taking care of the financial reporting.

The combination of different work packages and the proceeding in the project is described in Fig. 1.

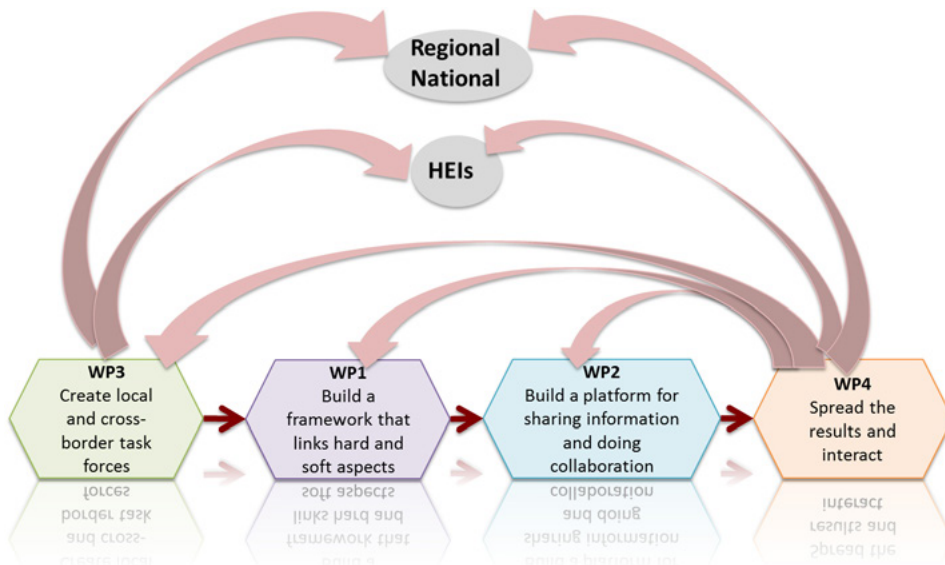


Fig. 1 The logical dependency between the work packages in the project.

As depicted in Figure 1, we see WP3 as the basis for obtaining a common view in both the local and cross-border task forces. It was not until we had a shared view on what entrepreneurship education was and how we could work with it, that the work in WP1 gained traction. Once this common view emerged after some time into the project, the development of the framework (WP1) quickly led to results in the form of a scientific paper that we co-wrote with participants from all HEIs. Once we had a clear picture of our guiding framework, the role and function of the support platform became clearer, which allowed us to build the actual platform (WP2) with its information and collaboration functions. This then paved the way for dissemination activities allowing us to spread results and interact both externally and internally (WP4). This last task provides feedback into the other three WPs, boosting local and cross-border task force activities and getting improvement suggestions for both the framework and the platform. We thus have a virtuous circle where improvement and innovation are enabled. As the figure also depicts, we see the work in WP3 and WP4 as central in providing beneficial impacts within our respective HEIs and in our respective regions and nations. However, without a good process as described hereinabove, there would be no impact from the project. Next, we will go into detail regarding the activities using the order from the figure, that is, we start with WP3 and then WP1, WP2 and WP4 will follow. WP5 is pure project management and, therefore, not discussed further.

2. THE ROLE OF LOCAL AND CROSS-BORDER TASK FORCES

One of the main aims of the project is to embed entrepreneurial culture in each HEI. For reaching that result, it has required that the study programmes should contain entrepreneurial elements and pedagogical practices. Therefore, a special project task force group was named in each HEI. The local task force groups then together formed the cross-border task force, which was responsible for the project activities and collaboration between project partners. Some activities were needed involving staff and different stakeholders in the process and, therefore, some workshops and seminars have been organised regularly during the project. The project participants agreed that for embedding entrepreneurial culture in each HEI some common aims and objectives should be included in the curriculum renewal process at each HEI, if possible.

The cross-border task force was able to work efficiently due to that most participants had experience from the earlier Innopreneurship project (and thus had built up trust) and that we were able to find a shared view of what the project was about. Because the project structure's different phases were interlinked it forced the group to work continuously. All the members were professionals and, if needed, they were able to use external followers. During the work it became very clear that the organisations need to support the task force groups for reaching the aims of the project. All the task force group members had some common activities such as writing articles, participating in conferences and working during the workshops.

During their work the cross-border task force has had to cross several borders. The first border to cross was the conceptual border between the narrow and broad definition of entrepreneurship education. The narrow definition of entrepreneurship education usually contains “business activities” and how students can learn to start and operate in an enterprise. On the other hand, the broad definition can be called enterprise education aiming to develop entrepreneurial mind-set and behaviour. These qualities and skills make it possible for individuals within organisations and communities to act flexibly and creatively when meeting rapid social and economic changes.

The second border to cross was the border between different disciplines. The cross-border task force members had different educational background representing different disciplines such as engineering, business and teacher education. Therefore, they can have different approaches to education which can create problems, but also opportunities. Entrepreneurship education in engineering and business education is typically focusing on new venture creation, i.e. that you practice engineering or business by starting a venture and becoming an entrepreneur. In teacher education the focus is instead on developing entrepreneurial competencies.

The third border contained the borders between nations and cultures. Even though the participating HEIs come from the same cultural area there are some minor differences between the Nordic countries, but they did not cause any challenges. Rather, they were enriching the co-operation and enabled the task force members to internationalise in this context. However, it became evident that there are some administrative and structural differences between the participating HEIs, and they may limit an effective work with project activities.

As a conclusion of crossing the three borders, it can be stated that learning to work together took some time and required the task force members to travel to visit each other every now and then. However, the actual project work was done in the local area, without collaboration between countries. In the first project period (2008-2010), there were no cross-border project activities but during the second project period (2011-2014), real cross-border activities started with less than 18 months from the project end. A key to getting the project to become cross-national was to find a common purpose to work for, which was found by breaking down the borders between the broad and narrow definition of entrepreneurship education. Therefore, a cross-border course between LTU and Lapland UAS was organised in the autumn term 2013. 21 students with different disciplines joined the course and studied networking from different angles. The feedback that the students gave was very positive:

“Different understanding on what we are actually doing and how to do it.”

“Learning new ideas for collaboration. Making new friends.”

“It was really a fun project in general, a lot of fun, and I believe all of us learnt a lot about collaboration and each other.”

For supporting the future development of entrepreneurship education some other actions have been taken in some of the HEIs. For instance, at LTU an extensive pedagogical strategy has been published and an entrepreneurial competence centre has been established. At Lapland UAS, a part of the objectives and actions has been included already in the operational documents supporting the establishment of the new HEI. At UiN work the entrepreneurial learning competence centre has been established and work started. At OU curriculum renewal will take place in 2015–2016 and in that context some aspects of the project can be utilised.

3. BUILDING THE THEORETICAL FRAMEWORK

The basis for building the entrepreneurial competence centre was to create a theoretical framework to be utilised in the partner HEIs and for forming the basis for the future development of entrepreneurship education. The framework was decided to contain two important aspects of entrepreneurial expertise needed in entrepreneurship education: the “hard side” (= knowledge) and the “soft side” (= personal development, skills, abilities). The framework was introduced in the 3e ECSB conference in Århus in June 2013 (see www.innopreneurship.org).

The main part of building the framework was to find a way to integrate entrepreneurship education at each HEI. For meeting that aim, the entrepreneurial learning competence centres have been established at two HEIs (LTU and UiN). On the other hand, in the two other HEIs the work still continues. During the process it has become evident that engineering teachers need to be trained for entrepreneurial learning. In addition, increasing the comprehension of the meaning and content of entrepreneurial mindset and thinking takes time and resources.

The participating HEIs have different prerequisites for establishing the entrepreneurial competence centres. Therefore, each of them has taken different actions as a part of this work package. At UiN, strategic decisions concerning entrepreneurial learning have been made already as a part of building SPENT (entrepreneurial learning centre). Therefore, it has been possible to include entrepreneurial learning at the faculty level and teacher education. At LTU, entrepreneurial learning is a central part of the new pedagogic strategy and supports the process to develop the learning centre forward. At Lapland UAS, the CDIO framework (www.cdio.org) creates a context for developing entrepreneurial learning, but still requires strategic decisions for supporting the process. At OU, it has become evident that entrepreneurship should be integrated in other subjects and that requires knowledge transfer. Also courses directly supporting entrepreneurship has been included in the curriculum. These include courses of “Business Plan” and “Lab-to-Market”.

The outcomes of this work package are various. The framework depicted in Fig. 2 is extensively used in telling about the content of entrepreneurial learning. It also forms the basis for the platform of the www.innopreneurship.org. As a result of building the framework, some cultural change has taken place between the participating HEIs and different disciplines. Due to the common learning process in this context it has become easier to communicate about entrepreneurial learning with colleagues.

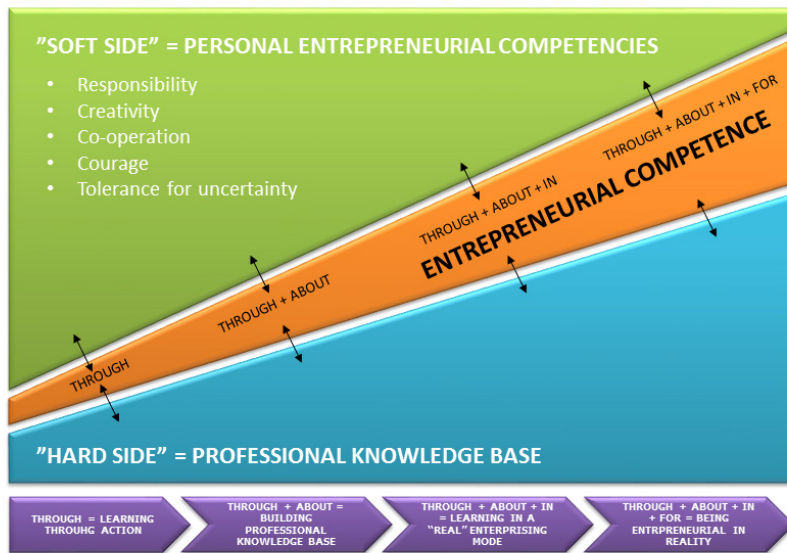


Fig. 2 The framework for the development of entrepreneurial competence

Hereunder, we outline the different forms of entrepreneurship education and how they can evolve:

1st phase: THROUGH

- Boosting students’ entrepreneurial mindset by using activity-based learning methods:

The aim in the beginning of studies is to boost students’ self-confidence, curiosity, and tolerance for uncertainty/ambiguity. This objective is pursued by applying multiple activating learning methods rather than relying on a single teaching approach. Project-based learning can be favoured as it allows flexibility in realising the actual learning situations. Problem-based learning (PBL) is a structured method and may, therefore, not be the best solution even though PBL emphasises students’ participation and involvement in the learning process. Teamwork is to be preferred in practical arrangements as it encourages vicarious learning, and helps the students appreciate variety in reasoning.

2nd phase: THROUGH AND ABOUT

- Building the knowledge base on entrepreneurship:

Information about entrepreneurship is to be gradually included while the activity-based learning methods applied during the first year should continue. Education is to cover the economic and societal meaning of business and entrepreneurship and the students will learn about entrepreneurship as a phenomenon. Contexts connected to students' disciplines are to be favoured. In practice, this may include, e.g. traditional lectures, lectures by experts, company visits and team exercises.

3rd phase: THROUGH & ABOUT & IN

- Expanding the knowledge base on entrepreneurship

The studying methods applied during the first two years will continue, however, they are supplemented by training in local companies. Professional field-specific education and EE are to be integrated in order to prepare the students for their future in business (or other) environment. In addition, entrepreneurial competences are crucial parts of many modern professions. Consequently, training periods and company assignments covering both business and professional aspects are to be utilised. Separate courses, or study projects, supporting the development of basic business knowledge (e.g. accounting, marketing, management) may be included. In addition, special learning environments such as pre-incubators or training camps can be an integral part of the learning environment.

4th phase: THROUGH & ABOUT & IN AND FOR

- Becoming entrepreneurial in reality

Students' entrepreneurial mindset and behaviour are to be supported during the fourth year. In addition, concrete tools will be given to those aiming to become entrepreneurs. Real business-life cases are used to systematically provide students with business knowledge. The topics to be covered may include e.g. venture financing, strategic planning, marketing, as well as leadership and management. Final theses could also support achieving these objectives. During the fourth year, enquiry-based learning methods may be suitable to complement the entirety.

4. CREATION OF THE VIRTUAL LEARNING ENVIRONMENT

For building the basis for collaboration and co-operation, a virtual learning environment (VLE) was needed. The web pages at www.innopreneurship.org went live in the beginning of 2014. As part of that work, we created a logo for the common competence centre. It is shown in Figure 3.



Fig. 3 The Logo developed and used in the project

The VLE contains two parts. Firstly, there are some common elements available for the public as a whole. Secondly, a closed VLE has been opened in Moodle for organising common courses to a certain group of participants. During the project, two common courses have been conducted by utilising the VLE. For ensuring the viability and development of the web environment a content master has been named at each partner HEI.

In addition, there are research articles, news and inspiration about entrepreneurship, resources as videos, documents and illustrations. The website will also be a platform to highlights courses, events and other activities with the topics in educational entrepreneurship. On the website, we ask the question of why an educator, educators in engineering and educators in management and social science should care about entrepreneurship and entrepreneurial learning.

The platform also enabled the arrangement of the cross-border course in a new context with good experiences. Some modules about entrepreneurial learning have been developed for the web environment. For ensuring the vividness of the platform it was agreed that all participants need to bring at least one contribution/month and visit the website at least twice a month. The innopreneurship.org website has been shared on Facebook, Twitter and Instagram.

We believe that this provides us with a very good base for future activities, but for it to continue functioning we need to update and refresh the platform continuously. The cost to maintain the website and its content is marginal in terms of fixed costs, but the participants need to spend some time every month if we want to attract traffic.

5. DISSEMINATION OF THE PROJECT ACTIONS

Many actions have been taken to disseminate the project and its activities. As agreed in the project plan, one common kick-off workshop and four local kick-off meetings have been organised in 2012. In addition, several workshops for teachers and representatives of different stakeholders took place in 2012–2013.

The web portal at www.innopreneurship.org has been introduced and promoted as part of the Århus conference and later in the context of other conferences (CDIO/Boston – Cambridge June 2013, ECSB/Turku April 2014, CDIO/Barcelona June 2014). In addition, there have been collaborative activities between different projects.

The main action has been to develop the website and make it familiar to different stakeholders through various social media. The challenge is, however, that it needs to be renewed and developed continuously to keep it alive as noted in the previous section.

The dissemination activities have thus contained some common elements such as conference papers and articles. In addition to those, some local activities can be mentioned as well. At UiN and Lapland UAS, a local kick-off was organised and Lapland UAS outlined and printed a brochure for the projects. For supporting the dissemination, a separate media plan was outlined in co-operation with OU and Lapland UAS in spring 2012.

At OU, a small research titled “Company establishment and growth – point of view from entrepreneurs graduated from vocational school and University of applied science” was carried out and the results were disseminated in the schools in question. The article Kess, P. (2014) Knowledge Transfusion from External Sources to Small and Medium-Sized Companies was presented at The Management, Knowledge and Learning (MakeLearn) International Scientific Conference 2014 at Portorož, Slovenia in 25-27/6/ 2014.

6. CHALLENGES AND LESSONS LEARNT

Even though the project participants have worked together and shared the same interests, there were some challenges in starting the co-operation. Because all the project participants have a different background and they represent different disciplines, finding the common conceptual understanding for the key concepts “entrepreneurship” and “entrepreneurship education” took some time. Common discussions during the workshops and especially the GOPP workshop (goal oriented project planning) in February 2013 helped to find mutual understanding. In addition, there were different views in interpreting the common project framework presented on the web pages

(<http://www.innopreneurship.org/sites/i/innopreneurship.org/files/183odb6a092e8166fec6468fdff44f67.pdf>).

Communication and documentation of the project activities could have been more efficient and systematic. Documenting the discussions and compilation of memos based on them was done but some routines and processes could have been utilised and agreed on them in the beginning of the project.

In a project such as InnoPreneurship 21, it is important that the different stakeholders and key personnel are involved in the process that the project works with. Especially the role of getting HEI leadership and management to push forward the project objectives is important. During the kick-off meetings organised in partner HEIs, the management was informed about the project, but continuous involvement and increasing the awareness of the later project activities had been needed. Especially one of the activities, curriculum renewal, requires that the management agrees on the importance of the InnoPreneurship 21 project objectives. In addition, the involvement and commitment of the management and key personnel might lower the resistance to change, which can be an obstacle in reaching the project objectives in some HEIs.

The geographical distances of the participating HEIs caused some challenges; the distance from Oulu/Kemi to Bodø is fairly long (750+ km) and, therefore, most of the common workshops were organised in Sweden. Naturally, the main part of the work was done

locally and some meetings were held on Skype as well, but as mentioned earlier, communication and discussions face-to-face are important for creating a common understanding.

During the project, it was discovered that even though learning to understand each other took some time, we learnt to work together in a productive way at a distance. As a whole, it was very rewarding to learn to understand others' mindsets. We also learnt that sharing experiences and systems utilised in different HEIs is necessary: we can learn from each other and strengthen the infrastructure and the content of each partner by co-operation with other institutions.

Finally, we have learnt that the pedagogic strategy of LTU could be used as a framework for building the similar documents in other participating HEIs. In addition, it became evident that entrepreneurship learning is not the same as entrepreneurial learning. Developing entrepreneurship education in a HEI is a long process and requires patience.

7. CONCLUSIONS

What impact did the project have on the participating HEIs? And what is needed for getting to the next stage? If we first turn to Lapland UAS, some actions have been taken at Lapland UAS and its engineering education in Kemi. The first workshop was organised in October 2012 and as a result some practical steps were agreed for reaching the objectives of the project. The first step was to create a personal development plan that each student should outline in the beginning of their study path. The personal development plan was agreed to be a part of the tutoring process and a tool for supporting students' career planning. The second step meant that the curriculum process should be developed further to support the development of entrepreneurial mindset and behaviour, and goal-orientation of each student. It was agreed in spring 2012 that some entrepreneurship education topics were to be embedded in the study projects in the curricula which were designed for the study year 2012 – 2013. In addition to these activities, Lapland UAS has been actively disseminating the project results both in the local media and at international conferences. When Lapland UAS was established in January 2014 one of the profile areas of the new HEI's strategy was chosen to be service business and entrepreneurship.

Even though many actions have been taken during the InnoPreneurship 21 project some actions are still needed. In spring 2014, the preparation for the new curricula 2017 has been started. In May 2014, it has been agreed that entrepreneurship and entrepreneurship education is going to be closely linked with the curricula process. Therefore, some teacher training is to be organised next autumn to get the process started. Anyhow, other activities still need to be developed. For instance, in the future, there is a need to enable more intensively collaboration between local companies and students. Moreover, some competence development for entrepreneurial learning and concrete teaching experiments, also in cross-border context, are required as well.

At OU, the project has enhanced the understanding of the entrepreneurship and entrepreneurial thinking and attitudes among some of the teachers. The entrepreneurial thinking is directly applied in courses of Business Planning and Lab-to-Market. Indirectly, entrepreneurial thinking can be seen in many other courses of Industrial Engineering and Management. The project has also, through international collaboration,

given new tools and techniques to the course and curriculum development work. Still, there is much that can be done to further increase the entrepreneurial aspects of the education.

At Luleå University of Technology, the work with entrepreneurial learning has resulted in a Centre for Entrepreneurial Learning that has received nationwide interest. The project Innopreneurship 21 has definitely been important in this work as it has pushed especially the scientific work on the framework forward enabling a strong core in the centre. The partnership with Oulu, Kemi-Tornio and Bodø has helped us to frame the centre to be multi-disciplinary and it has become a clear strength to be able to capitalise on borders instead of avoiding them. The processes in the project where we have been able to learn from each other despite differences has convinced us that it is worthwhile to have diversity in development processes, such as competence development courses and workshops. We have gained competence to work in these situations where we know it may take some time to produce benefits. Having established the Centre for Entrepreneurial Learning at Luleå University of Technology makes us a potent actor in the region (and also nationally) when it comes to promoting entrepreneurship via developing entrepreneurial competences. We believe this centre has an ability to attract funding and be active for many years to come.

Even if the participants from LTU are very happy with the current situation regarding entrepreneurial learning, there is still ample room for improvement. For instance, in the engineering education, only small steps have been taken towards a more entrepreneurial pedagogy. Here, there is a need for more work, which could be done in concert with Lapland UAS and Oulu University where engineering is a central education discipline. Also in teacher training, we can reach much further and here we think University of Nordland can be a good partner also in the future.

APPENDIX 1 -

Introduction of the participating HEIs and their contribution in entrepreneurship education

In November 2010, the Norwegian Government gave **Bodø University College** a university status. The **University of Nordland** was officially opened on 31 March 2011. The university is now providing several master's degree programmes at 4 different faculties, The Graduate School of Business, Faculty of Biosciences and Aquaculture, The Faculty of Social Sciences and the Faculty of Professional Studies.

Entrepreneurship has been included in the master's degree program since the mid-1980s. Since 2001, at The Graduate School of Business, more than 13 PhD students have finished their PhD in relevance to entrepreneurship. At the Faculty of Professional studies, there are today four PhD scholarships working on entrepreneurship relevant projects. Building on the accumulated knowledge regarding entrepreneurship education, entrepreneurship is introduced to the bachelor students already in their 1 year of study. At the Graduate School of Business, they are using a special developed and adapted business simulating programme, called the BEST programme, which is a course is 30 ETCS and provides an introduction to fundamental concepts and connections. The students learn to identify, analyse and solve practical problems within and between the different business administrative subjects; Business analysis, Philosophy, Ethics, Environmental issues, Information Technology, Marketing, Organisation/ Management, Entrepreneurship and Economics.

A specific goal is that the students shall establish their own company. The programme uses a variation of teaching forms and learning methods, web based systems, cases, projects, lessons, simulations, hand-ins, caseworks etc. Both students and faculty appreciate the learning opportunities that such an integrated training programme provides. Recent studies indicate that such an entrepreneurial education increases the entrepreneurial spirit and capability of students (Kolvereid and Åmo, 2007). Even so, we are now facing the time to further refine this curriculum by lessons learnt on best practices in educational institutions. As the conditions for entrepreneurship differ according to the local resource base and cultural aspects, it would be wise to draw knowledge from institutions in the northern regions.

At the faculty of professional science, a Centre of Pedagogical Entrepreneurship (SPEnt) was established in November 2010 and this is founded on the four following pillars:

- Education (implement entrepreneurship training for teacher students, teachers in the basic education and higher and further education)
- Research and dissemination of research
- Innovation and development of new studies, programmes, courses and seminars
- Maintain the role as provider of entrepreneurship and entrepreneurial activities performing as a regional development actor.

Furthermore, the teacher education has been offering various entrepreneurial studies for teachers and for students with interests in economic, social or cultural entrepreneurship, for about 25 years. Among the themes, can be mentioned “Relations between school and the local society” (30 ETCS), “Entrepreneurship in education” (30 ETCS), “Knowledge about working-life” (30+30 ETCS) and “Pedagogical Entrepreneurship” (30 ETCS + 30 new from 2008). The main goal has always been to facilitate teachers from kindergarten to upper secondary school to create ways of entrepreneurial teaching to develop entrepreneurial skills and attitudes in youngsters. All the courses have been using different learning methods such as creativity-learning-activities, cases, pedagogical enterprises, projects and lessons. Some of them have also included teaching practice in private or public enterprises and organisations. From the autumn of 2008, a module 3 and 4 of Pedagogical Entrepreneurship will be started up.

The Faculty of professional studies and SPEnt have also a high working profile on entrepreneurship as an element in flexible learning and to develop a profile in teacher education where we enhance the focus on the student role; the student as a proactive actor in their own learning processes.

At **Luleå University of Technology** new ways of working in higher education have always been sought. For instance, a number of programmes and parts of programmes have first been developed at LTU to later be found all around Sweden. Thus, LTU has a record of acting entrepreneurially and also has the ambition to continue to be an entrepreneurial university.

Even though the research subject entrepreneurship was not present at LTU before 2006, entrepreneurship research and entrepreneurship education has been present long before this. For instance, venture development courses have been offered since 1995 with very good results in terms of the students of these courses being successful

entrepreneurs. More recently, LTU has put together a comprehensive package of resources for the prospective entrepreneur under the LTU Innovation umbrella. We also still have a number of courses for students about venture creation and development.

Regarding non-business aspects, and especially linked to entrepreneurial learning as a general pedagogic tool for developing student motivation, creativity and responsibility to make them dare and engage in novel activities in all situations, LTU has been quite active the last couple of years. First, we have worked regionally with entrepreneurship in the teacher education including graduated teachers presently teaching in the school system. While the project had problems engaging the faculty and students in teacher education at LTU, it was a success among practising teachers. When the Swedish school agency announced that they will be working with entrepreneurial education in Sweden as a whole, the curriculum for the education was developed by LTU faculty. Based on this curriculum, LTU have performed numerous courses for teachers in the school system, regional development staff and also for students, staff and faculty at LTU.

At LTU, collaboration involving different research and education subjects, industry, schools, government and other actors has always been strong. Even though the experiment with Arenas – implying organising activity based on cross-functional collaboration around general themes – only have resulted in limited success in terms of functioning arenas, it has helped LTU to be better collaborators. At LTU, it is close between research subjects and industry is often involved in our projects. This has resulted in courses where entrepreneurship faculty hold workshops on entrepreneurship related issues in areas such as health care, experience production, freelancing and different technology sectors. In terms of cross-border collaboration, LTU together with University of Lapland in Rovaniemi have coproduced a tourism entrepreneurship course where students and faculty “toured” Finnish and Swedish Lapland visiting (and staying with) entrepreneurs and meeting business facilitators to get their view on doing business in the tourism sector in this region.

Besides research and education in entrepreneurship, there are many activities at LTU that are aimed at promoting LTU as an entrepreneurial university. Many of these activities are found under the DARE umbrella. Sample activities include “the entrepreneur week”, prizes for spin-offs and entrepreneurial educators and “the entrepreneurial classroom”.

In 2009, the Lapland University Consortium (LUC) was composed of three higher education institutions: **Kemi-Tornio University of Applied Sciences (K-TUAS)**, Rovaniemi University of Applied Sciences and the University of Lapland. In the beginning of 2014, the two universities of applied sciences formed **Lapland University of Applied Sciences (Lapland UAS)**. The establishment of the consortium affected the role of each member in the region. LUAS and its engineering education located

at Digipolis Technology Park where about 40 technology-based companies and organisations operate, is in charge of the development of Industrial Lapland. Over the years, LUAS has actively influenced the growth of the region through numerous RDI (research, development and innovation) projects and activities. Changes in the operating environment, the economic fluctuations and changes of the technological trends have emphasised the need for new local entrepreneurs and entrepreneurship with local customers. According to research, only locally established companies seem to be able to engage with the long-span development of the region. The entrepreneurial activity of engineering graduates is fairly low (0% to 2% of the graduates); therefore, new pedagogic approaches are needed as well. As it has been researched in the InnoPreneurship project, changing entrepreneurial behaviour requires new structural approaches in the context of teaching and learning entrepreneurship. The developed educational framework is to be implemented in the curriculum but to advance requires changes in the strategic operations and activities of the university as a whole. There is a need to build up co-operation between Northern universities in entrepreneurship for accomplishing results and building entrepreneurial operating environment.

Lapland University of Applied Sciences has developed a few practical entrepreneurship education events such as InnoMaraton, a 3 ETCS course, for familiarising participants with local companies and creating ideas. In addition, at Digipolis a DesignMaraton was conducted in autumn 2010 following the same concept. Students from K-TUAS engineering education and Lapland University faculty of arts operated in teams for finding solutions for assignments. The engineering education of LUAS has started to expand action based learning in its education as a part of CDIO project since autumn 2009. CDIO (conceive, design, implement, operate) is an international framework and network, started in 1990s at MIT, for developing engineering education. As a result of the CDIO project a curriculum renewal is aiming to create a new framework for the whole education. For supporting the development, LUAS joined the international CDIO network in summer 2011. Based on the research work conducted in the InnoPreneurship project it is understood that action based learning methods can be utilised for reaching the objectives of entrepreneurship education as well.

The University of Oulu is an international research and innovation university engaged in multidisciplinary basic research and academic education. The University of Oulu is one of the largest universities in Finland with an exceptionally wide academic base. Internationally pioneering research is conducted as a collaboration of different disciplines. The University encompasses eight fields of study: Humanities, Education, Economics and Business, Science, Medicine, Dentistry, Health Sciences, and Technology. In all, more than 70 different specialist disciplines are represented. In Oulu, the university operates on two campuses: Linnanmaa and Kontinkangas. The fields of information technology, biotechnology, northern and environmental issues have been defined as special research focus areas. The university cooperates closely with industry and

commerce, and has broad connections with hundreds of international research and educational institutions.

The strengths of University of Oulu are its broad academic base, top-level research in its chosen focus areas, and quality education. The university promotes advanced research, education and culture, and strengthens the knowledge and skills base leading to enhanced wellbeing. Its activities ensure the availability of a highly-trained specialist workforce and research capacity.

At IEM (Industrial engineering and Management), there are currently three main research areas: 1. Industrial Management, 2. Work Sciences 3. Quality and Project Management. Each focus area is managed by responsible senior professor. Industrial Management research area focuses on four sub areas including Business and Strategic Management, Innovation Management and New Product Development, Operations Management, and Supply Chain Management and Logistics. The Business and Strategic Management research area focuses on problems of starting and developing small and medium-sized enterprises (SMEs), as well as problems of larger business entities and public sector organisations. In recent years, an extensive amount of original research has been conducted on ICT based Business Processes and on Knowledge Management. In addition, applied Business Management research has been conducted in different industries, resulting in the development of co-operation models and between organisation networking processes. The SCM and Operations Management research areas are focusing on the analysis of value chains across multiple organisations which connect their work to that of the Business Management research discussed above. In addition, the SCM area also focuses on developing models for more effective manufacturing, which, in turn, reflects to the research conducted inside one organisation – the research focus of Operations Management, which consists primarily of the optimisation of operations and processes. New Product Development and Innovation research area is the newest research area in the DIEM, but the one with probably the greatest current interest. It is focusing on four main research areas currently: Product development inside an organisation, Product development co-operation between several companies, commercialising the results of these product development efforts and higher growth, international business ventures based on innovation and technology commercialisation

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Enhancing entrepreneurship and developing an entrepreneurial mindset and behaviour are a common challenge throughout Northern Scandinavia. Several studies have shown that the economy's prosperity and growth strongly depends on the entrepreneurship sector. Even though the general attitude towards entrepreneurship has become more positive, higher education organisations are still struggling in developing ways to increase entrepreneurship among academics and non-business students.

The consortium of four HEIs, Luleå University of Technology, University of Nordland, University of Oulu and Lapland University of Applied Sciences, conducted a project Inno-Preneurship 21 (2012–2014) for intensifying the cross-border collaboration, and finding ways to establish lasting co-operation between different actors in practice in the field of entrepreneurship education.

This publication describes the collaboration process, background, implementation and outcomes of InnoPreneurship 21 project. Additionally, the report opens new aspects for developing entrepreneurial competences in HEIs.



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