

Marja-Liisa Neuvonen-Rauhala (ed.)

INNOVATION AND ENTREPRENEURSHIP IN UNIVERSITIES

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LAHDEN AMMATTIKORKEAKOULU
Lahti University of Applied Sciences

Marja-Liisa Neuvonen-Rauhala (ed.)

**INNOVATION AND ENTREPRENEURSHIP
IN UNIVERSITIES**

**The Proceedings of the 3rd
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A Research reports

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FOREWORD

The theme of the third international FINPIN Conference 2010 was: Entrepreneurship and Innovation in Universities. Despite of the very unexceptional challenges of the arrangements - such as the threat of swine flu pandemic, global recession, and last but not least the volcanic ash cloud from Iceland – the conference once again was successful and rewarding according to the feedback. The aim of the FINPIN conferences is to create opportunities for teachers, researchers and practitioners to meet and share experiences of promoting entrepreneurship issues and also more often innovations. These conference proceedings introduce a collection of articles based on presentations at the conference to continue discussions.

It seems that in the promoting entrepreneurship and innovations we promoters are returning to basics: How the pedagogy of entrepreneurship education and learning environments should be arranged for achieving the best results for all the actors. The pedagogical issues for the entrepreneurship education are discussed from many interesting point of views. In close connection to the pedagogical studies also measuring and evaluating the results of the entrepreneurship education are suggested in many articles. The third part of the proceedings articles tackle very concretely with cases that present, how pathways to entrepreneurship should be supported and how the cooperation with enterprises could be arranged by implementing the idea of the triple helix models. The essential nature of the entrepreneurship education is very practical, therefore the collection of articles in these proceedings represents both the theoretical and research-based approaches together with more practical case studies. By combining these two approaches we would like to encourage researches and practitioners to share their approaches in a fruitful ways with each other – also in forthcoming FINPIN conferences.

The next - the fourth one - FINPIN conference is planned to be arranged in 2012 in Münster, Germany. The forthcoming conference will continue the main idea of FINPIN and its conferences in introducing how theories are implemented into practice, and how real enterprises are established by the exploitation of theories and entrepreneurship education. Meanwhile we hope for rewarding reading experiences and further ideas for developing new practices in promoting entrepreneurship and innovations in universities, and looking forward to cooperation in preparing the forthcoming conference.

As the Chair of the FINPIN Steering Committee and as the editor of the proceedings we would also like thank warmly all the reviewers: Lecturer in entrepreneurship and enterprise, Dr. Sarah Ingle (Dublin City University, Ireland), Professor Noel Lindsay (University of Adelaide, Australia), Professor Miroslav Rebernik (University of Maribor, Slovenia), Professor Jaana Seikkula-Leino (Lappeenranta University of Technology & University of Turku, Finland), Principal Lecturer, Dr. Vesa Taatila (Laurea University of Applied Sciences, Finland), Director, Drs. Henk J. Schout (The Hague University of Applied Sciences, the Netherlands). Thanks belong also to other fellows of the Advisory Board for their contribution in preparing the programme: Dean, Dr Kari Ristimäki (Seinäjäski UAS, Finland), Professor, Dr Thomas Baaken (Münster UAS, Germany), President, Dr Jussi Halttunen (Jyväskylä UAS, Finland), Director, Dr Saskia J.M. Harkema (The Hague UAS, the Netherlands), Director Sakari Kuvaja (FINPIN), President, Dr. Vesa Saarikoski (North Karelia UAS, Finland), and Dr Ralph Sichler (Wiener Neustadt UAS, Austria). Thanks also to Till Baaken, Anne-Mari Lehtinen and Erno Hokkanen in preparing the proceedings ready for

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**PEDAGOGICAL APPROACHES AND NEW LEARNING
ENVIRONMENTS FOR ENTREPRENEURSHIP AND
INNOVATION EDUCATION**

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ONLINE LEARNING AND SUSTAINABILITY: A NEW APPROACH FOR ACADEMIC EDUCATION IN DEVELOPING COUNTRIES

Abstract

The higher degree of access to the IT tools, such as personal computers, Intranet, Internet and the World Wide Web, in the last three decades resulted in the creation of a new type of economy. This new economy has different characteristics than the classical one. The term “e-globalized economy” was proposed to describe the dynamics behind such an economy. One area which has been touched by this “e-Globalization” transformation of the economic environment in recent times is education. Academic programs for teaching and examination can now be made available online for remote and ad libitum access on a global scale. In that context, discussing the issue of sustainable development becomes important. The sustainability concept touches on various areas of human activities including education. In the e-globalized economy the focus is on producing a sustainable growth where humanity, on global scale, can benefit from such an economy without bringing about undesired negative environmental consequences.

In this paper, we argued that obtaining sustainable development in academic education is feasible through the extensive utilization of online learning. In the world of today, online universities and institutions can help in spreading knowledge across the globe. Moreover, online learning can help us in educating a larger group of people without investing heavily in educational infrastructures such as traditional offline schools and universities. In our analysis, we found that the online learning is able to address major problems, which undermine the spreading of traditional offline academic learning in the developing countries. Among these are: costs of education infrastructure, costs of transportation infrastructure, quality of text books and other learning material, as well as the quality of teachers and university instructors.

Keywords: e-globalization, online education, online universities sustainable development, developing countries

1. Introduction

Online education has been a remarkable development in higher education and especially in USA. In the American post-secondary system, there has been an increase of around 12-14 per cent per year on average in enrollments for fully online learning over the five years period 2004-2009 (cs. Smith and Mitry, 2008). The term “E-learning (also electronic learning or eLearning)” encompasses all forms of Technology-Enhanced Learning (TEL) or very specific types of TEL such as online or Web-based learning (Fox et al, 2007). Eom et al. (2006) pointed out that there are fundamental differences between classic offline education and the Internet based one. Internet-based e-learning systems place more responsibilities on learners than classic face-to-face learning systems. Maack et al (2010) discussed the quality of e-learning in relation to entrepreneurship and

innovation courses, while Hedner et al (2010) looked at the new pedagogic approaches practiced in learning these disciplines in the Swedish universities. Pedagogical research has supported the possibility that learning and student satisfaction are always positively correlated to the extent and the quality of the dialogue between the course participants and the instructor (Bloom, 1956; Specht, 1985). The analysis of the cost of operating the various educational offline and online program reveals that online class rooms has so far been more costly as compared to larger campus classrooms (Smith and Mitry, 2008). The terminology “e-globalization” describes the conditions where the dispersal economy is the dominant business environment (Abouzeedan and Lejion 2004, Abouzeedan 2005). The concept of the “Internetization management”, as an operational paradigm, is related to this economic shift (Abouzeedan and Bulser 2003).

Several researchers have predicted a significant change in all aspects of academic education and training with the penetration of Internet technologies into almost all aspects of society (cf. Brandon and Hollingshead, 1999). The research design dimensions include a wide range of constructs that affect effectiveness of e-learning (Eom et al., 2006). Among such constructs are: technology learner control, learning model, course contents and structure and interaction, objectives/expectations and finally course infrastructure (ibid). Klofsten et al. (2009) examined the transfer of good practices in entrepreneurship education as originated from Linköping and spread to other regions in Sweden. The topic of how organizations are structured has received wide attention (cs. Katz and Gartner, 1988) proposed a model to understand properties of the organization being formed. The central properties proposed in the *Katz and Gartner* model are impacting also the structures and build up of educational organizations as well as universities.

The first section is a general introduction. In the section we discuss the advantages of the online learning approach to education while in the following section we look at the disadvantages of such method. In the fourth section we discuss the usage of online education as a candidate to full sustainable development conditions. In the last section we draw our conclusions.

2. Advantages of online education

Online education brings about clear advantages over traditional education in many respects. Among these advantages are four important ones. These are; ability of online education to reach a larger number of students, reduced cost to the students, flexibility of online education concept and the educational quality issue.

Ability of online education to reach more students

The only advantage of online learning, as claimed by Smith and Mitry (2008), is the ability to reach more students in diverse locations and circumstances. In contradiction to this view, it is argued that there are also other important advantages related to online education as we will see later. One of these is the issue of the availability of education to the wider population. This is the most important aspect of online education. Online education allows for a large number of students to obtain a reasonable academic level of knowledge. This is even more significant when other options of offline education are not possible to pursue due to various reasons including the lack of resources.

Cost of online education to students

The full cost for educational programs must take in account opportunity costs for the students and those of potential public sponsors (cs. Green and Baer, 2001). The key cost factor in online degree programs is the expert faculty member time allocated per student (cs. Smith and Mitry, 2008). A couple of studies performed on behalf of *Alfred P. Sloan Foundation* found that the time allocation per student is the major determinants of the cost of online programs (Carr, 2001). By significantly limiting the involvement of the original content expert on equivalently credentialed instructors, the program administrators can easily reduce the cost by hiring less qualified learners (or teachers) (Smith and Mitry (2008).

Flexibility of online education

One of the clear advantages of online education is its flexibility as compared to offline education. One can construct more balanced courses and programs. As Eom et al (2006) pointed out; course structure is an extremely important variable that has an impact on the success of distance education. Course objectives/expectations need to be specified in the course syllabus including; what areas are to be learned, required work load in competing assignments, expected class participation in the form of online conferencing system, group project assignments (ibid).

The educational quality issue

There is a concern about the quality of education in e-learning context. The flexibility and academic freedom for immediate judgment on student performance is not possible on a recorded online distance education. This is even more important when the instructors are not authorized to alter the context of the course of the examination method since only the course developer is authorized to do that (Smith and Mitry, 2008). This is why, it is important for the administration of the online institute to give more freedom for the instructor in choosing the text book and other instructional material to suite their courses (ibid).

3. The disadvantages of online education

Despite the previously listed advantages of online education, there are some disadvantages of this form of education. These include; higher costs of programs and courses, quality of teaching staff, physical separation of students from their instructors and self-motivation requirements in online education.

Costs of programs and courses

Many researchers stressed that equal quality online programs will never be as cost effective as large classrooms (Navarro, 1998). The per capita cost of providing online learning, where class sizes are limited to a smaller number of students, is higher than providing on ground classrooms with larger class sizes (Smith and Mitry (2008). The fixed cost, for universities, of classroom is not a consideration in the comparison when discussing online classes versus on ground classes.

Also, no significant economies of scale exist for online programs since the major cost is not the infrastructure but the variable cost of the hours spent by faculty members (ibid).

Quality of teaching staff

In online education, contact between the student and the instructor is less than in the offline classes. Taylor (2003) described the implementation and management of staff development for online education. Students perceive learning from other courses to be related to the amount of discussion actually taking place in these courses (Picciano, 1998). The single largest cost component for online program is faculty salaries. Many schools, who are making a lot of profit from online programs, replace their few full-time faculty members with academic degrees from high ranking universities with less qualified part-time facilitators with inferior or questionable credentials (cs. Smith and Mitry, 2008).

Physical separation of students from their instructor

When comparing the online degree program to the traditional classical classroom-based programs, the former has an important disadvantage in that respect. Namely, the online education is based on self-study and thus lacks any extensive dialogue with the expert faculty (cs. Perelman (1992). However, Smith and Mitry (2008), stressed that the interconnectivity of the internet does provide for extensive dialogue between the professor and the student whether synchronous or asynchronous. The use of virtual facilities such as chat rooms and downloadable overhead presentations with speak programs has become widespread and can be used in an educational context (cf. Carlson, 2004; Huntley and Mather, 1999). However, these facilities are less-valued substitutes for high-level cognitive interactivity (cf. Drucker, 2000; Duus and Nielsen, 1999; Pettersson and Heede, 2000). The problem of the physical separation between the student and the instructor can lead to a drawback when it comes to the ability of the student to discipline his/her study rhythm.

Self-motivation requirements in online education

Self-motivation of students plays a vital role in the success of the online education (Eom et al., 2006). The core demand of successful self-regulated learning is the existence of self-motivation (Smith, 2001). Self-motivation, according to Zimmerman (1985, 1994), is the self-generated energy that gives behavioral direction towards a particular goal. Two factors affect the learner's self-motivation namely self-regulatory attributes and self-regulatory processes (Eom et al., 2006). The self-regulatory attributes are the learners' personal learning characteristics including self-efficacy (ibid). Self-efficacy, according to Bandura, 1977, is situation-specific self-confidence in one's abilities. Research literature clearly indicates that those students with strong self-motivation will be more successful in their online programs than the less motivational students (cf. Frankola, 2001; LaRose and Whitten, 2000).

4. Online education for sustainable development

One result of the popularizing the new educational technologies is that teaching is moving from its traditional face-to-face (F2F) form to other new constructs (cs. Yueh and Hsu, 2008).

In this paper, we argue that online education is able to fulfill the educational needs for a world population as compared to the traditional classical education and is capable to respond, in more flexible ways, to issues of sustainability and sustainable growth and to solve problems that offline education cannot tackle. In this paper we shall discuss four major problems including: costs of educational infrastructures, costs of transportation of infrastructures, quality of text books and learning materials and quality of teachers and instructors.

Costs of education infrastructures

Classical infrastructure of traditional education institutions have a highly elevated overhead costs which are beyond the capacity of most of the developing countries. Online education can be build up with far less overhead costs than the classical infrastructure. In online education, all what is needed are administrative units and their supportive structures and there is no need for physical classrooms to bring together the instructors and their students.

Costs of transportation infrastructures

Classical education requires working and efficient physical networks of roads and other transportation infrastructures. These are needed to facilitate the movement of students between their residencies and the schools and educational institutions. Online education, on the other hand, enables students to receive education while studying at their homes. This implies a need to build up the electronic communication networks in the developing countries. However, it is more feasible and possible to investment in such networks than investing in roads, bridges, railroads and other transportation infrastructure means.

Quality of text books and other learning materials

In classical education there is a need for high-quality textbooks. These are usually very expensive. International versions of the text books issued by many established publishing houses are still far beyond the buying capacities of most of the students in the poorer countries. The online education can function by directly reading textual material from the screen of the computer or by printing out the needed information using less costly printing techniques.

Quality of teachers and instructors

Smith and Mitry (2008) argued that, the people used in online education to supervise courses are less qualified than instructors used in standard offline teaching settings. The two writers argued that such facilitators or instructors would rarely be considered for full-time faculty positions in high quality academic settings, and would certainly not be considered for tenure-track positions (ibid). The said is truer within the context of the classical education model. Using online teaching techniques, a qualified teacher can reach larger number of students and thus remedy this problem. A lot of academicians who are in their retirement age may be interested in part-time teaching, across national borders.

Table 1. Problems of education in developing countries and the online education capacity to solve them

The problem	How online education would solve it
Costs of education infrastructures	Online education can be build up with far less overhead costs than the classical offline education. All what is needed is administrative buildings and their supportive units. There is no need for physical classrooms.
Costs of transportation infrastructures	Online education enables students to receive education while staying in their homes and residences.
Quality of text books and other instructional materials	In the online education, students can read from the screen of the computer or by printing out the needed information using less costly printing techniques.
Quality of teachers and instructors	Using online teaching techniques, a qualified teacher can reach larger number of students. One can also benefit from retired professors for teaching across national borders.

We summarized in, Table 1, the arguments we presented above about the ability of the online education to solve the four major problems facing the education sector in developing countries.

5. Conclusions

Modern economy is going through a shift caused by information Technology revolution. A higher degree of availability of IT tools, such as personal computers, Intranet, Internet and the World Wide Web, in the last three decades resulted in the creation a new type of economy. Contemporary researchers are foreseeing a transformation of the classical scale economy to this new type of economy due to the impact of the IT. This new economy has different characteristics than the classical one, and it has been labeled as the *e-globalized economy* (Abouzeedan and Leijon 2004; Abouzeedan 2005).

One area which has been increasingly influenced by the transformation of the economic environment is *sustainable development*. The *sustainability* concept touches on various areas of human activities. In the e-globalized economy the focus is on producing a sustainable economic growth where humanity, on global scale, can benefit from such an economy without bringing about undesired fallout. One area in which such fallout can occur is in education. Initiating a feasible sustainable growth in the developing countries demands a sound and well-thought-of education system. The available educational infrastructures can either be offline or online Internet-based learning systems.

In this paper, we argued that obtaining sustainable development is feasible through the extensive utilization of online learning. In the world of today, online universities and institutions can help in spreading knowledge across the globe. More over, online learning can help us in educating larger groups of people without investing heavily in educational infrastructures such as traditional offline schools and universities. From our analysis, we advocate that online learning may be able to tackle major problems, which undermine the spread of traditional offline learning in the developing countries. Among these are four most important. They include: costs of education infrastructures, costs of transportation infrastructures, quality of text books and other learning material, and quality of teachers and instructors.

Future research need to investigate the connection between e-leaning and sustainability on an empirical level.

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THE ENTREPRENEURSHIP EDUCATION: CHALLENGES AND DEVELOPMENTS – CASE STUDY

Abstract

Facing the present boosting of the entrepreneurship and innovation role in the actual society, especially in the higher education field, the Polytechnic Institute of Leiria (IPL), in 2006, proceeded to the integration of the entrepreneurship and innovation subject in most of their graduation programs. This inclusion, combined with a wide range of parallel action as workshops, seminars, ideas competitions and business plans, road shows, among others, aimed to boost an entrepreneurial culture, to enlarge the entrepreneurship skills of their students, and to promote the increase of the number of spin-offs and new businesses created, not only during the graduation period but especially after graduation.

The authors carried out a methodological study of topics related with the current entrepreneurship and innovation education in the IPL, focusing on the following areas: engineering, management and business studies, arts and design, maritime and health studies. This study was designed to determine the impact of each of the above-mentioned initiatives toward creating an entrepreneurial culture in the academy. Results suggested a clear increase of indicators such as: number of supported business projects, number of incubated spin-offs, number of technology-based enterprises created, number of virtual incubated projects. The entrepreneurship education process also resulted in significant changes on the way teachers and trainers looked to this subject, and allowed them improve their own skills of teaching, being challenged by new strategies of learning-by-doing and learning-by-interacting, far different from the usual lectures based on a learning-by-learning methodology.

Keywords: Entrepreneurship, Innovation, Entrepreneurial Culture, Higher Education

1. Introduction

The Polytechnic Institute of Leiria (IPL) is a Portuguese higher education institution that acts at the training field, research and development, and community services. This Institute was created in 1980, and includes five higher schools with the follow main fields of actuation: Education and Social Sciences, Technology, Management, Fine Arts and Design, Maritime Technology, Tourism and Health Sciences. The Institute has currently about 800 teachers and 11 000 students, distributed by under-graduation, graduation and master programmes.

Taking into account the new role of the higher education institutions as social development mediators, the IPL felt the need to adopt a sustainable strategy to promote entrepreneurship. (Finkle, T.A., 2009, 35-53), (Jyothi, P., 2009, 39-43)

2. Methodology

The Polytechnic Institute of Leiria is a young institution, where the entrepreneurial spirit of its academic universe early flourished. In order to face nowadays global crisis and aiming the economic growth, the implementation of initiatives that develop the entrepreneurial spirit among its students, teachers and staff gradually increased the number of business projects among others.

Since the year of 2006, the Polytechnic Institute of Leiria proceeded to the gradual integration of the Entrepreneurship and Innovation subject in most of their graduation programs, starting by the area of Tourism and Fine Arts and Design, namely in the graduation programs of *Tourism*, *Tourism and Recreation* and *Sound and Image*.

In a second phase, several areas were included in this group as presented in table 1.

This subject is taught mainly by qualified teachers and trainers in the field and some experts are invited. During the semesters entrepreneurs (students) are supported by coaches, mentors or trainers for developing their own projects.

Creating an entrepreneurial culture must be closely followed by the training of the teaching and non-teaching IPL's staff in this area, which has already given some results, as for example the internal growth of experts that are able to coach and promote entrepreneurship innovative actions.

Table1. Distribution of Number of students in the IPL graduation programs

Areas	Graduation Programms	Graduation Programs with Entrepreneurship and Innovation subject (Number students 2006, 2007, 2008)
Education and Social Sciences (ESS)	<ul style="list-style-type: none"> • Cultural Animation • Media and Multimedia Education • Sports and Well-Being • Primary Education • Social Education • Human Relations and Organizational Communication • Social Work • Translation and Interpretation Portuguese/Chinese - Chinese/Portuguese 	<ul style="list-style-type: none"> • Cultural Animation (27, - , -)
Technology (Tec)	<ul style="list-style-type: none"> • Biomechanics • Energy and Environment • Automotive Engineering • Civil Engineering • Electrical and Electronics Engineering • Mechanical Engineering • Computer Engineering • Computer Sciences for Health Care • Civil Protection • Health Equipment Technology • Food Engineering 	<ul style="list-style-type: none"> • Biomechanics (- , 33, 45) • Energy and Environment (- , - , 2) • Automotive Engineering (- , 27, 21) • Civil Engineering (- , 85, 45) • Electrical and Electronics Engineering (- , 65, 50) • Mechanical Engineering (- , 21, 24) • Computer Engineering (- , 32, 44) • Computer Sciences for Health Care (- , 15, 10) • Health Equipment Technology (- , 25, 35)
Management (M)	<ul style="list-style-type: none"> • Public Administration • Accountancy and Finance • Management • Marketing • Legal Counseling 	<ul style="list-style-type: none"> • Public Administration (- , 10, 18) • Accountancy and Finance (- , 28, 33) • Management (- , 158, 130) • Marketing (- , 60, 50) • Legal Counseling (- , 5, 43)
Fine Arts and Design (FAD)	<ul style="list-style-type: none"> • Fine Arts • Interior and Spacial Design • Design - Ceramics and Glass • Design - Graphics and Multimedia • Industrial Design • Sound and Image • Theatre 	<ul style="list-style-type: none"> • Fine Arts (51, - , -) • Interior and Spacial Design (- , - , 1) • Design - Ceramics and Glass (- , 15, 10) • Design - Graphics and Multimedia (- , 18, 73) • Industrial Design (- , 34, 37) • Sound and Image (30, 98, 45)
Maritime Technology (MT)	<ul style="list-style-type: none"> • Biotechnology and Marine Biology 	
Tourism (Tur)	<ul style="list-style-type: none"> • Leisure Management and Business Tourism • Tourism and Hotel Management • Marketing for Tourism • Restaurant Industry and Catering • Tourism • Tourism and Recreation 	<ul style="list-style-type: none"> • Tourism and Hotel Management (109, 45, 59) • Marketing for Tourism (- , 15, 30) • Restaurant Industry and Catering (- , - , 16) • Tourism (31, 44, 30) • Tourism and Recreation (- , 1, -)
Health Sciences (HS)	<ul style="list-style-type: none"> • Nursing 	<ul style="list-style-type: none"> • Nursing (- , 114, 137)

3. Results of the new subject inclusion

According to the figure 1 it can be noticed a good students acceptance of the Entrepreneurship and Innovation subject in most of the graduation programs. This process includes two different regimes: optional and compulsory. The decreases in terms of the student' number in some programmes comes naturally from the demographic existent decrease in Portugal that confines the number of students in the higher education system and presents the lower value in the academic year of 2007/2008.

The graduation programmes of Sound and Image, Industrial Design and Design - Graphic and Multimedia in the area of Fine Arts and Design stand out, specially the two last ones that present a growth rate of students number of 9 % and 305 % respectively, between the years of 2007 and 2008. In the area of Tourism we can mention the programmes of Tourism and Hotel Management and Marketing for Tourism, with growth rates of student number between years 2007 and 2008 of 31 % and 100 % respectively. It is also of pointing out the strong interest of Nursing students on the subject, from the area of HS (growth rate of 20 % between 2007 and 2008). At the Management areas although the course of Management present the largest number of students, the growth rates in the programmes of Legal Counseling (760 %) and Public Administration (80 %) were the most significant. In the area of Technology the follow engineering programmes presented the most relevant growth rates: Health Equipment Technology (40 %), Biomechanics (36 %), Computer Engineering (37,5 %) and Mechanical Engineering (14 %).

Additionally a wide range of parallel action as workshops, seminars, business ideas and business plans competitions, among others, where developed and implemented. Mainly, these initiatives where promoted by an internal Technology Transfer Information Centre and the Entrepreneurial Centre. The first one is an organic unit that provides services to support companies, to promote business projects and create technology transfer between the institution and industry. The Entrepreneurial Centre is responsible for the promotion of technological entrepreneurship within the IPL environment, by implementing activities to develop an entrepreneurial culture, and to support and follow up innovative proposals.

Knowing promoters' difficulties on defining a business plan for its project, a crucial element to access financing sources and incubation, IPL is partner of two local Enterprise Incubators, participating actively on the incubation process. This process comprehends two stages: a first stage of "virtual incubation" (in the IPL) and a second stage of "physical incubation" (in the Enterprise Incubator). In the first stage promoters fill in an application form where business idea is described and then evaluated by an independent panel of experts. If there is a positive evaluation promoters have the support of the Entrepreneurial Centre of the IPL on working up the Business Plan. In case of an adverse evaluation promoters can always have support to improve the business idea. After working up the business plan promoters are prepared to apply the second stage: the "physical incubation", in the enterprise incubator. (Culkin, N, 2009, 73-79), (Lee, K, 2009, 666-673)

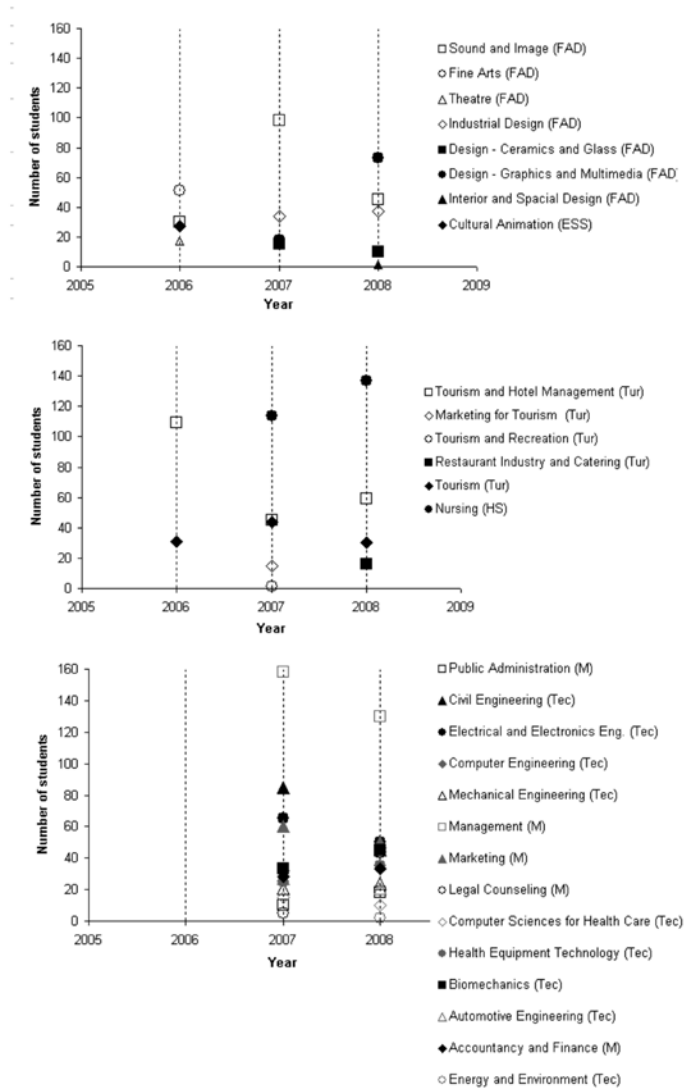


Figure 1. Distribution of Number of students per graduation programs in the period of 2006 to 2008

The new entrepreneurs's projects can benefit from support mechanisms provided by IPL that established funds to support the knowledge valorisation process (intellectual property protection). The funds are raised through agreements, partnerships, associations, bank entities, risk capitals, business angels and entrepreneurial associations, among others. (Table 2)

Table 2. Indicators: intellectual property applications, number of created technology-based enterprises, number of created spin-offs and number of services to the community

		2006-2007	2007-2008	2008-2009
Intellectual Property (Applications)	Patents	-	4	-
Intellectual Property (Registered)	Patents	-	-	4
	Provisional patent applications	-	-	18
	Industrial design rights	-	3	-
	Trademarks	-	2	1
	Direitos Autor	-	2	1
Number of Technology-Based Enterprises	Virtual incubation	-	1	4
	Physical incubation	-	2	-
Spin-Offs		-	1	5
Services	Proposals	1	18	30
	Approved proposals	-	9	20

4. Teaching entrepreneurs: New challenge

The entrepreneurship education process also resulted in significant changes on the way teachers and trainers looked to this subject, and allowed them improve their own skills of teaching, being challenged by new strategies of learning-by-doing and learning-by-interacting, far different from the usual lectures based on a learning-by-learning methodology. In order to achieve this propose, teachers and trainers were invited to be part of a formation program based on a “leaning by doing” methodology that allow to learn through team experiences, allowing to acquired or develop a set of entrepreneurial competencies.

This methodology is very different from the conventional teaching methods and bases on an experimental approach applied to class or outdoor activities that offers continuity from one experience to another. The teacher or trainer role is to support and orient students in the learning process and not only to provide them information and knowledge. The main focus is now the student and the understanding of this person. With this methodology the student has the responsibility of its own learning focus and teacher or trainer should provide the environment and support to facilitate this process.

The main class activities included actions of group discover, entrepreneur picture and unexpected questions. Further activities as ideas brainstorming, business plans, “entrepreneur for a day activity” (outdoor activity where students implement their own business for a day) and a lunch with the presence of invited entrepreneurs where carried out. These activities were replicated with the students of the Entrepreneurship and Innovation subject. (Carvalho, L. et al., 2008)

5. Conclusions

A sustainable strategy for the stimulation of entrepreneurship in the Polytechnic Institute of Leiria was established and one of the actions that was implemented in this scope, since the year of 2006, was the gradual inclusion of the Entrepreneurship and Innovation subject.

During the period of 2006 to 2008, stimuli, incentive and support was given to the participation of members of the teaching staff in projects for the transfer of technology and knowledge and entrepreneurship.

Several indicators are presented, as intellectual property applications, number of created technology-based enterprises, number of created spin-offs and number of services to the community. All of them revealed a clear increase and denote a strong commitment of the Polytechnic Institute in develop essential skills, capabilities and attitudes towards entrepreneurship.

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SOCIAL MEDIA IN ENTREPRENEURSHIP - NEW LEARNING SOLUTIONS

Abstract

This case study is based on experiences of the SaTaVa project. SaTaVa aims at empowering and encouraging students to become entrepreneurs, as well as improving networking between entrepreneurs and teachers at Satakunta, Tampere and Vaasa Universities of Applied Sciences. One of the main objectives of the project is to plan, to build and test a new innovative entrepreneurial learning environment. This paper introduces social media as a new way of teaching and learning entrepreneurship. We also make some conclusions based on the results and experiences gained already from SL learning environment, the new e-learning environment in SaTaVa project. Facebook and Second Life environments were chosen as the entrepreneurship-promoting social media for this study.

The traditional entrepreneurship education on the basic level has emphasized obligatoriness earlier. Every student is given the knowledge of the basic level about the entrepreneurship matters. However, this has not led to the increase in the university entrepreneurship. Social media creates and opens new viewpoints for entrepreneurship education. With the combination of traditional classroom training, mentoring and on-the-job training and with the strong supported personal study plan for entrepreneurship, social media can offers new perspectives for the student to develop entrepreneurial skills and get the best out of the whole learning process.

Social media can be a remarkable tool, both for producing and consuming incredible amounts of information. Activities in social media activity increase all the time and environments like Facebook, You Tube, Skype, Second Life, blogs communities, Twitter or any other service, are nowadays more or less a part of the infrastructure in organizations. But pedagogically, can we find right tools, and can we build right educational solutions, which would lead to the increase in entrepreneurship activity amongst students? How would teaching, which is based on traditional methods, change? In this paper we will study new learning environments for entrepreneurship more deeply. Especially links between student entrepreneurs and social media will the focus of our attention. What we are presenting in this paper represents only the very beginning of a long process. Social media, and in particular its exploitation in entrepreneurship education is an area that have not been studied extensively as yet.

Keywords: social media, learning solutions, e-learning, entrepreneurship education, student entrepreneurship

1. SaTaVa-project develops new solutions for entrepreneurship training

SaTaVa project is a research and development project in the field of entrepreneurship. The project started in autumn 2008 and will continue until the end of year 2010. The goal of the project is to investigate challenges that remain in teaching entrepreneurship in higher education. The project partners are Satakunta, Tampere and Vaasa Universities of Applied Sciences. The principal target groups of the project are the teaching and R & D staff of the participating universities, their present and future students, and the enterprises already running in the incubators. The aim of the project is to promote innovative preconditions of the participating institutes of higher education and research institutes by creating a common, innovation and learning environment for entrepreneurship. Participating universities fulfill each other's knowledge and they look for the best practices for student-driven entrepreneurship with the commitment of building a real enterprise not only for studying for a degree. In addition, the participating institutions within SaTaVa test new entrepreneurship-promoting activities, which have not been tried before in these institutions.

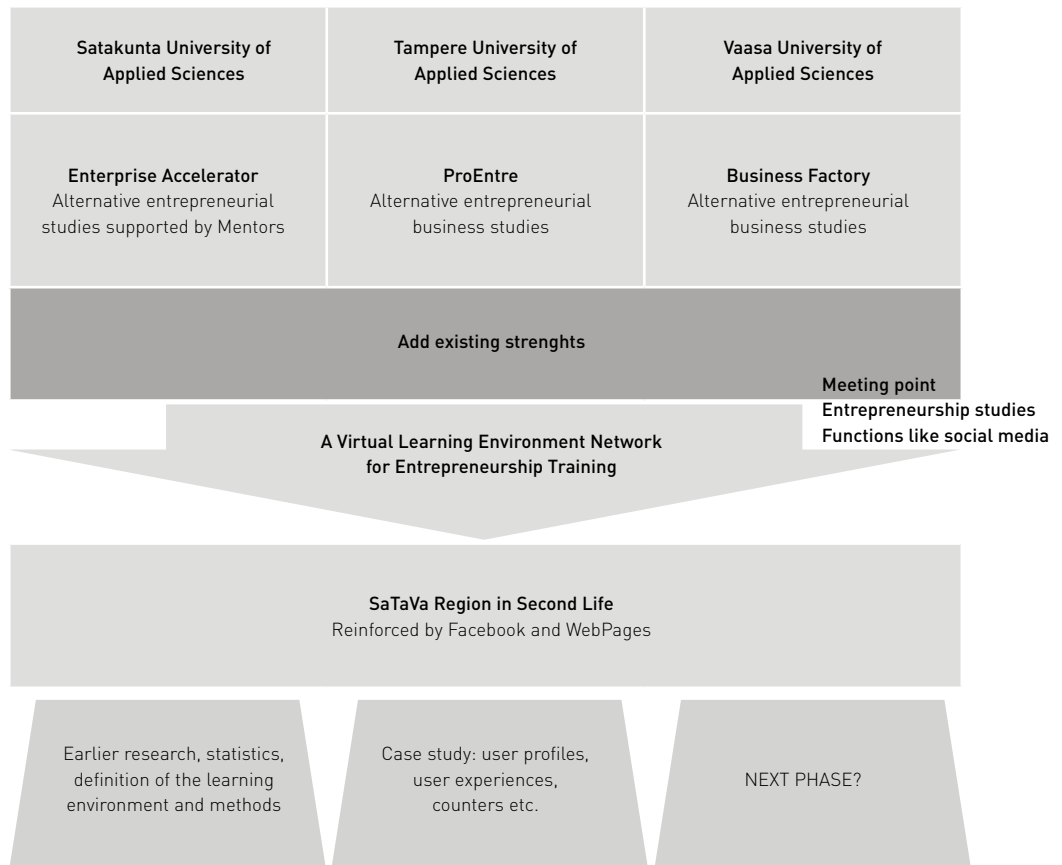


Figure 1. Structure of the SaTaVa project, Ari-Pekka Kainu & Antti Klaavu, 2009.

This case study is strongly connected to the study of new pedagogical methods and social media related tools such as Second Life or Facebook. We also search for new ways of teaching in the participating institutions. The wide scope of entrepreneurial education sets high expectations for pedagogy in higher education that has traditionally been focused on the superiority of knowledge. The wide concept also integrates institutions and learning processes in the surrounding reality, extending the concept of a learning environment. Their significance may be perceived through the current learning environments and methods on one hand, and through constructions of personality and intelligence on the other. (Kyrö, Ripatti. 2006)

A research by the Gartner Group (2008) indicates that the greatest “hype” on public virtual environments was in 2007, which has now somewhat declined. According to Gartner Group, the virtual environment outlooks are positive in a time span of 2 to 5 years, by which time Gartner Group believes virtual environments have become mainstream. According to the research the element of fun is essential to the success of virtual environment, forcing pedagogical questions about whether learning should always be fun. For instance, will the teachers’ and students’ experiences of fun meet in the long term? Gartner predicts that in 2011 80% of Internet goers will use virtual environments such as 3D versions of MySpace or Facebook for social networking and activities. As a matter of practice this means that most students in institutes of higher education already use virtual environments. Based on this fact there is no excuse to ignore the pedagogical opportunities offered by social media. (www.gartner.com, [www.gartner.com/ it/page.jsp?id=778814](http://www.gartner.com/it/page.jsp?id=778814))

Second Life is a 3D virtual environment (a continuation of the real world) and its phenomena have been built and developed by its residents (Avatars). Behind each avatar there is a real person, mirroring their own values and models in the virtual environment. They have the same expectations on behaviour and appearance as people have in the real world. Second Life consists of a number of islands or sites of various sizes on which the residents build and decorate their own buildings. Avatars are able to visit different islands and virtually make new acquaintances from all over the world. They can for example chat and have real-time discussions (free internet call), participate in events, shop and play games. Second Life was launched by Linden Lab in 2003 and founded by Philip Rosedale. It has over 14,000,000 users (the number of million users was reached on 18 October 2006). Second Life is free of charge, but by purchasing a Premium membership one can, for instance, buy land for building a house or even own learning environment. ([http://fi.wikipedia.org/wiki/Second Life](http://fi.wikipedia.org/wiki/Second_Life) 8.1.2010).

2. Second Life as a part of learning entrepreneurship – SaTaVa learning environment on Second Life

Higher education entrepreneurship is becoming a widely accepted point of view (Rae, D., Gee, S. & Moon, R. 2009), but there are still questions about how an institute of higher education could be entrepreneurial. In their study, Rae et al. present some interesting views from Derby University where a teaching team operated in an entrepreneurial manner for five years in order to stimulate learning of entrepreneurship. In their article the researchers highlighted three themes: the way an institute of higher education can develop entrepreneurial culture, the way teachers working entrepreneurially can act as a catalyst for cultural change, and the learning experiences

of this five year period. Using a similar model of thinking, SaTaVa-project built a virtual learning environment where everything would happen in an entrepreneurial manner and all surrounding material would stimulate entrepreneurship.

Each of the participating institutes in SaTaVa used more traditional virtual environments Virtualia and Moodle. Experiences from them were positive especially those concerning the ease of uploading material on the environment and the impeccability of giving out tasks. However, they did not offer real-time communication with the entrepreneurship mentors, for instance, nor a meeting place for entrepreneurs. As a result of mapping we found four new interesting environments based on social media: Twitter, Second Life, LinkedIn and Facebook. Considering the aims of the project and some user interface tests, we chose Second Life as the main development platform for the learning environment and Facebook as the project's marketing and discussion channel. The decision on Second Life was also supported by the facts that EduFinland (Suomen eOppimiskeskus ry) offered us a favourable lease rate for teaching and research purposes as well as user support and training in Finnish.

In spring 2009 we rented a virtual region of 9000 m² in Second Life from EduFinland (<http://slurl.com/secondlife/EduFinland%20II/64/53/26/?title=SaTaVa>) for the use of SaTaVa project. Our aim was to build there a virtual learning environment with an emphasis on entrepreneurship. So far we have built premises including Enterprise Accelerator, Innovation Laboratory, Entrepreneurship Library, a Conference room and a Business Hotel. All of these are located in the SaTaVa region. The library has a collection of downloadable electronic articles and guidebooks (both in Finnish and English) on entrepreneurship. These publications focus on themes such as founding a business and tax advice. The Business Hotel is a place where you can meet other entrepreneurs and the conference room with seaside view provides Avatars with a free of charge environment for meetings.

In terms of this case study, our aim is to look into how this learning environment functions at the moment, and how it should be developed further. Simultaneously, we are keen to identify background of those people who visit Second Life learning environment (from here onwards the SL learning environment) and use our services there. At this point, teaching does not yet take place in the region. Therefore, measuring of learning effects is mainly restricted to the training material offered in the learning environment. The common long term goals for the SL learning environment of the participating institutes are defined as follows:

1. The learning environment offers a virtual environment which independent of place or time (Figure 1),
2. The learning environment offers courses in entrepreneurship and information on entrepreneurship as a career option,
3. The learning environment offers a versatile and motivating meeting place for like-minded people and
4. Functions like social media as a self-complementary learning environment

There are good examples of how to use Second Life for training purposes. For instance, the Faculty of Medicine of the Imperial College of London has a virtual hospital there, where students can examine virtual patients in a department of pulmonary medicines. At the Auckland

University, virtual hospital medicine students get to practise working at an intensive care unit and play the role of a patient. ([www.med.helsinki.fi/tuke/tukevasti verkossa/arkisto/0902/090202.htm](http://www.med.helsinki.fi/tuke/tukevasti_verkossa/arkisto/0902/090202.htm)). Sosiaalinen media oppimisen tukena (Social media as a support for learning) is a Finnish example of international network <http://sometu.ning.com/>. However, social media in teaching and learning receives a lot of criticism. In his column in *Opettaja* magazine 49/2009 Dr Mikko Lehtonen, professor of Media Culture, criticise social media and especially its sociality, because it appears to be more individualising than socialising after all.

We used two types of methods for gathering information about users in the SL learning environment: 1. Visitor counters and 2. User analysis. We have added counters that automatically record each visitor on the island. The counters indicate the total number of visitors in different premises on a daily, monthly and annual basis. In addition, they show the average number of visitors per day, week, and month as well as the number of visitors per location. The statistics can also be exploited in defining the research target group and in checking the daily number of Avatars in the region. The user analysis questionnaire that helps us to develop our services further is available in the SL learning environment. The questionnaire is open 24 hours per day.

The feasibility of an information system signifies customers' needs within the service (Koivunen, M-R. & Nieminen, M. 1994). Especially with new technology there is a problem, because, with the client is not necessarily able to identify or tell about his/her needs. This is also the case with the development of the SL learning environment. The opportunities seem to be within reach, but the means of exploiting them in order to build a successful environment remain a question mark. At this point of the development work, we are able to present the client with an environment with basic building blocks for learning and teaching entrepreneurship, but in practice only the library is equivalent to Moodle teaching materials. This limitation must be taken into consideration in the user analysis questionnaire.

3. First results of the case study

Since August 2009, the number of visitors has grown fast. First launch took place in week 34, 2009, when we completed the Business Hotel and Library. In the beginning of August 2010, there have been more than 400 hundred visitors (Avatars). Each Avatar is calculated only once.

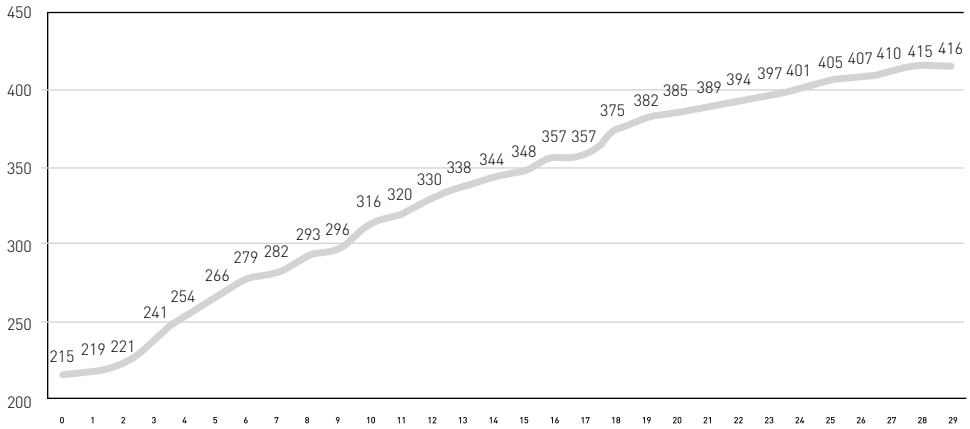


Figure 2. Avatar visitors in SaTaVa region in Second Life

One of the first premises is the Entrepreneurship library, which is also the most popular environment in SaTaVa region. Avatars borrow articles and guide books about entrepreneurship. Quay and Stock have been created in July, 2010.

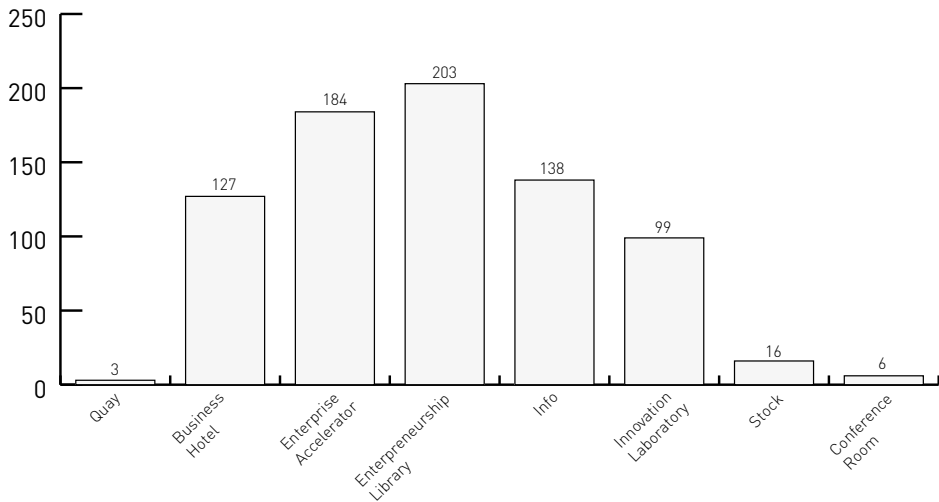


Figure 3. Avatar visitors in different places in SaTaVa region

The first results from user analysis show that Avatars mainly visit one or two places at a time when they come to the region. The feedback we have received has so far been positive and it has helped us to form some questions that will be subject to further study. In terms of future development, there is a challenge to build all the locations more interactive and with an existing virtual guide Avatar there.

4. Conclusions and next phases of new pedagogical models

A survey by Growth Lab Consulting (2/21/2010) shows that in Finland, Enterprise 2.0 is currently at the early adoption stage, where competitive advantages will come to those who embrace new tools and business models. But already 40% stated that spend will be made to prepare a social media strategy. Our research together with SaTaVa-project is taking first steps towards developing a common strategy for entrepreneurship education that uses social media. Because of social media new types of approaches between universities and students are possible. The new media provides many different opportunities to communicate and to teach entrepreneurship-related subjects. Students can learn and develop their own business ideas irrespective of time and place. Second Life is only one tool in this environment. It is an interactive medium, which allows Avatars to have discussions. One of the key challenges for SL is that computers nowadays grow old very quickly, and SL requires a fast operating system in order to function properly. Especially for young students with limited financial means this can be problematic. Simultaneously, the whole social media is developing at such a fast pace that it is nearly impossible to predict what the future holds.

In the future, the SaTaVa region in the SL learning environment will be a venue for virtual information events for student entrepreneurs. There will be short virtual seminars for instance, where entrepreneurs talk about their entrepreneurship and workshops on marketing, customer relations, and lines of action and methods of developing an enterprise, among others. But something else is going to happen in the field of new pedagogical models. For example, Tampere University of Applied Sciences is now building for the SaTaVa project a new business environment KYKY, where students practice and learn how to establish, lead and do business in the environment. The central objective is that the students adopt business in both theory and practice. Facebook is also more and more linked to our learning environment. These kinds of learning environments are well- suited for students from different education fields and they serve as teaching bases for the basic studies of entrepreneurship and business. Most of systems are browser-based, which makes remote login possible regardless of time and place. And systems can be edited into a learning environment and properties can be added to it according to the teaching needs. The open environment makes development and enlarging of the learning environment possible because in many cases license fees are not connected to open source codes. They are not bound to a particular supplier or to any expert individual. Teachers may create events for the ability environment itself or define automatic machine functions.

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EMBEDDING INNOVATION SKILLS IN LEARNING

Abstract

The educational system has traditionally provided knowledge and skills that have been adapted to innovation processes only later in future working life environments. However, a new kind of operational model could be developed by simultaneously applying the principles of both constructive learning theory as well as innovation theory to education. Through the model, it would be possible to determine how to support the development of students' innovation skills from the very beginning of their studies. Consequently, the traditional gap between 'theoretical teaching' and 'practical requirements of working life' would be filled and it would also enhance the professional growth of students already during their studies.

This paper discusses the theoretical framework of innovation pedagogy. First we aim to answer theoretical questions related to the concept of innovation pedagogy; what does it mean and what are its elements. Then we discuss its objectives and benefits especially from the perspectives of various interest groups. The practical applications of innovation pedagogy are not discussed here.

The paper starts from the concept of knowledge beyond innovation pedagogy, approaches to pedagogy and didactics it is based on, and how they are related to the definitions of innovation. The concept of innovation pedagogy and its theoretical framework are defined and presented. The aims and outcomes of innovation pedagogy are discussed from the viewpoints of different interest groups, especially from the perspectives of national and organisational competitiveness as well as educational development. Combining knowledge on innovation skills with pedagogy might offer a new theoretical basis for reinforcing knowledge-based competitiveness in the context of the co-operation between higher educational institutions and working life.

Keywords: innovation skills, innovation pedagogy, learning, universities of applied sciences, working life co-operation

1. Introduction

Universities of applied sciences have an obligation to engage themselves in research and development (R&D) activities. This responsibility directs them to operate in environments where knowledge is applied to practice; when assessing universities of applied sciences, applicability and usability of results in working life are among the key criteria. Practical know-how, the recognition of problems and the ability to solve them are all needed in learning processes in addition to mere theoretical knowledge. The prerequisite for success is a continuous interaction, which encompasses all the actors involved and in which breaking borders between fields of know-how and organisations is encouraged. (Putkonen & Hyrkkänen, 2007).

Education, R&D and working life co-operation should form a solid and interactive whole, which should be able to respond to dynamic and ever-changing expectations. Embedding pedagogical knowledge in innovation activities might be able to offer a long-desired theoretical basis for developing knowledge-based competitiveness in the co-operation between working life and education. The aim of the education in the universities of applied sciences should be to produce graduates equipped with not only competencies related directly to their own substance field but with competencies related to being able to engage oneself in the design of innovations, innovation competencies, as well. Referring to the same issue, Kettunen (2009) emphasises internalisation of an ‘innovation pedagogy mindset’ instead of dogmatically following its principles. According to him, the cornerstones of innovation pedagogy are interdisciplinary operations, R&D, curricula and internationalisation in addition to entrepreneurship and service activities.

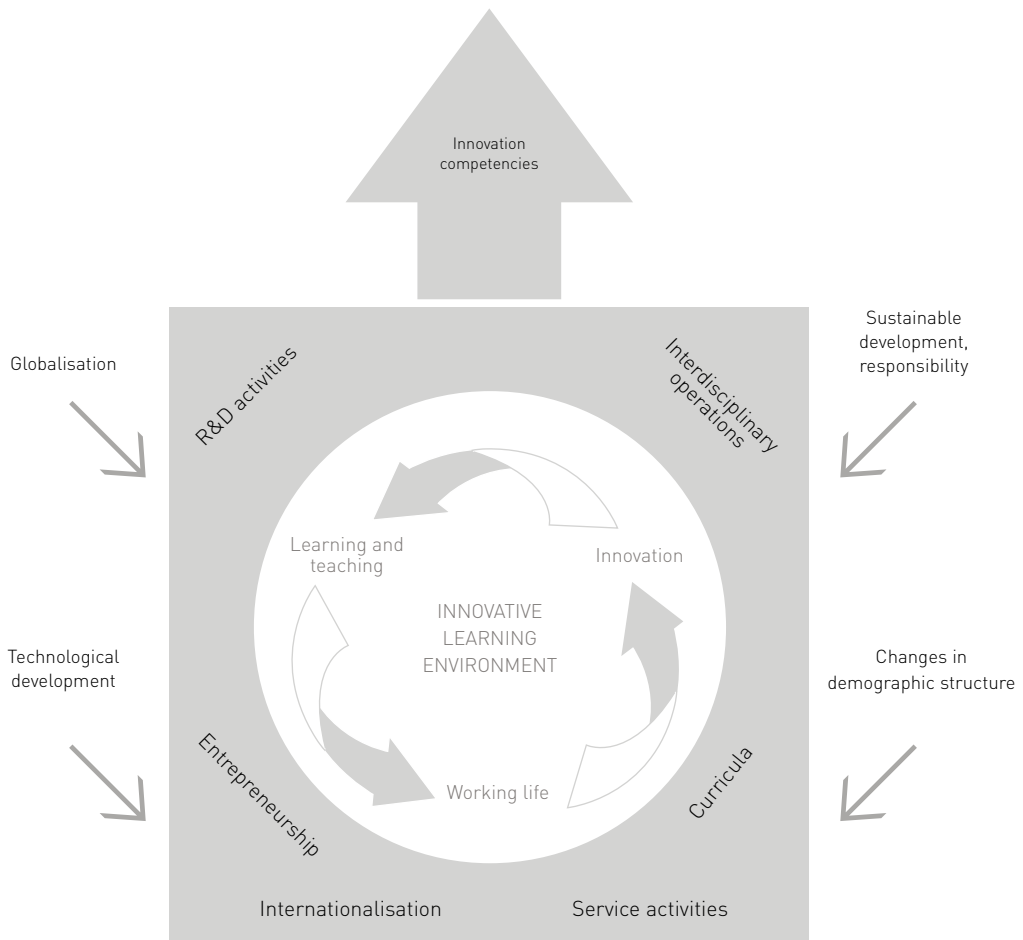


Figure 1. The drivers for pedagogical development in universities of applied sciences.

Figure 1 illustrates the drivers for pedagogical development in universities of applied sciences, the cornerstones of innovation pedagogy as well as the dynamics, operational environments and objectives between them. Here, the key elements are innovative learning and teaching methods, surrounding working life and innovations, all of which can be interlinked with physical products, services and processes. These elements function within the circle of continuous improvement when they act together in an interrelated, interactive and innovative environment. In surroundings like these, learning and teaching methods are developed more expediently, operations and competitiveness regarding working life are enhanced and new innovations are created.

An open and network-based environment helps to observe societal development pressures emerging from the economy, to react to them, and act in a value-increasing way in national and global value chains. The circle of continuous improvement contributes not only to the continuous development of the included elements but also ensures the professional qualifications of students. This professionalism is responsibility-centred as well as development-oriented; it encourages actors to absorb and create new knowledge, which supports innovation creation in working life.

2. Elements of innovation pedagogy

Assumptions about learning

Learning can be defined as a process where behaviour changes as a consequence of experience (Maples & Webster 1980). The humanistic way of understanding people as the creators of their own future forms the philosophical foundations of innovation pedagogy.

Innovation pedagogy also includes assumptions which are in congruence with cognitive learning. Cognitive theory defines learning as a behavioural change based on the acquisition of information about the environment. Through diverse learning environments, active learners are exposed to new situations where new insights can be gained in a dialogic process. The basic assumptions of constructivism argue that humans generate knowledge and meaning from their experiences. This means that knowledge is always tied to the person who possesses it. (Ruohotie 2000.)

Cultural ways of behaviour guide the learner; thus the process of learning can never be separated from the specific culture by which it is surrounded. Innovation pedagogy reinforces the development of understanding and learning, which in turn supports the central idea of innovation pedagogy: producing, further cultivating and finally commercialising innovations in higher education.

Assumptions about knowledge

When learning is understood as a learner's conscious knowledge formation process which takes place in a certain cultural and social context (Tynjälä 2002), knowledge is considered to be an object, which has certain characteristics enabling it to be used when internal cognitive models are being built. These models are born as a consequence of learning.

Gibbons et al. (1994) and Nowotny et al. (2001, 2003) distinguish two different modes of producing knowledge. They make a distinction between academic scientific knowledge and

the knowledge born in situations originating from the need to solve practical and application problems. The concepts of expert knowledge, know-how, tacit knowledge and intuition are important in contexts relating to application. Professionalism requires making tacit knowledge explicit and developing it further in a triadic interaction process between students, teachers and working life.

One of the basic assumptions regarding innovation pedagogy is that the knowledge produced and accumulated in learning environments challenges the traditional way of understanding knowledge.

Innovation in the pedagogical context

There is no one and only way of defining innovation. Schumpeter discusses innovative entrepreneurship and argues that it can lead to better performance in business. Rogers states that an innovation can be defined as an idea, object or a way of doing things which is considered new. According to him, an innovation does not have to be new in absolute terms, but the individuals involved must consider it as something new. (Rogers 2003.)

A report of Sitra (2006) suggests that an organisation possessing excellent innovation ability is able to constantly channel the creativity, know-how and all other resources of its personnel, service producers and customers to new solutions and innovations, which results in financial benefits. In Finland's national innovation strategy (2008), 'innovation' refers to utilised competence-based competitive advantage. An innovation is generated by a combination of different competencies. An innovation can be radical or incremental (Tidd, Bessant & Pavitt 2001). Innovation has also been mentioned together with education. Tella and Tirri (1999) define educational innovation as a product or a process which didn't exist before.

Innovation can also be considered as constant improvement. When discussing innovation pedagogy, Kettunen (2009) defines innovation as an idea utilised in working life. Pedagogical innovations sometimes lead to technological innovations, which can be patented. In the context of innovation pedagogy, innovation is understood as the process of constantly improving know-how, which leads to new ideas, further know-how or other practices applicable in working life.

3. Framework and definition of innovation pedagogy

Learning is a gradual process which consists of collecting, assimilating and adapting new information. In other words, learning happens when new information is added to existing mental data structures in the learner's mind. According to innovation research knowledge and skills of knowledge application play a crucial role when creating innovations. Thus, creating new services, products and organisational or social innovations requires knowledge and skills, which are applied in an innovation process. Traditionally, the role of education has been to give knowledge-based readiness, which later would be applied in practice to various innovation processes in working life. However, simultaneously applying the principles of constructive learning theory and innovation theory in education could lead to an operational model, through which it would be possible to determine how to support the development of students' innovation skills from the very beginning of their

studies. Consequently, the traditional gap between 'theoretical teaching' and 'practical requirements of working life' would be filled and it would also enhance the professional growth of students during their studies. For instance, innovations can be created already in the educational context by working in multi-disciplinary teams together with companies and other organisations; additionally, innovation skills can be scaled more accurately to adapt to future working environments.

When the learning environment is stimulating and creative, intuitive knowledge can be produced and tacit knowledge transferred. The tacit and intuitive knowledge meant here comprises of e.g. customer understanding learnt in situations where people with different backgrounds and needs come across. In these situations cultural literacy and awareness can be improved. When having to work together as a group the students gain understanding through experiencing how networking is done and how people work towards common aims in a network. When the assignments given to the group are versatile and comprehensive interconnections between issues become visible. Sometimes when working in a group with a preset goal it can happen that the aims are not being met. In these situations it is important to learn that a failure does not mean the end of the world and that after a failure there always is a new start.

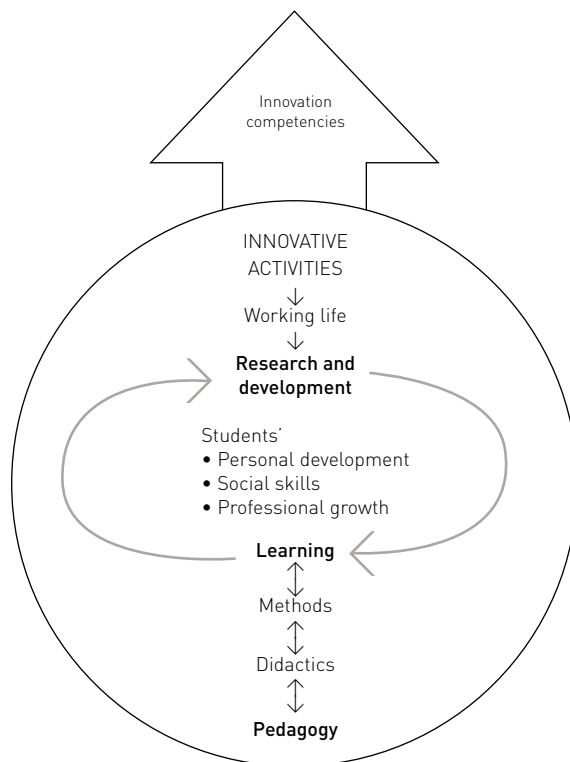


Figure 2. The framework for innovation pedagogy

The framework for innovation pedagogy (figure 2) presents a model which helps to bridge the gap between the educational context and working life. With the help of the model, learning and teaching processes that meet the requirements of better social skills and enable personal and professional growth could be developed; these enhancements provide improved qualifications when entering working life. The learning processes are deepened and strengthened when the previously gained knowledge is continuously applied in practical contexts. Innovation pedagogy does not start with knowledge and move later to its application: new information is applied to practical situations immediately, even before the information is assimilated. *Innovation pedagogy combines learning with information creation and its application.*

On a practical level, innovation pedagogy refers to an approach to learning and teaching from the perspective of emphasising working life and R&D skills. This means applying existing learning and teaching methods in a creative, value-increasing way. Simultaneously, new methods are developed and put into practice while ensuring that students take responsibility for their learning and that they actively pursue their learning objectives. As a result, graduating students have professional skills and qualifications, which are both innovative as well as development-oriented. Therefore, innovation pedagogy moves further from traditional theoretical learning, to application of learned skills to practical development challenges. *Innovation pedagogy is a learning approach, which defines in a new way how knowledge is assimilated, produced and used in a manner that can create innovations.*

4. Discussion

The aim of the study was to consider the theoretical and practical questions concerning innovation pedagogy: what innovation pedagogy is, why it is needed and what kind of educational surplus it may offer. As defined in this paper, innovation pedagogy is a specific learning approach that supports innovation discovery via knowledge creation, adaptation and exploit. Thus the question regarding the nature of knowledge behind innovations becomes essential. The model for innovation pedagogy was constructed based on previous studies on pedagogy and innovation research.

Innovation pedagogy rests on knowledge the need for which arises from social and economical contexts. The starting point for producing this knowledge lies in practicalities congruent with views presented by Gibbons et al. (1994) and Nowotny et al. (2001, 2003) on mode 2 knowledge. Similarly to mode 2 knowledge and R&D, innovation pedagogy strives for contextually emerging and cumulative knowledge, which is also boundary-breaking, practical and societally durable by nature. This is why innovation pedagogy is a suitable theoretical framework in which to develop methods for creating new innovations between working life and universities of applied sciences.

Creating innovations presupposes know-how and the ability to apply it. The traditional view held by educational institutions is that students receive new information and skills as a student and only begin to apply what they have learnt after finding employment. This is exactly the way of thinking innovation pedagogy wants to challenge. According to this new approach, know-how should be applied for creating innovations already while studying. In other words, know-how should be accumulated and applied simultaneously. According to the principles of innovation

pedagogy, individual expertise should be transformed into communal expertise, which promotes controlling knowledge and developing problem solving skills (Haarala ym. 2008).

These arguments are supported by Viljamaa (2009), who found that innovation processes must be based on a new kind of synergy and collective learning between local companies and the operational environment. Innovation pedagogy can be seen as a pedagogical innovation touched upon by Manninen et al. (2000) in itself. Separated from the traditional view, a pedagogical innovation is based on the new outlook on learning and possibly utilises new technology in a fresh manner.

Learning is constructing meanings based on dialogue. According to social constructivism, knowledge is founded on individuals participating in solving shared problems and discussing them (Ruohotie 2000). Innovation pedagogy underpins learning by favouring actual working life development challenges being brought under discussion, in which students, teachers and working life representatives all take part. In addition to efficient learning, innovation pedagogy strives for new ideas, operating models and innovations applicable in working life. These aims are consistent with sociocultural theory as discussed by Vygotsky (1982), Wenger (1998) and Hakkarainen et al. (2001) in regard to the two-way interaction of theory and practice. Theory helps in solving practical problems and sometimes operating models born of practical contexts may evoke scientific breakthroughs, so why not innovations as well.

There is demand for an approach like innovation pedagogy. As actors operating closely with local economic life, universities of applied sciences can have an influence on the activities of companies in their region. This can be achieved by raising new generations of professionals, whose conceptions of producing, adopting and utilising knowledge make innovative thinking and creating innovations possible. According to the national innovation strategy (2008), this kind of proficiency is needed and demanded. Until now, Finland has thrived well in international competition and is, at the moment, one of the leading countries in the world regarding innovativeness and the quality of companies' operating environments. However, the basic dilemma of innovation activity is in which field of know-how Finland is able to produce additional value in global value networks; in that same field, Finland should also become a country where tapping into that know-how produces profit for investors. Also education and reinforcing it emerge as vital points in this context. The aim of innovation pedagogy is to generate environments in which know-how-inspired competitive advantage can be created by combining different kinds of know-how. When utilised, this edge provides opportunities of success for the whole society. Innovation skills sharpened by innovation pedagogy are the key in introducing new competitive advantages via know-how. In a multi-disciplinary environment, it is possible to evoke regional innovations and increase entrepreneurship through research and development.

Being as recent as it is, the concept of innovation pedagogy offers an abundance of opportunities for further study. One of the most interesting objects of study would be creating an innovation barometer. The barometer would be used to determine how to evaluate and measure executing innovation pedagogy. The innovation barometer could be utilised as a shared instrument when evaluating the maturity of both working and educational communities. Additionally, modelling collaborative projects relating both to innovation pedagogy and the companies involved also offers an interesting research subject. This research illustrated the fact that the innovation pedagogy approach can be a powerful starting point in developing learning environments as well.

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UNLOCKING HUMAN INNOVATION POTENTIAL

Abstract

Today's global competition challenges companies, organizations and nations to contemplate how to get all their innovation potential into use. This paper presents recently started research work, the INNOPOTENTIAL research that bites into this subject.

Thus far there has been considerable research on how to turn ideas into successful products and businesses, the innovativeness of organizations and regions, and the structure and effectiveness of innovation systems and environments. The focus of this research is to study operating and innovation environments from the individual's point of view.

Every human being possesses innovation potential. How can this valuable feature of an individual be activated and developed resulting more innovative entrepreneurship? The research examines what kind of aggregate is constituted by an individual's different operating environments regarding the individual's innovativeness. The study covers the whole human lifespan: from day-care centres and schools, study and research environments to business incubators and corporate product development. What kinds of features of the different operating environments support and what kinds prevent the individual's innovativeness? The aim is to create a model of Lifespan-covering Innovative Environments. The purpose of the model is to provide a tool for better understanding and enhancing innovativeness and innovation activities throughout the whole human lifespan.

The research problem is: How can an individual's innovativeness be activated and developed throughout the entire lifespan? For illustrating the research idea, a case is briefly presented, where innovativeness and entrepreneurship are supported fairly comprehensively throughout the human life cycle. The aim for the scientific contribution is to:

1. increase understanding about the development of innovativeness during the different phases of human lifespan
2. increase understanding about the influence of operating environments on the development of an individual's innovativeness.
3. define the notion and create the model of "Lifespan covering Innovative Environments"

As practical contribution the research produces new knowledge, methods and concepts on improving the innovation processes of companies, knowledge clusters as well as training and research institutes and for innovation coaching. Additionally a goal is to increase understanding about how the whole education system can be coupled much tighter than today as a part of local, regional and national innovation systems and how the perspective of fostering local, regional and national innovation activities can be widened to be an aggregate covering the whole human lifespan.

Keywords: Innovation potential, Innovativeness, Innovation environment, Lifespan-covering Innovative Environments, Lifelong innovativeness

1. Introduction

This paper presents a recently started research work (2009 – 2012), named INNOPOTENTIAL, that bites into the challenge of how to get the human innovation potential into use, that is, how to unlock the innovation potential that exists in us, creative people. Thus far there has been considerable research on how to turn ideas into successful products and businesses, the innovativeness of organizations and regions, and the structure and effectiveness of innovation systems and environments. The focus of this research is to study operating and innovation environments from the individual's point of view. The aim is to study how it is possible to build holistic lifelong support for human innovativeness. The research aims to resolve what kind of system-level support is required for successful unlocking of human innovativeness in order to enhance innovative entrepreneurship. The needs and possibilities of the support are approached via holistic lifespan-covering operating environments.

The research problem is: How can individual innovativeness be activated and developed throughout the entire lifespan?

As the research problem is rather broad, the research is circumscribed by three focusing sub-questions:

- What kinds of operating environments foster human innovativeness? (theoretical part)
- What kinds of operating environments have produced successful innovators in practice? (empirical part)
- What are the operational strengths and challenges of existing innovation environments concerning lifespan-covering support for an individual's innovativeness? (empirical part)

The aim of the research is to create a model or models of Lifespan-covering Innovative Environments. Modeling is needed for reaching profound enough understanding so that solutions and methods developed in certain operating environments could be successfully utilized and modified into other environments. Modeling also restrains that solutions and methods would be tried to multiply into new operating environments into which they don't suit as such. Modeling facilitates to perceive the aggregate, deepens understanding about the effects of different operating environments on developing an individual's innovativeness and helps to observe and develop mutual couplings of different operating environments as well as reveals the existing bottle necks and gaps in forming the entirety.

The purpose of the model, Lifespan-covering Innovative Environments, is to provide a tool for better understanding and enhancing innovativeness and innovation activities throughout the whole human lifespan: from day-care centres and schools, study and research environments to business incubators and corporate product development.

2. Methodology

The INNOPOTENTIAL research started at the end of 2009 and is planned to be completed by the end of 2012. The research strategy is illustrated in Figure 1. At first a theoretical model for Lifespan-covering Innovative Environments will be built based on former innovation researches as well as creativity and innovativeness theories. After that a case study will be made of successful innovators and the theoretical model will be compared with their lifespans. Then a study of three cases will be made where an entirety of Lifespan-covering Innovative Environments has been striven for as far as possible. The theoretical model will be mirrored to those environments operating in practice. The research method in the case studies will be the theme interview.

On the basis of the case studies, a more advanced model / models will be constructed from the theoretical model. This model will still be ascertained by defining case studies A (successful innovators) and B (three existing innovation environments).

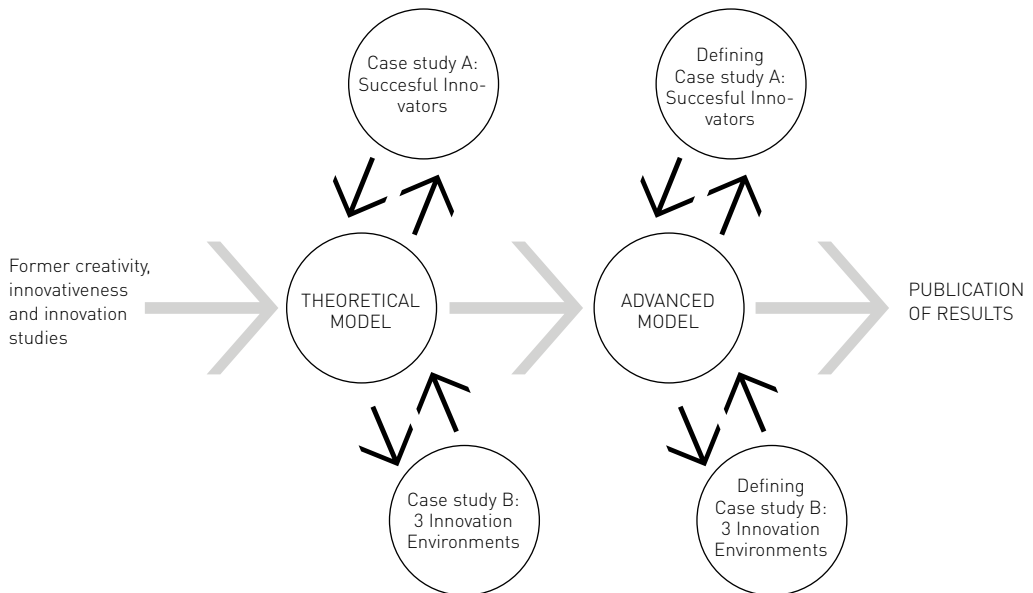


Figure 1. The research strategy

3. A case for lifelong supporting of human innovativeness

RFM-Polis is a concentration of expertise in wireless telecommunication and digital media, located in Ylivieska Finland. RFM-Polis belongs to Multipolis network in northern Finland and Scandinavia that is an entity comprised of centers of expertise focusing on different sectors of high technology. A polis means a concentration of high level expertise including successful companies in the business line of the polis, higher education as well as research and development activities. Additionally, a polis entirety includes a technology center providing premises and business services as well as a business incubator as a business coach to new ventures. The operation of a polis is to build up an innovation environment for knowledge based companies (Figure 2).

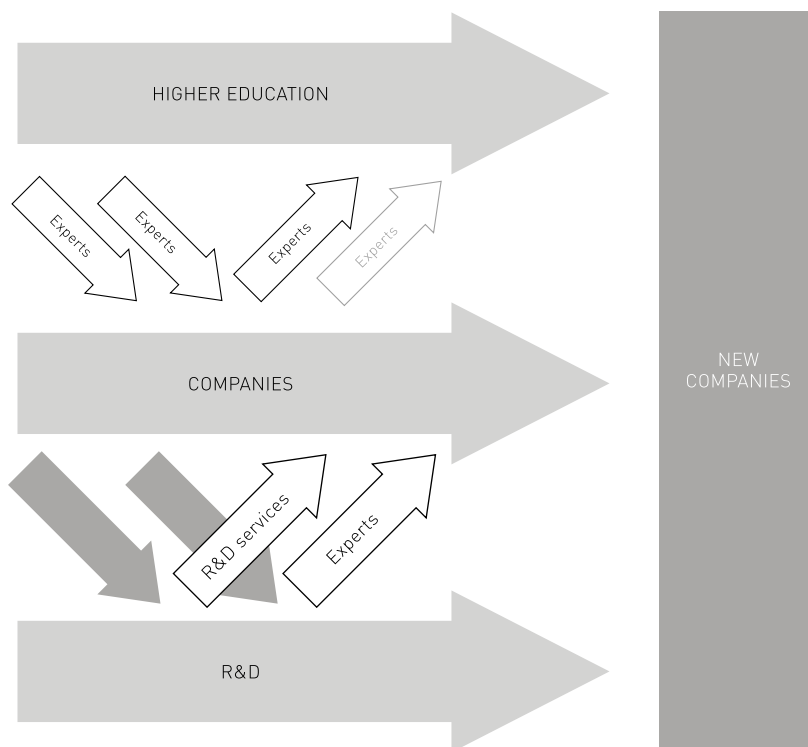


Figure 2. Operation principle of a polis

The speciality of the business incubator in RFM-Polis is that the pre-incubator is located in the university of applied sciences for fostering student entrepreneurship and the actual business incubator in the technology center and these two build up together a seamless entity.

Teknokas, the technology education center

Teknokas is the first technology education center in Finland and a rarity also internationally. Teknokas acts as a developing and maintaining engine of the technology and innovation education in schools. The actual technology and innovation education is carried out in schools. An essential mode of operation is the supplementary education getting teachers acquainted with technology and innovation education. At certain intervals teachers come with their students to have learning sessions in the Teknokas center. There are learning workshops enabling the students' and teachers' own innovating and constructing activities. The staff of the center is actively getting out into the field consulting schools in the realization of technology and innovation education and the center hires out education material and equipment to schools. The research and development of the methods of technology and innovation education carried out in Teknokas are of the top level internationally. The international networks are very extensive and the international cooperation outstandingly active and of good quality.

A case of Lifespan-covering Innovative Environments

Figure 3 illustrates the innovation environment of RFM-Polis. The children attending day care, pre-school or elementary school as well as the youth attending upper secondary school are provided with activating technology education in order to promote their innovative talents. As students move forward from upper secondary schools to the university of applied sciences, ones who are interested in entrepreneurship, can get entrepreneurial training and attend the pre-incubator process. When, a new enterprise emerges from the pre-incubator it can be provided with coaching consulting by the business incubator. After the period in the business incubator, the new enterprise is offered the operating environment that is to enhance the development of knowledge intensive enterprises.

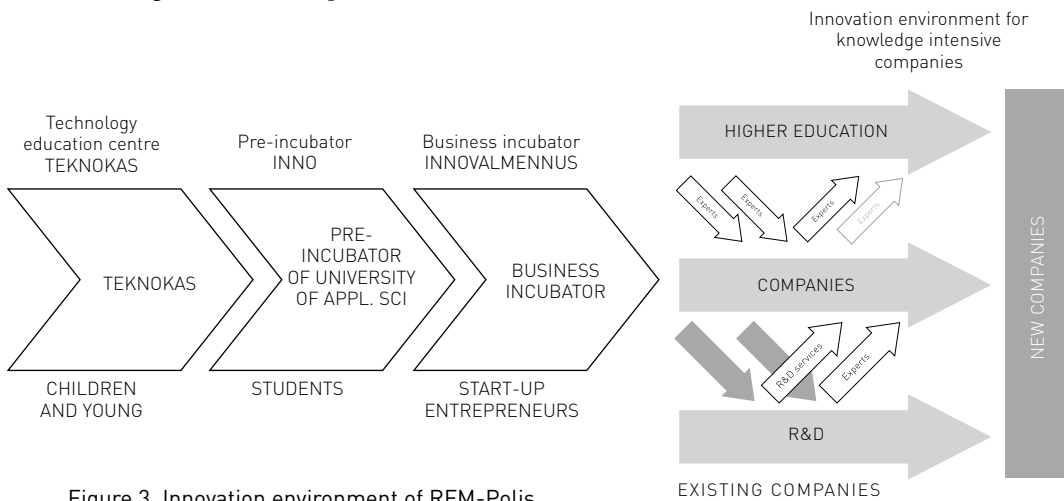


Figure 3. Innovation environment of RFM-Polis

When the Teknokas center started in 2005, one could observe that an interesting aggregate supporting an individual's innovativeness from childhood to adult years had been born. From this thought of a lifespan-covering innovation environment was further born an insight that this kind of notion of Lifespan-covering Innovative Environments creates an entirely novel perspective for considering and developing local and national innovation systems. From these insights and contemplations clear comprehension that deeper understanding about this kind of aggregate necessitates research and modeling was born. A research question emerged: Is it possible to consciously develop different operating environments of human life in such a way innovative that a person can live his or her whole life from childhood to old age in operating environments that activate innovativeness and this fosters the developing of innovative entrepreneurship?

4. Concept of Lifespan-covering Innovative Environments

The first aim of the INNOPOTENTIAL research is to increase understanding how human innovativeness activates and develops during the entire lifespan. Then it will be examined by which prerequisites it would be possible to build up such innovative operating environments

that a person throughout his or her life from childhood to old age could live in environments that activate and develop his or her innovativeness. The effects of such environments would be remarkable, e.g. they would

- offer richer life for individuals
- make people more innovative
- produce innovative companies
- produce innovative employees for companies
- produce worldwide successful innovative products and services

The INNOPOTENTIAL research examines what kind of aggregate is constituted by an individual's different operating environments as to the development of the individual's innovativeness. A definition and a model for the concept "Lifespan-covering Innovative Environments" will be created. As a basis for research work, the human lifespan is thought to comprise four types of mutually continuously interacting operating environments (Figure 4):

1. School environment
2. Study and research environment
3. Company environment
4. Free time environment

The content and categorization of Lifespan-covering Innovative Environments will be particularized during the research.

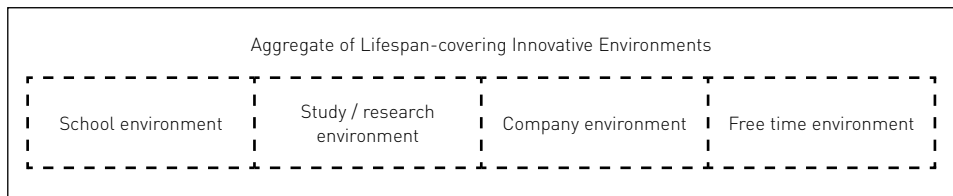


Figure 4. The aggregate of Lifespan-covering Innovative Environments

The research concentrates on interdisciplinary, system-level examination of Lifespan-covering Innovative Environments in order to get an understanding about the entirety and to create a system-level model or models. An important point of view in the research is how different operating environments, their mutual interactivity and coupling to each other can be developed so that they constitute a mutually feeding aggregate. The possibility of finding such factors from more thoroughly researched areas, like company environments, that can be applied to other operating environments, and respectively, methods from other areas of life, e.g. technology and innovation education for children and youth, fostering creativity and innovativeness that promote the emergence of new innovations in company environments will be explored.

The research is circumscribed to system-level examination of the innovativeness of the life span's operating environments and the aggregate they constitute. The research doesn't cover

getting empirically acquainted with characteristics of different types of operating environments (school, study / research, company and free time environments) more thoroughly but tries to find international solutions, processes and ways of action that have been discovered to affect conductively or find out factors that affect preventively to the development of individual innovativeness in different types of operating environments.

Human creativity and innovativeness are wide-ranging notions and appear in a variety of areas of life. This research is restricted to those human operating environments and actions and factors in them which seem to have influence on fostering innovative entrepreneurship.

5. Conclusions

The main goal of the INNOPOTENTIAL research is to create the model of Lifespan-covering Innovative Environments. The purpose of the model is to provide a tool for better understanding and enhancing innovativeness and innovation activities throughout the whole human lifespan: from day-care centres and schools, study and research environments to business incubators and corporate product development. The model couples together actors and operating environments that today are separate both in research work and in practice.

The INNOPOTENTIAL research aims to provide important scientific contributions:

- Increases understanding how human innovativeness activates and develops throughout the entire lifespan
- Increases understanding about the influence of the operating environments for the activation and development of human innovativeness
- Creation of the notion and system-level model of the environments fostering innovativeness throughout the entire human lifespan, “Lifespan-covering Innovative Environments”

When achieving the scientific aims the research will also offer remarkable practical contributions to companies, developers of innovation environments, education authorities and policy makers by:

- Bringing in more essentially the viewpoint of a man, an individual, to the development of innovation environments
- Bringing in new perspectives to the renewal of innovation processes in companies
- Increasing understanding about the influence of the operating environments in companies for the activation and development of human innovativeness
- Introducing novel viewpoints and methods to the development of innovation training and consulting in companies
- Widening the perspective of fostering local and national innovation activities to be an aggregate covering the entire human lifespan
- Coupling the school system more widely to be part of the fostering of national innovation activities

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PRAGMATISM AS A PHILOSOPHY OF EDUCATION FOR ENTREPRENEURSHIP

Abstract

Pedagogical solutions used in a university are built on foundations of an educational philosophy. The learning results are to a great extent based on the tools and pedagogic approaches used. What, then, is the philosophical foundation that would best serve education for entrepreneurship? This article discusses about realistic vs. pragmatic philosophy of education and proposes that latter is more advantageous to use in this case. An example, Laurea Business Ventures, of use of pragmatic philosophy of education for entrepreneurship is presented. In the discussion the approach is proposed to be used wider in other areas of applied sciences as well.

Keywords: Pedagogy, entrepreneurship, philosophy, pragmatism

1. Introduction

More entrepreneurs are needed (EU, 2003, Hallituksen politiikkaohjelmat: Yrittäjyys, 2006, Wagner, 2008). The national economies need a constant flux of new entrepreneurs to renew themselves and be able to compete in global markets (EU, 2003, Schumpeter, 1926). Entrepreneurs form an evolutionary force by adapting their businesses to meet the requirements of ever-changing social environment (Giunipero et al., 2005) because rigidity in the face of change would only lead to business failure (Zimmerer and Scarborough, 2002).

The need for entrepreneurs puts additional pressure to the university education system. As the world become increasingly more complex, the better educated entrepreneurs are more likely to succeed in it. Entrepreneurs with an academic background are more often innovative, use modern business models and base their ventures on the use of new technology (Pajarinen et al., 2006). Academic education offers students a chance to see the latest developments in their selected field, thus allowing them a clearer view on how to implement them into a business in the future (Minniti & Lévesque 2008).

Unfortunately, the current situation of support for entrepreneurship in higher education lacks depth, at least within the EU. Only about 24% of university students have access to any education on entrepreneurship. The more focused the subject branch is the less likelihood there is of a student learning entrepreneurial skills. The competence and time allocated by academic staff to entrepreneurial education is inadequate. Hence, practical action is required in order to answer the challenge of producing more academically educated entrepreneurs (European Survey on Higher Education Institutions, 2008).

The competencies that make a successful entrepreneur come from a wide spectrum. For example, Schumpeter (1926) stated that successful entrepreneurs should be innovative, creative and risk taking. This view later has been supported in follow-up studies, like the one by Wickham (2006), which stated that entrepreneurs are creative, seek and discover niches for market innovations, bear risks, are growth oriented and are driven to maximize profit or investors' returns. There exist a multitude of similar studies on the subject, like Lambing and Kuehl (2000), who list a passion for business, a tolerance of obstacles, perseverance, trust, determination, risk management, a positive attitude towards change, the tolerance of uncertainties, initiative, the need to achieve, punctuality, an understanding of timeframes, creativity, an understanding of the big picture, and motivation. For a more detailed discussion about entrepreneurial skills, see Taatila (in publication).

The referenced studies and several other studies agree that entrepreneurial competencies are often psychological or social skills, not skills specific to a business or academic branch. If one thinks about a normal university curriculum it is very difficult to find these types of skills in course descriptions. Still there is ample evidence about successful academic pedagogical approaches to produce academic entrepreneurship (e.g. Collins, Smith & Hannon 2006, Henry et al., 2003, 2005a, 2005b, Platt 2004, Saurio 2003, Taatila in publication). These studies stress the importance of learning in concrete business projects in order to inculcate the required working skills and attitudes within students.

Thus the goal is clear and tools are available, successful examples have been presented in multitude. Why, then, there is so little action?

Ardalan (2008) has shown that universities act according to their underlying philosophies of education, differences in which lead to major differences in educational practices. Both pedagogical methodologies and the course goals and contents are affected by differences in basic philosophical assumptions. Whether a lecturer sees her task mainly as providing students with the latest facts of the world or to guide them in growing as individuals is not a question worth neglecting. Since this underlying core of a university effects all of the actions taken, **what, then, should be the philosophical foundation on which education for entrepreneurship should be built?**

This question will be approached by firstly discussing the educational philosophies related to the interpretive and functionalist paradigms of social sciences (Burrell and Morgan 1979). The discussion will then be focussed deeper into pragmatism and its ideas about higher education. A case of pragmatic Learning-by-Developing-based learning environment for entrepreneurship will be introduced as a practical example of this approach. The article will be closed with a discussion about the answers to the research question and their general implications on the university pedagogies.

2. Interpretive vs. functionalist paradigms as a philosophy of education

Burrell and Morgan (1979) have stated that pedagogical philosophies can be categorized under four broad paradigms in social sciences: radical humanist, radical structuralist, interpretive and functionalist based on two axes, objective vs. subjective and radical change vs. regulation. Since

we are not looking for radical societal changes, we will concentrate the comparisons to the paradigms that are in the regulated end of the axis, i.e. interpretive vs. functionalistic paradigms.

For the functionalistic paradigm the social world is very much like a natural world, a collection of orderly facts that can be studied objectively. This view is rooted in the tradition of positivism. In functionalistic paradigm the social environment is an object with some factual rules that the researcher can objectively study. Teacher then enlightens her students about these facts. Pedagogical philosophy related to functionalistic paradigm is generally defined as realism. (Ardalan 2003, 2008, 17-18).

The interpretive paradigm sees the social world as an ever-changing place which can be constantly improved. A researcher interprets situations, but knows that the rules she finds are situational, not universal. Thus the goal is not to seek the ultimate blueprint, but “rather to secure both long and short-term goods in future experience.” (Hildebrand 2003, 73). According to the interpretive paradigm the goals of education are not to give students facts about the way of the world, but let them “learn the process of discovery and self-sufficiency as much as the facts that are discovered”. This type of pedagogical philosophy is often defined as pragmatism. (Ardalan 2008, 20).

The extreme ends of realism-pragmatism –axis produce very different types of learning environments. Realism focuses on teaching global facts, while pragmatism focuses on students gathering their own situational facts and acting on them. The learning environments in realism are theory-based. Pragmatism favours action-oriented solutions where students create their own reality. Realism-based university provides students enough knowledge that they will know how the world functions, while pragmatic universities provide the students with tools to accomplish real tasks in constantly evolving situations, and to use every situation as a learning experience. In realism the teacher teaches while in pragmatism she guides and mentors. The goal of learning in realism is that the students will be able to give the teacher back the same content they received in teaching, while in pragmatism it is that the students will be able to create their own views and act on them. (Ardalan 2008).

Education for entrepreneurship is by definition very praxis-oriented. The goal is to turn students into successful entrepreneurs, to be able to cope with constantly evolving surroundings. It is difficult to see how this could be best served by trying to reveal global scientific facts. The needs and situations experience constant changes and the important skills are application and implementation. To a great extent, this will require interpretation of situations and the skills and knowledge required to operate successfully within them. Thus the pedagogic philosophy for education for entrepreneurship should fall within the interpretive paradigm i.e. pragmatism.

3. Pragmatism as a philosophy of education

Pragmatism (Dewey 1929; James 1907; Peirce 1992, 1998) is an action-oriented philosophy of science. It studies the link between action and truth, practice and theory. Pragmatism can be described as “the doctrine that reality possesses practical character” (Dewey 1931, 31). For a pragmatist, the world is a set of practical actions that are born from thinking. Thinking and doing are two sides of the same coin. Action requires thinking, and ”thinking is a mental activity: it is a doing” (Peters 2007, 356).

There is no universal truth in pragmatism – extreme pragmatist sees truth as relative and reality as probabilistic (Ardalan 2008, Haack 1976). Fendt et al. (2008, 478) conclude that more important than truth are beliefs. Do we believe and ultimately act on our belief. Only action makes a fact relevant, pure “scientific truth” that has no relevant application is not interesting to a pragmatist (Miettinen 2006, 391). Pragmatist philosophy exists in real world, where change is constantly taking place, and man is an active agent and conductor of transformations, either by thought or by action. Things of reality only become known when they interact with human (Dewey 1925/1988b, 14).

To deal with this multi-dimensional interaction, a strong emphasis is put on reflective dialogues. It requires real dialectics between at least two individuals, not just an isolated thesis-antithesis-synthesis discussion with self. New insights are created by seeking out alternative views and imposing one’s own thinking on them. In order for dialogue to be fruitful the individuals should disagree over what they consider important (Fendt et al. 2008, 480). When addressed to a real situation this discussion then leads into relative truth that is used for solving the puzzle at hand. This does not require the individuals to agree verbally on the situation; the “truth” will be the actions that are really taken.

Learning is in a central position within a pragmatic framework. Since pragmatism aims at translating useful knowledge of real-life problems into action, the people must constantly acquire new knowledge and skills to better cope with the situation. The goal of learning is to create constantly new competence to fit the contemporary situation, or in Dewey’s words: “Instead of reproducing current habits, better habits shall be formed, and thus the future adult society can be an improvement of their own (Parker 2003, xviii). Learning begins by answering to why and what should one learn, and what the learning will be used for (Ardalan 2008).

The pragmatic approach to education critiques strongly the transmission-type teaching. According to Dewey, the real educative process is created by development and growth that takes place in intelligent inquiries of the environment (Seltzer-Kelly 2008, 293-294). The teaching was not based on the subject per se, but on making students learn to use proper methods, and think and act on their own initiative based on the results they discovered.

Being a teacher in a pragmatic situation requires numerous skills. She should master the subject well enough, be able to focus on the individual growth of the students, and further be able to guide learning in open situations to solve problems with no fixed amount of variables (Seltzer-Kelly 2008, 299). For Dewey, the teacher’s job is constant interactive intervention to contemporary problems with and by the students in order to to cultivate them (Seltzer-Kelly 2008, 299). Thus a teacher must have very strong pedagogical skills. A variety of different learning methods as well as their situational variations must be mastered. “Only knowledge of the principles upon which all methods are based can free the teacher from dependence upon the educational nostrums which are recommended like patent medicines, as panaceas for all educational ills” (McLellan and Dewey 1908, 10).

However, the teacher is not the most important individual in a pragmatic learning process. The learner, the student, is. Learning takes place only within the student. No amount of support, instructions and facts can force her to learn if she opposes learning. According to pragmatism

the student must be placed within the situation to personally experience the problems, goals and limitations. She then imposes a meaningful framework on the unruliness of the case facts, searches for the key pieces of data and distinguishes central facts from peripheral ones. Student organizes often internally incoherent data and arrives at a reasonable recommendation for action. She expresses her views, feelings, reactions, attitudes, and prejudices which are reinforced or rejected by their colleagues. All this gives the students an “opportunity to re-evaluate and re-appraise their recommendation, character, and personality” (Ardalan 2008, 28).

Despite its practical nature, pragmatism, as any other philosophical approach, only offers some vague views and advice on the actions that should to be taken. In a proper pragmatic view they only become true if put into action as a practical set of steps taken in a real-life situation. Thus this article will continue by presenting a practical case based on pragmatism.

4. Case: Learning-by-Developing –based curriculum of Laurea Business Ventures

Laurea University of Applied Sciences has selected a pragmatism-based approach, Learning-by-Developing, as its pedagogical approach (Laurea 2007). Raji (2000, 2003) has shown that in order to become an expert of a pragmatic situation one has to integrate knowledge, understanding and doing into competence to work autonomously in developing real-life situations, which requirements have been embedded into the core thinking of LbD. LbD is based on five principles: i) authenticity, ii) partnership, iii) experiencing, iv) investigative approach, and v) creativity (Fränti and Pirinen 2006, Laurea 2006, 2007, Raji 2006, 2007).

LbD can be considered to be a very pragmatic approach to university education, focused on giving the students appropriate tools to succeed in constantly evolving daily situations (Tautila & Raji, in review). Thus Laurea University of Applied Sciences has offered different types of entrepreneurial learning environments based on LbD-approach, mainly at bachelor level, since 2005 (Tautila 2006, 2007 & 2008, Tautila and Vyakarnam 2008).

Currently the most advanced LbD-based learning environment for entrepreneurship in Laurea is Laurea Business Ventures (LBV). It has been established in 2008 as a learning programme of entrepreneurship and business development. The annual take in is officially 70 students for Finnish- and English-speaking programme and so far there have been several transfer students per annum. Currently the headcount is 160 students.

In the core of learning in LBV is the new competence-based curriculum. It defines the learning objectives in eight subject areas and that the learning takes always place in authentic development projects. Thus there are no exams, lecture series and learning modules in LBV. Evaluation is based on competence presented in development projects.

The eight subject areas are (i) identifying business opportunities and generating ideas, (ii) making and implementing business plans, (iii) sales and customer relationships, (iv) finance, (v) management, (vi) communications, (vii) knowledge of the operating environment, and (viii) languages (Laurea 2008b).

For each subject area three competence levels are defined: doer (10 cr), applier (doer+20 cr) and developer (applier->). Students must show competence defined in the curriculum at least on doer level in each substance area, thus the size of obligatory learning objectives is 80 credits. For a degree of 201 credits, after obligatory thesis and job placement a student can aim 85 credits into the direction of their own interest. For example, there are students who have invested all of the free credits into sales and CRM –projects. Since they can also participate in job placements into these types of tasks and write their thesis accordingly, they are capable of developing themselves a very high-level competence in the subject. However, a majority of the students opt to disperse their credits more widely, acquiring practical knowledge in several fields. (Laurea 2008b)

The role of a "teacher" is quite different to traditional university lecturer. LBV's teachers are titled mentors and their main task is the guidance of practical student projects. A mentor is a facilitator and partner for students and in relation to the project its developer and researcher. The idea is to give space for students, facilitate their knowledge construction processes in relation to practical experiments and give tools and develop them together with students and through all the processes to be involved in assessing the achievements of students' learning outcomes (Taatala & Raij, in review). In addition to support the students get from staff mentors there is also peer-support from more advanced students as well as actors of working life. This has created a situation where the students really have to take responsibility of their own learning. If a student cannot find an appropriate project or show required level of competence she will not get credits. A large share of projects is related to the business ideas or existing businesses of the students. These projects are easier to come by especially within the English-speaking students.

Competence evaluation is based on skills presented during the projects as well as in after action reviews. Evaluation in LBV is a development-oriented co-operational process between the students, staff mentors and working like representatives. Most typical method is to have a formal after action review during which the students present their project and its results as well as their learning objectives and results. These are reviewed in comparison to the learning objectives defined in the curriculum. In the end the amount of credits and grade are agreed on.

So far the results of LBV have been promising. Currently there are at least seven start-ups that are directly connected to LBV. In addition there are also tens of businesses planned and analyzed in order to find out about their feasibility. The amount of credits achieved is well in line with the more traditional learning environments as well as the use of resources. Currently LBV has six full-time and two part-time mentors attached to the staff.

There has been no proper research yet about the learning process of LBV. However, several more informal questionnaires have been made, and based on them it is possible to review the situation from the viewpoint of three shareholders: the students, the staff and external partners.

For the students, the most positive aspect has been the focus on learning, not on teaching. Authentic projects have made learning a very concrete project where students can see the results of their actions immediately. The students have also considered that the increased amount of responsibility has supported their growing into professionals. Personal mentoring is also a positive aspect even though there have been several cases where more guidance would have been expected. Interestingly the most negative part has been the lack of lectures. The students would like to use

this tool for knowledge acquisition more than it is available. The amount of responsibility is also sometimes considered over-whelming, specially with younger and foreign students to whom the whole working surrounding is a new experience.

For the staff it has been a good possibility to focus guidance into a relatively small number of students. Evaluation that is based on authentic projects and their results has also been quite simple – it has given a good understanding of the students' ability to apply their knowledge. LBV also forces the teachers to learn constantly. They cannot use the same slides year after year but have to live in constant interaction with the surrounding business environment. This last aspect is also sometimes considered as a negative aspect. There is no escape from the front-line; mentors have to be always on the edge of their knowledge. This situation is strengthened by the situation that the staff has no personal working spaces but they share two open offices with the students. Also planning of the work has been more difficult when there is no administrative structure to base it on. However, this has not become a major problem due to good level of trust between staff and management.

The best part of LBV to the external partners has been the ability to get project workers immediately, without the time-limits defined by administrative learning modules. The students have also been very motivated. This has been ensured by making student to acquire their own projects – they know that if they perform poorly they have shut down a door of a possible future employer. The students have also worked quite entrepreneurially, showing a lot of responsibility. Most of the results have been good though some areas of competence have been lacking, putting the students into projects that go over their heads. There have also been some areas where it has been difficult to find student. Generally speaking, basic sales projects are difficult to staff sine the students want to focus more on business development and management activities.

5. Discussion

The main question this article considered is what should be the philosophical foundation for entrepreneurship education. Based on the presented discussion, the author does not hesitate to answer that pragmatism fulfills the stated requirements. Pragmatism has a long history and a sound philosophical base in higher education. Since the goals of education for entrepreneurship are very practically oriented it would be difficult to claim that pragmatism is not appropriate to use in this context. Further, since LbD is a practical solution within the pragmatic paradigm, it is deductively clear that it, too, is an acceptable approach for entrepreneurship pedagogy.

Presented case, Laurea Business Ventures, illustrates how a theoretical approach can be applied in practice. It has been designed according to pragmatic guidelines. LBV shows that it is possible to build a learning environment on different ground than traditionally in the universities. There are naturally several similar cases around the world in the field of education for entrepreneurship (e.g. Henry et al., 2003, 2005a, 2005b). Many of these are also very pragmatic, aimed at developing practical capabilities of their participants.

Interestingly, despite numerous prior estimations, no more resources per credit unit has been needed in LBV than in a traditional teacher-led learning environment. When the unit was formed

there were several doubts that mentoring and guiding will require substantially more time per student than teaching in a lecture-setting. Naturally the student spends now less time with a staff member. In a lecture-course a student may spend 40 hours on lectures, thus seeing the teacher and having a theoretical possibility for interaction. In a typical project with the same amount of credits a mentor may spend only 8 hours with the student. However, is time on a lecture really interactive face-time? In several cases a teacher could be substituted with a video and students with tape recorders. While 8 hours is obviously less than 40 hours, one should also think about the quality of time spent together. A mentor is fully focused on the problem at hand, discussing a particular case much deeper than is possible in lecture setting.

It is also an interesting question whether pragmatic approaches could be used also in other areas of applied science education. How, for example, does teacher education or some parts of the medical profession differ from other applied sciences? If education in some curricula is mainly aimed at creating graduates who in the majority of cases will work in some practical professions and not become basic researchers, should they consider the underlying assumptions on educational philosophy as well? This change is already taking place in several traditional academic organizations (see, f. ex. Kivinen and Ristelä 2001, Nowotny, Scott and Gibbons 2001 and Chisholm 2000), and should take place even more widely.

The key challenge in adopting a new educational philosophy is that it requires changes both in the institutional processes and in the operational patterns of staff. In a pragmatic university, whether aiming at basic or applied research, a lecturer turns into mentor and facilitator, spending her time outside of the high-lighted podiums. As she becomes a facilitator of learning processes she has to give the focal position to her partner, a student. The ripples that these changes make within institutes of higher education can grow high and force a whole university to reconsider its reason for existence. However, despite the challenges it creates, the author wishes that the readers dare to take their view in this matter into careful consideration and then act on it – according to best pragmatic recommendations.

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EXPERIENTIAL LEARNING, STRATEGIC ENTREPRENEURSHIP, KNOWLEDGE AND COMPETENCY IN THE UNIVERSITY CONTEXT

Abstract

In this paper, by analysing two different entrepreneurship education programmes in the UK, we explore how experiential entrepreneurial learning can be optimised while students engage in parallel in actually creating a new venture. Until both programmes are properly up-and-running - with graduates – both programmes started in 2009 - it will not be possible to draw firm conclusions about the types of business being started. This paper describes how research, experience and anecdotal evidence was used to develop two degrees. Progress will be the subject of reflective, longitudinal research to evaluate the relevant propositions. We identified four important issues arising from our analysis. First, a clear importance within these programmes that students start a real business, rather than just learn with cases or participate in simulations, business games, or role plays. In addition, we see a need to capture the learning with a portfolio. Second, there remains a debate about whether such a pedagogical intervention is best achieved at Undergraduate (Bachelor's) or Postgraduate (Master's) level. However, an important point about these programmes is that students can still graduate because there is a valuable learning experience in business start up to capture in a portfolio. Third, it remains unclear whether entrepreneurship (as opposed to enterprise skills) should be in the curriculum or adjunct to it. Or, indeed, whether the optimal situation is to have entrepreneurship as both part of the curriculum and adjunct to it. Fourth, it is important to recognise the potential of collaboration between 'complementary' Universities and the building of a sharing community, something of a federation which might grow over time, grounded with reference to entrepreneurial universities.

Keywords: universities, experiential learning, impact, new venture creation, strategic entrepreneurship

1. Introduction

We explore the role of experiential entrepreneurial learning in the provision of university entrepreneurship education while students engage in parallel in actually creating a new venture. Our chosen focus is particularly salient given contemporary debates about the effectiveness of entrepreneurship education (Henry et al, 2003), evaluation of programmes and the alignment of objectives with learning outcomes (Hytti, 2001; Hytti and Kuopusjärvi, 2004a, b) and, therefore, the importance of providing solid 'entrepreneurial outcomes' (Hannon, 2007; Pittaway and Cope, 2007b; Pittaway and Hannon, 2008).

We build upon prior studies that have argued the case for a ‘learning by doing and learning from doing’ approach (Thompson, 2008) or even an explicitly new-venture-based-learning experiential pedagogy (Gibson et al, 2009) in order to discuss the practical and theoretical rationale for delivering the most experiential and high-impact enterprise education possible. As such, we compare and contrast two philosophically and ideologically aligned degrees, at the University of Huddersfield (Undergraduate/Bachelor’s level) and Queen’s University Belfast (postgraduate/Master’s). Although there is prior evidence of the starting up of real businesses as part of entrepreneurship education courses in Europe (Hytti and Kuopusjärvi, 2004b), it is far from clear whether such pedagogies have been effective or successful, i.e. Hytti’s (2001: 45) cautionary note that, “the setting up of virtual or real businesses in entrepreneurship education programmes does not automatically create positive attitudes towards entrepreneurship.” As a result, we have sought to ensure that our respective pedagogies are grounded sufficiently theoretically and practically, as well as linking the classroom sessions, assessment, mentoring, and the new venture creation (NVC) itself in the most coherent and symbiotic way in order to optimise students’ entrepreneurial learning.

We need to set this work in the context of enterprise and entrepreneurship education. Jamieson (see Henry et al, 2003: 92-93) delineated between:

- education about enterprise: awareness creation ... educating students on the various aspects of setting up and running a business mostly from a theoretical perspective.
- education for enterprise: the preparation of aspiring entrepreneurs for a career in self-employment with the specific objective of encouraging participants to set-up and run their own business.
- and education in enterprise: management training for established entrepreneurs and focuses on ensuring the growth and future development of the business’.

It is important at this point to separate what we would call ‘generic enterprise skills’ from more specific entrepreneurship skills. The former comprise valuable skills that arguably all students can benefit from having upon graduation. They include communications, problem solving and decision making skills and they will help with employability (Nabi and Bagley, 1999). . They can be developed in a variety of ways, but in particular through practical exercises, case studies and problem based learning (Rae, 2004). Entrepreneurship skills are then those associated with business start up and they can be developed through either simulation or real business experience. The important issue is that students are exposed to opportunity and risk. We will see in the Huddersfield model (Section 3.1) that generic enterprise skills provide a foundation for entrepreneurship skills as the degree develops. Hytti and Kuopusjärvi (2004a) identified three approaches:

- To learn to understand entrepreneurship (What do entrepreneurs do? What is entrepreneurship? Why are entrepreneurs needed?)
- To learn to become entrepreneurial (I need to take responsibility for my learning, career and life. How to do it)
- To learn to become an entrepreneur (Can I become an entrepreneur? How to become an entrepreneur? Managing the business?).

It will be appreciated that the two degrees featured in this paper cover all three.

Timmons (1989) succinctly points out that entrepreneurs create something (of value) out of nothing. Effectively they spot opportunities in a dynamic and uncertain world and seek to exploit them. In doing this they are not necessarily searching for the best or optimum answer to a problem. They are, in part, pursuing their instinct. They accept and take the risks implicit in their venture as they understand them; they may prepare business plans but do not plan to the point where they never 'get on with the task in hand'. Successful entrepreneurs stay focused on key issues (Bolton and Thompson, 2000). In this respect one might argue that too much knowledge (to analyse) could be a restraining force. These arguments would reinforce that entrepreneurs are more naturally 'right brain' than they are 'left brain'. Degrees and other programmes that emphasise left brain learning may well teach students more about entrepreneurs and how they behave but they will be less appealing to those would-be entrepreneurs who seek support for developing that 'something out of nothing'. It can thus be an issue if these people are over-exposed to teachers and researchers who are by nature more left-brain. The designers of the two programmes featured believe that if we are serious about developing entrepreneurial potential and intent then we have to engage the right-brain.

The two degrees profiled in this paper clearly take a right-brain approach – in their context an extreme right-brain approach. Practical engagement can, after all, be achieved with exercises, case studies and simulations; it does not have to involve starting a real business, which these do. These degrees take a step further to the right that most other programmes we have found and they are not designed to establish a new 'common ground' but rather to provide a more robust and challenging experience for the would-be student entrepreneur who is serious about obtaining a degree and at the same time learning (and embedding their learning) about the realities of entrepreneurship. These degrees, then, are designed for a niche market and identifying those students who are ideally suited for the programmes and can benefit from them is clearly a challenge. Arguably delivering on the promise implied in these programmes is a greater challenge for academics than teaching tools and transferring knowledge in a more conventional sense; and that is the risk they are taking. The promise we refer to is grounded in the belief that both business survival and business growth can be enhanced if the would-be entrepreneurs who start and run them are more knowledgeable, more thoughtful and more reflective – and that this comes by experiential learning. Specific tools and concepts will always be relevant and important; the challenge for Huddersfield and QUB staff is delivering these in an appropriate and flexible manner that responds to student needs as their businesses develop. Assessments will also need to reflect a flexible approach. The theories of business and entrepreneurship serve to help students make sense of what they experiencing as they develop and run their businesses. In this context, the actual businesses are really vehicles for developing entrepreneurial awareness and competency. They are a good means for helping students deal with opportunity, opportunism and risk. It is not necessarily a given that they must be successful businesses (if the student is to graduate) because there can be valuable learning from setbacks as well as from failure. It is also not a requirement that the students continue with the businesses after the degree credits are obtained, although it is anticipated many will.

Later we explain the entrepreneur's learning community (Figure 3) where it is emphasised would-be entrepreneurs can learn a great deal from listening to and questioning existing 'role model' entrepreneurs. Finding and engaging suitable role models is another challenge for the effective running of these degrees, as is finding external mentors who can support the students in their endeavours and supplement the contribution of the academic team.

It should be emphasised that the word ‘entrepreneur’ is used relatively loosely and flexibly in this paper. In many cases our students are really would-be entrepreneurs who aspire to develop a genuinely entrepreneurial business. Not all businesses are entrepreneurial (i.e. they are not genuinely different from other rival organisations) and not all would-be entrepreneurs become entrepreneurs in a tight definition sense, although they may start and maintain micro and small businesses that survive for a number of years. There are many definitions of entrepreneurs but if we use that of Bolton and Thompson (2000) we can see the key distinction. They define the entrepreneur as ‘a person who habitually creates and innovates to build something of recognised value around perceived opportunities’.

The remainder of the paper is now structured as follows. Section 2 sets the scene by outlining a theoretical perspective on entrepreneurial learning and new venture creation and developing two conceptual models – one of informal and formal entrepreneurial learning, and one of the link between ‘experientiality’ and entrepreneurial impact. In Section 3 we describe succinctly, in a case study format, the BA Enterprise Development at the University of Huddersfield and the MSc New Venture Creation at Queen’s, in order to develop an integrative discussion and conclusion, using our two conceptual models as an analytical framework, in Section 4.

2. Entrepreneurial learning, NVC and universities: a theoretical perspective

In this section, we develop two conceptual models, building upon the theoretical literature on entrepreneurial learning and NVC. Clearly, universities have had a major role to play in providing entrepreneurship education, and these have been extensively reviewed by academics (for example, Dainow, 1986; Scott and Twomey, 1988; Plaschka and Welsch, 1990; Solomon et al, 1994; Gorman et al, 1997; Kolvereid and Moen, 1997; Vesper and Gartner, 1997; Leitch and Harrison, 1999; Laukkanen, 2000; Hannon et al, 2004; Hytti and Kuopusjärvi, 2004a, b; Béchard and Grégoire, 2005; Henry et al 2005a, b; Akola and Heinonen, 2006; Hannon, 2006; Hannon et al, 2006; Van Auken et al, 2006; Botham and Mason, 2007; Bridge and McGowan, 2007; Hannon, 2007; Pittaway and Cope, 2007a,b; Smith, 2007; European Commission, 2008; Herrmann et al, 2008; Hussain et al, 2008; Pittaway et al, 2009). However, while there have been clearly a wide variety of approaches to entrepreneurship education (see Hytti, 2001), it is not evident that many of these pedagogies have enhanced entrepreneurial learning or, indeed, contributed to effective, successful (i.e. high performance), and sustainable strategic entrepreneurship.

Authors have previously advocated that HEIs adopt an explicit strategy of business generation (Laukkanen, 2000) and the inclusion of practitioner and practice-relevant learning, or “a shift from transmission models of teaching (learning ‘about’) to experiential learning (learning ‘for’) and offers students techniques that can be applied in the real world” (Hermann et al, 2008) . Similarly, it has been noted that UK entrepreneurship education, even at Master’s (postgraduate) level, has had a predominant focus upon ‘pre-start’ and assisting students to prepare to create a new venture (Gibson et al, 2009). Tellingly, the authors conclude that: “Most of these programmes are clearly aimed at ... ‘thinkers’ (those thinking of starting a business), not ‘doers’ (those who actually are doing so).” (ibid). The Triple Helix of university-industry-government has been put forward as a model that shows that the ‘entrepreneurial university’ is not an ‘oxymoron’ (Etzkowitz, 2003). Clearly, there are major challenges in promoting entrepreneurial behaviour in any bureaucratic organisation. However,

whilst universities being entrepreneurial of themselves and actually promoting entrepreneurship amongst students are two quite different streams of activity, they nonetheless may have a relationship with each other, i.e. may be mutually dependent or influential.

Akola and Heinonen (2006: 16) have argued that assessments in entrepreneurship education are ineffective or uncondusive to entrepreneurial learning, "if they are not embedded in a real-life situation." While there are clearly many different approaches to assessment (just as there are various approaches to entrepreneurship education (Hytti, 2001)), it is critical also to connect assessment to learning outcomes (Pittaway et al, 2009). In other words, there needs to be clear integration and coherence between the aims, teaching, learning, assessment, and ultimately outcomes, whether academic or entrepreneurial, of entrepreneurship education programmes (Hytti, 2001; Hytti and Kuopusjärvi, 2004a, b; Pittaway et al, 2009). This again links in closely with the debate around the effectiveness of entrepreneurship education and its entrepreneurial outcomes (Henry et al, 2003; Hannon, 2007; Pittaway and Cope, 2007b; Pittaway and Hannon, 2008). However, in parallel to the field of entrepreneurship education, the process of entrepreneurial learning has also been researched to a more limited extent but this concept tends to be applied in a practical context, i.e. starting and/or growing a new venture, and not from a university perspective (Cope and Watts, 2000; Jones-Evans et al, 2000; Rae and Carswell, 2000; Heinonen and Akola, 2007; Pittaway and Cope, 2007a; Leitch and Harrison, 2008; Politis, 2008). In various contexts, however, entrepreneurial learning can be modelled as a process which intersects learning, the 'development of entrepreneurial identity' and the socialised, networked "negotiated enterprise" (as conceptualised by Rae, 2005). In Rae's (2005) seminal framework for entrepreneurial learning, therefore, the social connections and networks of entrepreneurs, for example with mentors, is critical to how the enterprise is 'negotiated'. This moves sharply away from the individualistic paradigm expounded by, for example, Shane and Venkataraman (2000) and Shane (2003) in the identification and exploitation of opportunities. The socialised view of entrepreneurial learning (Rae, 2005) is thus one which is supportive of our model of NVBL.

Broadly, entrepreneurial learning can be conceptualised as a complex transformative process in which career experience is converted into entrepreneurial knowledge (Politis, 2008), though Heinonen and Akola (2007) noted that it has no agreed 'precise definition'. For the purposes of this paper, Politis' (2008) definition is appropriate. Much entrepreneurial learning literature has been influenced by theories and models of experiential learning (Dewey, 1938; Lewin, 1942; Kolb, 1984) in which people learn through a process of reflection and review (e.g. Jones-Evans et al, 2000; Cope and Watts, 2000; Pittaway and Cope, 2007; and Politis, 2008). In particular, some authors have argued that a learning-by-doing, reflective, and experiential approach is clearly so much more appropriate (Cope and Watts, 2000; Cope, 2005, Thompson, 2008). While even David Birch has stated that, "If you want to encourage entrepreneurship, it should be through some kind of apprenticeship" (Aronsson, 2004: 289), Hindle (2007) suggested that universities could offer such an apprenticeship and, indeed, asks: "Is the culture of the business school an immutable constant, or could business schools be induced to adapt and diversify their educational approaches to suit different subject matter and different student needs using different approaches than those that currently prevail?" Although the entrepreneur's personal development should be considered when designing entrepreneurship education programmes (Rae and Carswell, 2000), Politis (2008: 65) cautions that: "attempts to stimulate entrepreneurial activities through formal training and education is not likely to have an strong and direct impact on the development of entrepreneurial

knowledge ... [but] should primarily focus on developing creativity, critical thinking and reflection among individuals, which in turn can have a profound influence on both their motivation and ability to develop entrepreneurial knowledge throughout their professional lives”

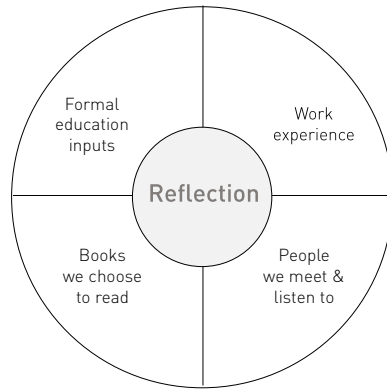


Figure 1. Formal & Informal Entrepreneurial Learning Model
Source: Developed by authors

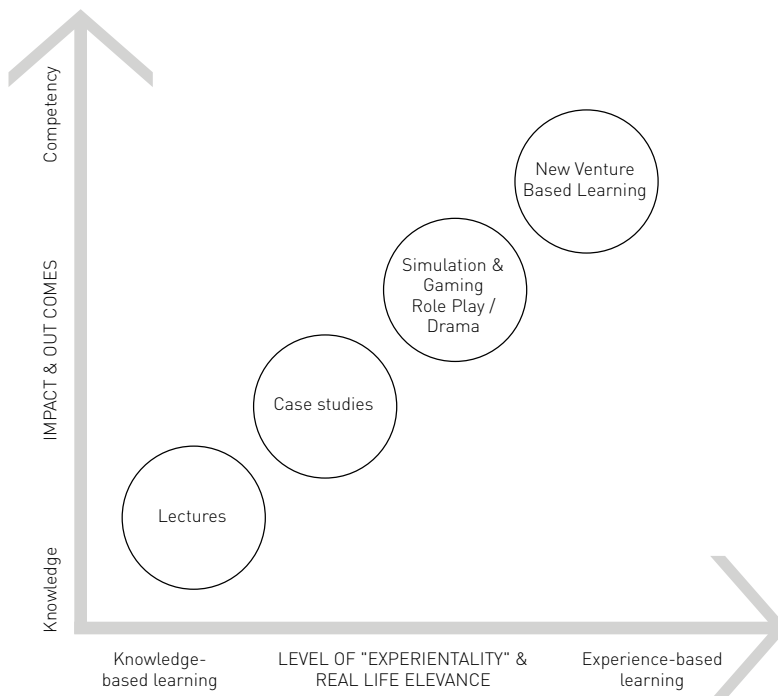


Figure 2. Experiential learning and entrepreneurial impact
Source: Developed by authors

So can universities stimulate effective experiential entrepreneurial learning for students who are involved in new venture creation while simultaneously participating in an uber-experiential entrepreneurship education program? Despite a plethora of different approaches to entrepreneurship education, whether experiential or not (Hytti, 2001; Fisher et al, 2008), we would argue that the Kolbian reflective experiential entrepreneurial learning process is influenced by four elements (Figure 1), which may manifest themselves as formal education inputs, work experience, books we choose to read, or people we meet and listen to. In a sense, the latter is of most interest to us, because it may concern organised mentoring, on the one hand, or more informal role models, on the other. Clearly, reflective learning, i.e. concrete experience, reflection, abstract conceptualisation and active experimentation (Kolb, 1984), and career or work experience (Politis, 2008) are critical to this process, but so too are the other elements. Intuitively, then, any entrepreneurship education programme that claims, or indeed aims, to contribute to effective entrepreneurial learning should be benchmarked against this model, and should contribute strongly to both the 'left' and the 'right' hand side of the model. Yet, while the two leftward quadrants (**knowledge-based learning**) are important as a basis for future entrepreneurship, they are impotent if they are not symbiotically linked to the rightward quadrants (**experience-based or experiential learning**), work experience and 'people we meet and listen to'.

Linked to this entrepreneurial learning model, Figure 2 then illustrates how certain approaches to entrepreneurship education (lectures; case studies; simulation & gaming / role plays; and New Venture Based Learning or creating a 'real life' new venture) differ in terms of their level of experientiality and real-life relevance and, as a result, whether they can be categorised as knowledge- and/or experience-based learning.

In addition, our second model illustrates how experientiality, therefore, has a direct influence on the impact and outcomes of such pedagogical approaches – where at the basic, non-experiential level, for example, lectures help to develop knowledge, whilst other approaches, particularly 'real life' or new venture based learning actually build competency, essentially the ultimate and most effective form of entrepreneurial learning.

3. Entrepreneurial learning, NVC and universities: a theoretical perspective

3.1 BA (Hons) Enterprise Development, University of Huddersfield

A key feature of this new degree is that students in part learn by doing and learn from doing. After three years students will have accumulated the necessary credits for an undergraduate honours award; they will also have started their business and have it up and running. Admission therefore requires applicants to be able to demonstrate previous entrepreneurial endeavour and serious intent; this may well embrace entrepreneurship programmes in schools. The basic approach is that in the first year students explore a number of possible ideas and opportunities before settling on one. In the second year they develop this in detail and possibly launch the business, which they are required to do by the end of the year. In the third year they are running the business. Some of their credits thus come from work-based learning and experiential reflection.

They will:

- Learn by listening – somewhat passively, but not entirely so – to academics, certainly, but also to ‘experts’ and practising entrepreneurs
- Learn by and from doing, with a real focus on reflective experience
- Be confronted with problems and the need to make decisions, both individually and in groups
- Be exposed to ambiguity, uncertainty and some risk throughout
- Be encouraged to learn from their mistakes and manifest poor judgment.

In designing the programme the Huddersfield team were keen to ensure that the degree deals effectively with the three key transformational themes of new business development:

1. An idea into a product and a real opportunity
2. A would-be entrepreneur into a competent practitioner
3. The informal beginning into a proper organisation.

It is a designed three year developmental experience that embraces knowledge, skills and behaviours – both doing and thinking - and attitudes along the following line

Year One - the foundation part – developing the person

We believe it is important to start the programme by making sure every student is ‘on message’ and understands how the programme will develop. The need to test ideas robustly, and not assume every idea for a new product or service is a real opportunity, is critical and this will be instilled by exposing the students to a ‘dreaming room’ experience where their ideas and thinking are put to the test, probed and scrutinised. This environment needs to be both firm and fair if it is to help build student confidence.

Relevant foundation modules will be based around Personal and Study Skills (relevant for this degree and including the abilities to screen opportunities and to pitch an idea effectively), Creativity, Innovation & Entrepreneurship, Problem Solving and Decision Making. Seminars require students to work both individually and in groups to develop their ideas creatively. The intention is that at the end of Year One students will have explored a number of options and ideas and chosen to focus on one that they will develop as a business in their second year. They will also have been exposed to a number of different entrepreneurs. Students will also be required to think about, assess and address their own personal characteristics – to both understand their entrepreneurial potential and put in place mechanisms to deal with the implications. Such an approach can contribute to developing students’ entrepreneurial identity (Rae, 2005).

Year Two - the establishment element – crafting the business opportunity

Students will develop their business plans, which will stretch beyond the start-up stage and factor in growth issues from the beginning.

Support modules will include and cover relevant Legal Aspects, Project Management (as part of Business Planning), Marketing and Selling and Finance. The relevant 'technical' aspects are supported by allowing students a floating option module from across the campus.

Assessment will be a mixture of academic work and business-related artefacts. At the end of the year the students will have a business that is either in its embryo stage or ready to launch.

Year Three - the final stage – preparing for growth

In their final year students will be running their business. Key modules on strategy, growth and leadership support the year. The students will complete a dissertation with an important reflective component. In addition their work experience will be accredited.

Exit Routes

Although careful entry selection will attempt to recruit students who are most suitable for this degree it is recognised some will not succeed in starting a growth business. Those students who are instead able to demonstrate success from self-employment or starting a small social enterprise or running a successful one-off project will be able to complete all the modules and graduate, because they will have relevant experiences to reflect upon. Those students who are not able to do one of these options successfully will be able to complete most of the specified modules but in their final year they will be asked to submit a more conventional dissertation and exchange the work-based experience credits for two relevant taught modules from the Business School. The name of their degree award will be amended to reflect this.

Networks

Networks and networking are important themes in entrepreneurship (Anderson et al., 2007; Casson and Della Giusta, 2007; Greve and Salaff, 2003) and their significance is recognised. Figure 3 (from Thompson, 2008) describes the Entrepreneur's Learning Community and argues that student entrepreneurs on this programme will find learning opportunities from their interactions with fellow students undergoing the same development opportunity, from the academic team as both teachers and mentors, from practising role model entrepreneurs and relevant professionals that are invited to the University and from external mentors that we find and that they find for themselves. We have set out to build this community as effectively as we can from the outset.

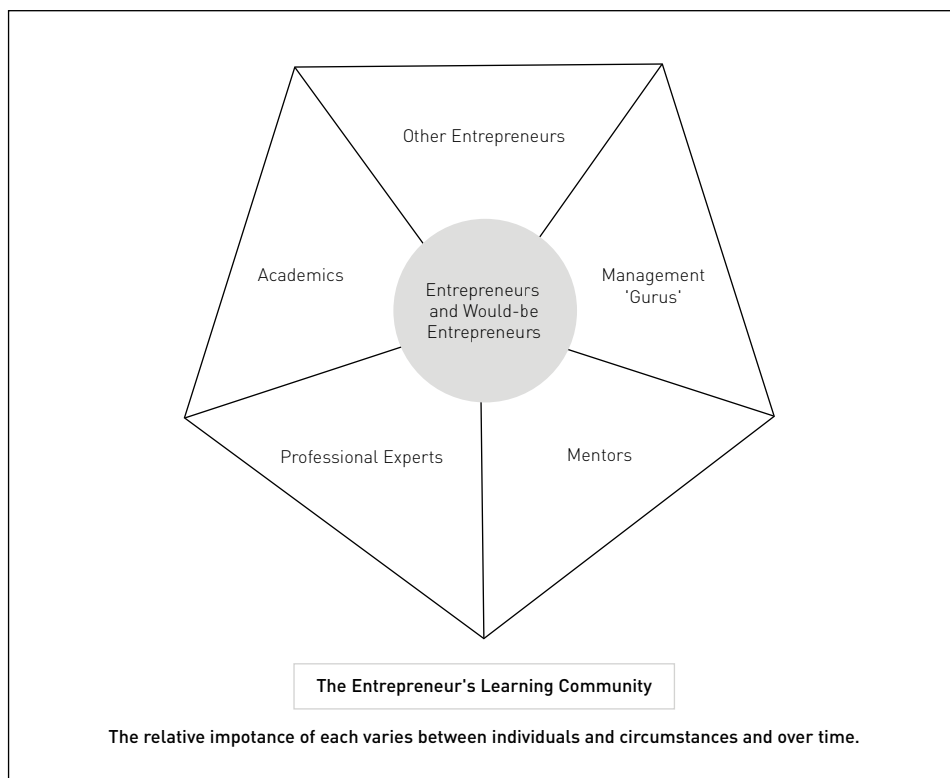


Figure 3. The Entrepreneur's Learning Community (Thompson, 2008)

3.2 MSc New Venture Creation, Queen's University Belfast

This approach builds on the 100 per cent embedded curriculum model at Queen's University Belfast in the degree pathway of 22,000 students. The university's model was benchmarked in a Directorate General (DG) Enterprise report as a best practice curriculum model (European Commission, 2008). There is a focus on students going through the entrepreneurial process of creating, innovating and executing – with students given the choice to focus on starting their own business, social enterprise or intrapreneurial project in the corporate setting. There is an opportunity for students to learn by having an opportunity to implement their innovation through developing their own business. Queen's University was the Times Higher Education Supplement Entrepreneurial University of the year in 2009-10. The Queen's approach has also been adopted as best practice in a variety of countries including China, India and Latvia amongst others. Over 500 students started part time businesses at Queen's in the last year. However, the new Masters is aimed at giving Queen's graduates the opportunity to implement business ideas with High Growth potential, building on their entrepreneurial learning within their own curricular area.

The difference from Babson College type models is the focus on learning, as well as business success; at Babson, students are given poor marks if they do not raise venture capital (which is very tied to American culture). As we believe that serial entrepreneurs have to learn from failure (though see Cope (2010), for further insightful analysis of the process including its 'grief recovery'), our pedagogy – whilst aiming for success – allows students to apply the Kolb model (plan, do, and reflect) and to learn from failure, as well as success.

It should not be surprising to the reader that the key recommendation emerging from this paper is that we would encourage universities not only in the UK but in other parts of Europe (and elsewhere) to introduce exploratory programmes that implement the New Venture Based Learning model. Queen's University Belfast validated a Masters programme in New Venture Creation that started in September 2009. Discussions between the university's Regional Office and Queen's University Management School identified the critical need for a Masters-level programme which provides practical and academic support to graduates who have a viable idea with growth potential over the first year that they create and grow their new venture.

The primary rationale for this new programme is, therefore, to meet an economic and social need within Northern Ireland for focused, practice-oriented provision of postgraduate entrepreneurship education for graduates who have a viable business idea with growth potential. The MSc New Venture Creation builds on activity at the Undergraduate and Postgraduate level to enable students to develop the capacity to apply their project practically. The MSc New Venture Creation is in line with the regional development agency, Invest NI's, aim to create new ventures with high growth potential. We anticipate that students will have started implementing their new venture by the time they begin the course or, if not, within the first few weeks. In some cases, they will not be trading – but most should at least be looking for their first customer(s) and some may even have successfully made the first sale. Our definition of start up is that students will have registered the business whether they are actively looking for customers at that stage or not.

There are two potential types of students on this programme, both of whose needs will be catered for effectively through the provision of mentors and other support. First, those who are ready to trade, who may have ideas which are low growth, relatively low (or medium) risk, low entry barriers (e.g. funding requirements), and are near to market; and, second, those who will be non-trading for some time, who have a high-growth potential, distant from market, high risk, and may be developing a prototype or other technology which means they may not be able to start trading during the MSc. Mentors and the Course Director will monitor the speed and robustness of the development or implementation of the new venture (through the portfolio of evidence and notes from mentor-student meetings): although not a formal part of the assessment of this MSc, such monitoring is necessary to ensure students can progress the implementation of their new venture at a satisfactory speed, and that developmental issues or barriers can be identified by an "early warning system" and resolved.

In the first semester, three modules will run concurrently, the first of which introduces students to the concepts and practicalities of entrepreneurship and more specifically to the model of New Venture Based Learning applied within the MSc New Venture Creation. At the same time, in a module on Entrepreneurial Strategy and Planning, students will gain the ability to enhance and develop their idea into a more strategic vehicle for the future development and growth of

the business. The third module in the first semester will focus on Entrepreneurial Marketing & Sales, and hence students will gain the ability to undertake sales and marketing activities in an entrepreneurial way, which builds upon the existing idea.

Semester two involves three further concurrent modules. The first is on Entrepreneurial Finance, giving students the ability to obtain finance and financially manage the business. The second focuses on Innovation, i.e. the ability to be innovative to grow the new venture. The third focuses on Leadership and Management, hence providing the ability to lead and manage the new venture in a strategic and entrepreneurial manner. Finally, students will undertake a Strategic Review of their business. Throughout all modules, students will be mentored and assessed on that particular functional aspect of their new venture.

At the end of the degree course, the 'Project' – which is not a dissertation in the traditional sense due to its experiential, reflective and New Venture Based Learning approach – is a Strategic Review of students' experience over the course, both of the pre-start activity, the process of starting the business and beginning to trade. Students are required to write a 15,000 word (minimum) reflective document: a Strategic Review of how successful or otherwise their strategy has been over the first year. This Strategic Review is not assessed on how successful the business has been in its first year as it is often the most difficult for many businesses. The Strategic Review will vary depending on the type of student and how near/distant from market their idea is; level of funding required, risk, and growth potential. Furthermore, it is an opportunity for some students to review the implications of taking their idea to market. Indeed, while some students may have a real business at the end of this process (which may or may not be trading), others may rather have a refined set of ideas.

4. Discussion of the issues being raised and Conclusions

Both degrees successfully recruited their first cohorts. Huddersfield was looking for undergraduates who welcome a non-traditional, more reflective and more experiential approach and who are seriously interested in doing something for themselves after graduation. There is a small minority of more mature people who see the degree as an opportunity to change direction. QUB sought graduates who had a genuine business idea they wanted to take forward, and who are attracted by a bursary which allows them to test their idea in the 'real world'. As time goes on, the relevant staff will learn more about the people for whom these programmes appear best suited – and how the programmes themselves might need to be modified to reflect the needs and expectations of those who are attracted and recruited. Similarly it is only when the programmes are properly up-and-running - with graduates – that it will not be possible to draw firm conclusions about the types of business being started. Although Huddersfield is working with financiers to establish a venture fund, it is by no means certain the types of businesses generated will need substantial funding – at least in the beginning. The majority of the students will be young and lack either an educational or an experiential grounding in specific technologies. The QUB students are likely to be different – many will have relevant first degrees that can underpin their business proposal.

In many ways this is not a relevant issue. Businesses which require only limited capital and are not underpinned by technology can be set up to be either (or both) scalable and saleable – using

as a template the franchise preparation extolled by Gerber (1995). We need look no further than Subway for a perfect example. This business was set up by the seventeen year old Fred DeLuca as a single sandwich shop. The main issue is the extent to which the business is both strategic and entrepreneurial. If we take the basic principles of competition described by Porter (1985), namely cost management and difference, we can see that an entrepreneurial business is different in some critical way. Either the product or service offers something different from its rivals, something that matters to customers, or the business does what other businesses can do, but faster or cheaper. Students will be driven to achieve one (or even both) of these regardless of the nature of the business. In other words they will be pushed to create a robust business model where it is clear what the product or service is, who the target customers are, and (especially) what their compelling reason to buy is. It goes without saying there should be a sound accompanying revenue model. Thompson (1999) offered the E-V-R (environment-values-resources) framework as a test of a strategically entrepreneurial business, arguing successful businesses achieve and maintain through emergence and change a congruency between their resources and opportunities.

Related to our preceding description of both universities' programmes and, in particular, when considering the wider implications for entrepreneurship practice (the "So what?" question), there are four critical strategic issues for entrepreneurship educators.

First, there is a clear importance within these programmes that students start a real business, rather than just learn with cases or participate in simulations, business games, or role plays. In addition, we see a need to capture the learning with a portfolio. Whilst, at least according to our conceptual model of entrepreneurial learning and entrepreneurial impact (Figure 2), case studies are more experiential – and, therefore, have higher competency-building outcomes than lectures, (and more so with role/play and drama) – these are still fairly low impact compared to actual "New Venture Based Learning".

Inevitably, one can imagine certain pitfalls (for example, if a student-entrepreneur's idea turns out to be unviable or their new firms does not perform as well as anticipated), but then such is a risk with starting any business. We would suggest that these programmes would enable students/entrepreneurs, through higher-impact experiential learning and the building of competence and experiential knowledge (not just academic knowledge, as per Figure 1) and, consequently, to be better prepared for an entrepreneurial career.

Second, there remains a debate about whether such a pedagogical intervention is best achieved at Undergraduate (Bachelor's) or Postgraduate (Master's) level. Conceivably, students at Master's level are more likely to have more knowledge than undergraduates and, indeed, may have more work experience that can be applied to their new venture. Then again, it may be that, in forming entrepreneurial attitudes and an "entrepreneurial mindset", the minds of undergraduates may be more receptive to such a programme. However, the answer to this question remains unknown and will remain so we would suggest, that without further research, we can say they are different and should achieve different outcomes. For example, the pedagogy is condensed into a year at PG level while it may be over 3 years at UG, which may give more opportunities for pedagogical intervention. A related question for future investigation is whether one takes a different approach with UG and PG students; in one sense, then, there is an analogy here with the PGCE (Postgraduate Certificate of Education – 1 year of educational development and

teacher training/classroom practice after completing a Bachelor's degree in a subject) and the BEd (Bachelor of Education – 4 years of subject learning and teacher training) education courses in the UK. Some would argue that the BEd may enable students to develop their teaching ability over a longer period before embarking on their career; but with NVBL there may or may not be a similar benefit of the UG approach.

Third, it remains unclear whether entrepreneurship (here, as in our earlier discussion in the introduction we do mean entrepreneurship as opposed to enterprise skills) should be in the curriculum or adjunct to it. Or, indeed, whether the optimal situation is to have entrepreneurship as both part of the curriculum and adjunct to it. These degrees imply a clear choice by students and there is room and opportunity for incubation-themed activities to operate on campuses for students seeking to try out their business ideas without committing to a dedicated degree.

Fourth, it is important to recognise the potential of collaboration between 'complementary' Universities and the building of a sharing community, something of a federation which might grow over time, grounded with reference to entrepreneurial universities (e.g. Leitch et al, 2007). This particularly provides a wonderful opportunity for international collaboration of various forms – which is one of the rationales for presenting this paper at USASBE and for discussing its findings with a North American audience. For such a federation, it is relevant to consider if we are developing entrepreneurial or enterprising individuals or both?

Similarly, what about approaches that are either practical/applied (engineering) or theoretical/pure (business and management)? Other issues include how to balance creativity, on the one hand, with the managerialism or bureaucracy that is often espoused within Business School courses and which is a feature of "management" within very large-scale corporations. Similarly, informal versus formal learning is another important debates. While we recognize that two thirds of entrepreneurship education in England is business school led (Hannon et al, 2006), and which we are aware is similar in universities in most other Western countries, basing entrepreneurship education within an environment in which students are being prepared for "corporate" careers (aside from the relevance of entrepreneurship to "corporate entrepreneurship" and intrapreneurship) may not be the most optimal to foster entrepreneurial learning and creativity.

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FOCAL FIRM ACTIVITIES IN A BBA PROGRAMME: A CASE OF ENTREPRENEURSHIP EDUCATION

The paper describes the learning approach applied in a BBA programme in the Seinäjoki University of Applied Sciences. The programme utilizes long term partnerships with SMEs as an integral part of teaching. It was launched, in its present form, in January 2008.

The entrepreneurial BBA programme is based on the principle of treating entrepreneurship as a capability to be developed within individuals rather than as a taught subject. The explicit focus is on SME management skills rather than entrepreneurship. The implementation, however, implicitly fosters individuals' entrepreneurial capabilities which are held to include both the skills to manage a small business and the mental attitudes necessary for doing so. The assumption is that while all the students are not going to become entrepreneurs, all benefit from the development of entrepreneurial thinking. Partnerships with focal firms give the students a live, holistic understanding of how an SME operates. This enhances the students' ability to weigh realistically the possibility of a career as an entrepreneur and provides them with practical experience of a working relationship with a firm.

The paper gives a brief overview of the pedagogical background of the learning approach and of the focal firm activities, and discusses experiences of the first two years.

Keywords: Entrepreneurship education, BBA, teams, small and medium enterprises, active learning

1. Introduction

Past decades have seen a notable increase in the interest in entrepreneurship in higher education. In Finland, enhancing the interest in entrepreneurship has been an official aim for higher education since the mid-90's (Guidelines for entrepreneurship 2009, 25-26). Internationally, a recent literature review suggests that the field of entrepreneurship education is converging towards agreement on two key issues: the perspective is that of attitude-changing rather than of start-ups, and the methods need to be more action-based than traditional (Mwasalwiba, 2010, 20, 40).

Yet the very extent of the continuing discussion on entrepreneurship in higher education suggests that the practical problem of combining entrepreneurial behaviours with traditional traits associated with theoretical higher education remains only partially solved. How does one instil innovativeness, practicality and risk-taking in students while operating in the context of theoretical content, respect for senior scholarly authority and fixed courses with fixed assessment criteria? This paper describes a case of entrepreneurship education in Seinäjoki University of Applied Sciences. The Degree Programme for SME Business Management originally begun in 1992. Located in the traditionally entrepreneurial region of Southern Ostrobothnia, the degree programme builds upon a long tradition of entrepreneurship education (Riukulehto, 2007).

Now, in the past two years, the programme has adopted a distinctive approach to entrepreneurial education.

The aim of the development process has been to infuse the whole programme with a spirit of modern entrepreneurship and a flavour of practical experience while retaining a clear course structure (cf. the Team Academy BBA in Jyväskylä UAS, described in Leinonen, Partanen & Palviainen, 2002). The original impetus for change came with the need to restructure the formerly 240 credit programme to the standard 210 credit BBA degree format. The need for radical change in the curriculum both prompted and enabled a radical change in the pedagogical approach as well. Two leading principles, *active learning in a social context* and *integrating learning to continuous cooperation with SMEs*, were crucial in programme development. The ongoing process of developing an entrepreneurial BBA programme has challenged both the staff and the students to re-think their roles.

The next section of the paper describes briefly the theoretical background of the adopted approach. In the third section the practices of the programme are outlined with some examples. The paper concludes with a section on conclusions so far.

2. Teaching entrepreneurship – a contradiction of terms?

A number of issues are under continuing debate in entrepreneurship education, among the most important the proper aims and the proper name for entrepreneurship education (see e.g. Jones & Iredale, 2010, 10-12; Mitchelmore & Rowley, 2010; Sewell & Pool, 2010). Entrepreneurship education is generally understood as referring to educating future entrepreneurs and individuals possessing entrepreneurial traits such as responsibility for self and others, innovativeness, etc. Traditionally the success or failure of entrepreneurship education is measured with the number of entrepreneurs created or post-education attitudes towards entrepreneurship such as entrepreneurial intent (Mwasalwiba, 2010, 34). Currently, as working life increasingly favours entrepreneurial traits in employees, entrepreneurship education is also linked to employability (e.g. Sewell & Pool, 2010)

In reference to the Programme described here, the usage discussed by Ristimäki (2008) is adopted with some modification. Entrepreneurial and entrepreneurship refer both to *business knowledge* (cf. business and management competencies in Mitchelmore & Rowley, 2010; Jones & Iredale, 2010, 10-11) and to more Schumpeterian *entrepreneurial qualities* such innovativeness, calculated risks and catalytic behaviour (Ristimäki, 2008; cf. entrepreneurial competencies, conceptual and relationship competencies in Mitchelmore & Rowley, 2010; Jones & Iredale, 2010, 11).

In the Degree Programme for SME Business Management, naturally, business knowledge as it pertains to running a small or medium-sized firm is the core substance of the programme. Entrepreneurial qualities are viewed as something developing within the individual and manifesting in the individual's capability to behave entrepreneurially. Developing a capability is something the individual or group of individuals does, rather than something to be done to the individual. However, institutions of higher education are traditionally structured to provide teaching more than learning. The focus tends to be on the course content rather than on student

learning. The ECTS system with its emphasis on learning outcomes is making a difference; yet clearly abandoning the traditional mode of thinking is challenging for teachers as well as students.

The pedagogical approach in the Degree views the student as an active participant in the learning situation. He looks for comprehension, tests ideas and constructs an understanding. The teacher is a consultant, offering suggestions rather than definitive models, and assists in the testing and confirmation of ideas. Learning is thus located in the individual and the individual's learning community. For learning to occur, the student has to work at it, and the teachers have to provide meaningful learning situations.

The adopted learning approach is related to collaborative knowledge building (e.g. Yazici, 2005; Hakkarainen, Lonka & Lipponen, 2008), problem-based learning (see e.g. Tan & Ng, 2006) and investigative learning (tutkiva oppiminen) as conceptualized by Kai Hakkarainen and his colleagues (Hakkarainen, Lonka & Lipponen, 2008) and Kolb's learning cycle as recently modified by Taatila, (2010, 56-57, see also Vince, 1998; Petkus, 2000). Learning is considered contextual, i.e. connected to a specific issue and to a specific social and cultural context. Learning occurs in a learning community where knowledge is shared, interpreted and constructed in social processes. Students as active learners are also teachers – to themselves as well as each others. The inherent assumption is that the problems investigated are open-ended problems with no single correct solution. Small and medium enterprises and entrepreneurship, as subject areas, are well suited for the open-ended approach. SME firms and their operating context are highly heterogeneous and hence multiple 'local' solutions rather than traditional correct answers are required.

Learning outcomes must also be assessed somewhat differently (cf. e.g. Munro & Cook, 2008; Pittaway, Hannon, Gibb & Thompson, 2009, 77). Ultimately they should be viewed in terms of the students' ability to recognize and solve independently problems that occur in the environment, and the creative, practical application of theoretical tools, rather than in terms of students possessing the theoretical tools or knowledge. The learning dimension of competencies is thus emphasised. Focal enterprises provide the familiar example and anchoring for theoretical knowledge. At the same time the course format ensures that learning tasks enforcing application of the theoretical to the focal firm context occur.

To summarize, entrepreneurship is viewed in the programme as *an ability to see opportunities, to self-organize and organize others, to work with and through others to achieve self-defined goals* (see also Arola, Katajamäki, Taijala, Turunen & Viljamaa, 2008, 5). The aim is that the student learns to habitually view his environment analytically and sees himself as a dynamic participant of that environment. The perspective is that of opportunities rather than of limitations. The explicit focus of the courses and the programme as a whole is on the theoretical and practical SME management skills needed to run and develop a small business. At the same time the implementation of the courses and programme as a whole is designed to foster the mental attitudes necessary for doing so. While most of the students will not end up as SME owner-managers, all will benefit from the development of entrepreneurial skills and attitudes. In the degree programme these skills and attitudes are fostered using a framework of focal firm activities. Using SMEs as learning environments is by no means unknown in higher education (see e.g. Hynes & Richardson, 2007; Taatila, 2010). The next section describes the application developed in Seinäjoki UAS:

3. Focal firm activities in the Degree Programme for SME Business Management

In the Finnish educational system a BBA programme is associated with the first cycle of higher education (level 6) within the Bologna framework for Qualifications in Higher Education (Recommendation of the, 2008; Tutkintojen ja muun, 2009). The Degree programme for SME Business Management has the minimum extent of 210 ECTS and the expected duration of 3.5 years. The students entering the degree programme for SME Business Management are typically 19–21 years old. Most will have passed a matriculation examination, some have secondary vocational qualifications. Most have altogether more than 12 months of working experience from summer jobs or gap years.

The students are divided into enterprise teams of 6–8 members during their first week in the programme. They are familiarized with the learning approach and its practical implications for studying. All first year students also participate in a team workout camp, a one day event designed to help the transition from learning as individuals to working in teams. The informal working environment of the camp also helps somewhat in breaking down the traditional boundaries between students and teachers, as teachers also participate in the learning exercises at the camp.

As students are divided into teams they also assume responsibility for organising their structure. Each team is assigned a staff member as a team tutor, but the teams are required to decide independently their internal working arrangements and rules. After a few weeks the teams are informed about their focal firms, and are required to organise their first visit to the firm. Although team tutors typically take part in the initial visit, the responsibility for planning and arranging the visit lies with the student team; the teachers take no initiative. In student feedback the clear responsibility for establishing and maintaining the relationship with the focal firm has been described as rewarding and important. Although most of the students have had contacts with firms e.g. through summer jobs, contact with management on a more equal level as future professional partners in developing the firm is more challenging and interesting.

The focal firms vary widely in sector and size. During the first two years of activities focal firms have ranged from large international manufacturing firms in the machine industry to small local firms in the social and health services sector. Although firms with ten or more employees are preferred, the key factor in choosing focal firm partners is the genuine interest and commitment of the acting management. Firms within a reasonable driving distance from the business school are preferred, as frequent contact is necessary.

Having a focal firm is not, in itself, a sufficient condition for learning, i.e. a meaningful and stimulating learning situation. The teachers must still engage the students in learning by awakening in them the need to actively apply theoretical content to the practical environment of the focal firm. At minimum the stimulus is that of requirement, at best that of curiosity.

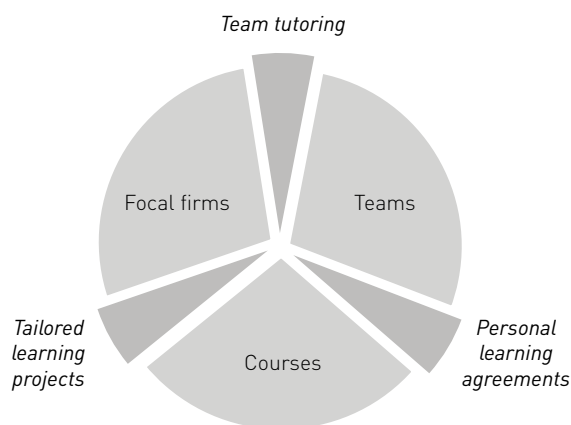
Roughly 70% of the courses of the first two years in the programme are integrated with focal firm activities. In some courses the integration is minimal, consisting of small learning tasks. For example, in a language course the teacher might ask for a presentation of the firm's products in English, or for a business letter written for the firm in Swedish. More typically, however, the focal

firm activities are exhibited in written team reports required in business courses. For the first year students, a team report typically describes and analyzes the firm from a required perspective and then suggests improvements or alternative solutions based on theoretical teaching. Most of the descriptive information is collected from the firm itself. In the second year more extensive and ambitious reports, using a wide array of resources, are requested. Putting together a report, i.e. sharing a written assignment to which each member in the team is expected to contribute, is often challenging for the newly formed team. Keeping an eye on the process and the team's ability to manage their report projects is one of the key tasks for team tutors.

In addition to internal coordination the reports pose a problem of fitting together two seemingly divergent realities. From the students' point of view it often seems that their focal firm doesn't do what the theory says it should. Generally the managers of the focal firms describe their activities and decision-making solely from the firm's perspective. Words and meanings are frequently different from those used in business text books. In some cases, for example, students return from an interview with the manager to report that the focal firm doesn't need marketing. This gives the students and the teachers the necessary task of bridging the gap from theory of marketing to reality of marketing in an SME. The disparity between meanings in text books and meanings in SMEs has the side benefit of promoting discussion and questioning in class: the teacher is required to demonstrate the relevance of theory and students are required to deconstruct and reconstruct the meanings given by the focal firm.

The focal firms, teams and courses of the curriculum are the three main elements of the learning framework in the degree programme (Figure 1). Three further aspects should be mentioned here. Team tutors have already been referred to. Although they are members of teaching staff, their role as tutors is that of process rather than content guidance. The teams are assigned altogether four hours of scheduled time for working on their assignments each week. The team tutors typically meet their teams once a week. The tutors also coordinate twice yearly focal firm seminars and the team's internal feedback. All students are required to participate in self- and peer-assessment.

Figure 1. Key elements of the focal firm activities framework (Viljamaa 2010)



In the course of curriculum restructuring increasing latitude for individual learning agreements was given. Although the first two years' schedule gives very little leeway for individual choice, the third and fourth year of the Programme are extremely flexible. Subject to agreement with the Head of the Degree Programme, students may design their own specialisation based upon a set of guidelines and on courses available in the Business School and the School's foreign partner universities. The Programme strongly encourages its students to spend a semester abroad, and approximately 80 % of them do.

The Programme is also flexible on the level of individual or small group projects. The students and focal firms are encouraged to actively suggest and carry out learning projects of interest to both students and the firm. General guidelines for planning learning projects were designed in 2008 and have since then been applied to over a dozen learning projects. Each project has its defined learning outcomes, content and reporting requirements. For example, a team of five students may undertake a trade fair project to plan and carry out participation in the fair on behalf of a firm, or a pair of students may report on export procedures concerning specific products to South America. In this way the practical needs of the firms can be responded to with little reference to the scheduling of regular curriculum courses. The students get genuine opportunities to gain professional experience and more individualized learning experiences.

4. An open-ended process: some temporary conclusions

As an open-ended development process the focal firm approach doesn't lend itself easily to conclusions. What can be said of the results from the first two years?

The focal firm activities can, cautiously, be called a success. The students find contact with real, working businesses motivating. The teachers in the programme have been able to draw examples from the focal firms, introducing immediacy and relevancy to theory-based teaching. All in all, the experience of the first two years has been intense but encouraging enough to keep the work going. To summarize the mood: this is difficult but necessary. The gap between the turbulent, detailed reality of SMEs and the ordered, institutional reality of higher education must be bridged in order to give the students the tools they need. Already it is clear that the advantages of continuous contact with actual small and medium firms far outweigh the administrative complications it introduces.

The main difficulties encountered in the first two years have concerned workings within the school rather than outside it. Some problems have been encountered with the focal firms, but most the development work has focused on the students and teachers working in a new way. For students the biggest adjustment has been the different working and learning style and working together as a team. Also, the need to collaborate on the courses, as opposed to teaching independently, has called for flexibility from the teaching staff.

From the beginning it was understood that focal firm activities and the pedagogical changes connected with them must be seen as an open-ended development process. All teachers participate in the work, and team tutors meet bi-weekly to discuss progress. In the beginning the focus has been on the integration of learning from the firm and from the class, and on supporting the team

processes in order to form a better learning environment. The next focus areas are likely to be the development of focal firm processes and of the assessment methods. In addition, continued investment in teacher training is needed in order to support the development of tutoring skills and the integration of practical and theoretical learning. The focal firm approach has pushed the teachers to work in a closer cooperation with each other as well as in a more flexible way with the students. This is a departure from the more traditional student-teacher relationship.

All change takes time. The progress achieved so far can be attributed to the spirit and enthusiasm of the teachers and the students of the degree programme. The learning networks established between Finnish Universities of Applied Sciences have also played a role by providing a platform for dialogue and mutual learning.

Perhaps the process of learning how to teach entrepreneurship is in many ways similar to that of learning entrepreneurship. It is an open question, with many good answers – something to learn actively by experimenting and by taking risks.

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EVALUATION OF ENTREPRENEURSHIP EDUCATION AND MEASURING THE RESULTS

TEACHING STUDENTS TO GENERATE BUSINESS IDEAS – FOCUSING ON STUDENT MOTIVATION AND STUDENT TEAMS

Abstract

This study addresses the role of motivation to study entrepreneurship for the satisfaction on the learning outcome, taking into account the effect of student team behaviour. We hypothesise that both intrinsic and extrinsic motivation has an influence on the perceived learning outcome and that team behaviour moderates this relationship. A follow-up survey data was used. The sample data comprised 117 students who participated in the pre- and post-programme surveys. First, explorative factor analyses were employed in examining the latent variables. Second, hierarchical linear regression analyses were carried out to the test proposed hypothesis. We found that intrinsic motivation has a negative effect on the learning outcome while extrinsic motivation showed a positive one. However, the team, and in particular the resources that become available, positively moderates the relationship between the intrinsic motivation and the outcome. Students in entrepreneurship education programmes have different motivational aspects for studying entrepreneurship which reflect their satisfaction with the outcomes. Using teams in the entrepreneurship course seems to generate positive outcomes for students with both low and high intrinsic motivation. Finally, the results suggest the need for more flexibility in the course design. The paper makes an original contribution in distinguishing between extrinsic and intrinsic motivation to study entrepreneurship and analysing the role of student teams in the students' satisfaction with their outcomes from an entrepreneurship programme.

Keywords: Entrepreneurship training, evaluation, idea generation, motivation, team learning

1. Introduction

The offer of entrepreneurship education has continued to increase both in Europe (Fayolle, 2005; Nurmi and Paasio, 2005; Hannon, 2007) and in the US (Katz, 2003; Kuratko, 2005). On a policy level there is a widespread belief that entrepreneurship education offers an efficient and cost-effective means to increasing the number and quality of entrepreneurs in the economy (Matlay, 2006). In addition, entrepreneurship education is seen to contribute to the development of other important skills appreciated by the future employers (Chia, 1996; Heinonen, 2007). Previous research (Henry et al., 2005; Hytti & Kuopusjärvi, 2007) suggests that entrepreneurship education evaluations need to be sensitive to these different goals set for entrepreneurship courses and programmes (Hytti & O'Gorman, 2004).

The role of entrepreneurship education in affecting the students' attitudes towards entrepreneurship, their motivation and intentions in engaging in new ventures have been studied (e.g. Dreisler et al., 2003, Peterman and Kennedy, 2003; Klapper, 2004, Fayolle, 2005; Pittaway and Cope, 2007; Athayde, 2009). However, there is a need for more rigorous research investigating the impact of entrepreneurship education on entrepreneurial outcomes (Henry et al., 2005). There is an

important research gap in understanding how the motivation to study entrepreneurship affects the perceived learning outcomes, which will be addressed in this study. The purpose of the paper is to investigate the relationship between students' motivation to study entrepreneurship with their performance in business idea generation. Additionally, the study analyses how learning in student teams moderates this relationship.

2. Learning Outcome, Motivation, and Team Behaviour in Entrepreneurship Education

Learning outcome: Generally, the role of entrepreneurship education in influencing the students' attitudes towards entrepreneurship, their motivation and intentions in engaging in new ventures have been studied (e.g. Dreisler et al., 2003, Peterman and Kennedy, 2003; Klapper, 2004, Fayolle, 2005; Pittaway and Cope, 2007; Athayde, 2009). The aim to influence on entrepreneurial intentions and attitudes among students are not the only outcomes of entrepreneurial education. At the individual level the capabilities for entrepreneurial behaviour and understanding entrepreneurship are important in any organisational setting (Henry et al., 2005). As a process entrepreneurial learning requires certain levels of experiential, cognitive, and networking perspectives (Wang Yan Man, 2007). Thus, entrepreneurial behaviour can be encouraged via the certain course assignments, activities increasing the problem-solving capabilities and opportunity recognition, and experimental learning methods (Kuratko, 2005; Heinonen, 2007). In this course the goal was to strengthen the student perceptions of idea generation as an active process, that is, their self-efficacy in idea generation. Hence, we believe that the students' self-assessment of the business idea and its feasibility, creativity and the written presentation is an efficient measure whether this learning outcome was met.

Motivation is a condition of being driven by motives (Peltonen and Ruohotie, 1992). The motivation drives the individual to act in a certain way. Their behaviour is thus goal-oriented. (Peltonen and Ruohotie, 1992; Sprinthall et al., 1994) Motivation is also system-oriented: a process of feedback can either encourage the individual's behaviour or discourage it, which can cause them to discontinue their behaviour and find a new outlet for their energy (Peltonen and Ruohotie, 1992).

Learning theories show that intrinsic and extrinsic factors contribute to motivation (Helm-Stevens and Griego, 2009). With intrinsic motivation, the factors causing the individual's behaviour are internal. The person receives intrinsic rewards through completion of the task. Activity thus produces internal, psychological pleasure. Extrinsic rewards are unexpected. Extrinsic motivation is dependent on the environment and aims at achieving an instrumental goal. (Deci, 1992; Peltonen and Ruohotie, 1992; Vallerand et al., 1992) Intrinsic motivation relates to satisfying the highest level of needs (self-actualization and self-development), whereas extrinsic motivation is most often related to meeting the lowest levels of needs in Maslow's hierarchy of needs (such as safety and belonging). (Peltonen and Ruohotie, 1992; Vallerand et al., 1992) Rewards have a major impact on human behaviour. Extrinsic rewards are often of rather short duration, and should therefore be provided frequently. Intrinsic rewards have a more lasting effect, and can act as permanent motivational factors. For this reason intrinsic rewards are often more effective than extrinsic ones. (Stipek, 1988) Hence, we assume that the students' motivation is positively related to the learning outcomes.

Hypothesis 1a: The intrinsic motivation for studying entrepreneurship is positively associated with the learning outcomes.

Hypothesis 1b: The extrinsic motivation for studying entrepreneurship is positively associated with the learning outcomes.

Student teams: Social relationships are considered important in identification of entrepreneurial opportunities: (Puhakka, 2002; Puhakka, 2007) Different studies have identified the importance of various interest groups as a source of learning for the entrepreneur (Taylor and Thorpe, 2004). The role of the team has been emphasized in opportunity recognition and business activities (Harper, 2008). For example, team-based companies have been found to be more growth-oriented and more international than other firms (Eisenhardt and Schoonhoven, 1990; Dobbs and Hamilton, 2007; Packalen, 2007). This is explained by the larger and complementary skills and knowledge base offered by the team (Reynolds, 1993), by the opportunity to specialise in different areas and to effectively divide responsibilities (Eisenhardt and Schoonhoven, 1990) and to share risk within the team (Paasio and Pukkinen, 2005). Therefore, we hypothesise that the team behavior is positively related to the learning outcomes:

Hypothesis 2: The student team behaviour is positively associated with the learning outcomes.

In a learning situation the teams will influence the learning outcomes. Previous research suggests that co-operative learning enhances student performance (Ravenscroft et al., 1999; Umble et al., 2008). An opportunity is constructed through the active interaction within the team. The knowledge provided by the team, complementary views and peer pressure may all contribute positively to the team performance (Umble et al., 2008) The diversity within the teams may result in conflict and dysfunction within the team which will reduce team performance and satisfaction (York et al., 2009). Hence, having students working in groups does not automatically contribute to enhanced learning but is dependent on the authenticity of presenting the problem and the quality of the dialogue within the team, for example (Innes, 2006). However, we hypothesise that the team behavior will enhance the effect of motivation on the learning outcomes.

Hypothesis 3: The student team behaviour will positively moderate the association between the motivation and the learning outcomes.

3. Research method

Sample and variables: A follow-up survey data was used to test the hypotheses. The first survey was conducted prior and the follow-up survey after the course. These two data sets were combined and after matching the respondents the sample data comprised 117 students. In order to assess the perceived learning outcome, the respondents were asked to answer the question: *"How satisfied you are with the final achievement of your team?"* on a 0–100 scale ranging from "0=Achievement was weak to 100=Achievement was perfect". The final dependent variable was a composite measure including three different measures (Cronbach's $\alpha=0.83$). In order to assess the motivation to study entrepreneurship, the respondents were asked to answer the question: *"What is your opinion for the following statements on motivation to study?"* on a five-point scale ranging from "1=totally disagree to 5=totally agree". The respondents were asked to respond about their perception on the

student team's functioning: "How you perceive the functioning of your student team in developing your business idea?" The analyses were controlled for the age and gender of the respondent.

Analyses: First, explorative factor analyses with Varimax-rotation were employed in examining the latent variables based on the used measures. Second, a hierarchical linear regression analysis was carried out to test the proposed hypotheses. The requirements for regression analysis were checked with the Spearman correlations between perceived learning outcome and the related independent latent variables.

Results: Factor analyses were employed in classifying the statements assessing motivation and team behaviour. The factor analysis related to measurements related to the motivation to study entrepreneurship comprised a two factor solution (KMO=.764, $p < .001$) (Table 1). Factors were named as "Intrinsic Motivation" ($\alpha = .81$) and as "Extrinsic Motivation" ($\alpha = .74$) comprising measures indicating the varying motivations related in participating in the course. The results are supported by the acknowledged division between intrinsic and extrinsic motivation (Deci, 1992; Peltonen and Ruohotie, 1992, Vallerand et al., 1992; Helm-Stevens and Griego, 2009). The first generates rewards through the completion of the task, which in our case is achieved in terms of a business idea and specific knowledge on entrepreneurship. The latter is more dependent on the external factors and it has aspiration for achieving instrumental goals.

Table 1. Motivation to Study Entrepreneurship: Varimax rotated Component Matrix

	Motivation Factor	
	Intrinsic	Extrinsic
I'm interested in studying entrepreneurship	.850	
I would study entrepreneurship even if I would not have to	.849	
Studying entrepreneurship is not useless, since one day I may be an entrepreneur myself	.758	
Studying entrepreneurship is important for me, since it helps me to better understand entrepreneurship and entrepreneurs	.618	
When I study entrepreneurship, it is important that I will learn the necessary knowledge and skills needed in entrepreneurship	.558	
Because getting a good diploma is really important, it is important to get good grades also in the entrepreneurship courses		.771
When studying entrepreneurship, it is important that one manages well the courses and exams		.755
Studying entrepreneurship is important for getting a good education		.640
In order to get a good job, it is important to study entrepreneurship		.615
When one studies entrepreneurship, it is possible to familiarise oneself with entrepreneurs and their customs		.587
Percent of variance	36.0	20.7
Cronbach's α	.811	.737
KMO=.764, Barlett's Test $p < .001$, cutpoint was 0.4		

Thereafter, we grouped the statements related to team behaviour (Table 2). Results show a three factor solution (KMO=.846, $p < .001$). The factors were named as “Resources” ($\alpha = .85$), “Trust” ($\alpha = .77$), and “Goals” ($\alpha = .67$). Resources refer to possible contacts and additional capabilities gained through the team relationships. Trust comprises the functionality and trustworthiness of the relationships in the team. Finally, the goals indicate the common comprehension of the individuals and team-level goals among team members.

Table 2. Team Behaviour: Varimax rotated Component Matrix

	Team Behaviour Factor		
	Resources	Trust	Goals
I received from the team lot of new contacts which are useful in starting up a business	.799		
I obtained from the team concrete resources for my (possible) business	.710		
I know the members of my team really well	.681		.520
My team members would help me in opening doors to contacts which are important for starting up a business	.630		
I have close relationships with the most members in our team	.604		.555
The expertise of my team members was really useful	.604	.520	
I received from the team important information for developing the business idea	.501	.472	
My team included many members who could be able to help in starting up a business	.500	.437	
The team members supported each other also in difficult situations	.446	.427	.414
The team members avoided hurting other members' interests		.818	
The team members always kept their promises		.782	
In our team no one exploited other member even if it would have been possible		.621	
Our team had many members who were able to develop the business idea	.401	.601	
The team members had similar goals than I had			.730
In our team we understood and accepted other members' goals		.436	.647
Percent of variance	39.3	13.4	7.1
Cronbach's α	.852	.786	.671
KMO= .846, Barlett's Test $p < .001$, cutpoint was 0.4			

The characteristics of the study sample are shown in Table 3 that shows the descriptive statistics and correlations of the related variables. A slight correlation was found between the team behaviour: resources and the team behaviour: trust (Spearman's rho 0.48, $p < .001$), and between the team behaviour: goals and the team behaviour: trust (0.52, $p < .001$). The closer analysis of the possible multicollinearity showed that the variance inflation factor (VIF) values of all the independent variables were below 1.9 which is below the critical level of 2.2.

Table 3. Descriptive Statistics and Spearman Correlations for the Related Variables

Variable	Mean	SD	Min	Max	1)	2)	3)	4)	5)	6)	7)
1) Perceived Learning Outcome	58.79	14.18	9.5	83.2							
2) Intrinsic Motivation (IM)	2.61	0.57	1.0	3.6	0.06						
3) Extrinsic Motivation (EM)	2.02	0.46	0.7	3.4	0.18	0.25**					
4) Team Behavior: Resources	1.67	0.43	0.8	3.1	0.42**	0.28**	0.21*				
5) Team Behavior: Trust	2.45	0.44	1.3	3.3	0.33**	0.17	0.18	0.48**			
6) Team Behavior: Goals	2.64	0.55	0.7	3.4	0.12	0.08	0.05	0.35**	0.52**		
7) Gender	0.47	0.50	0	1	-0.07	-0.02	0.40**	-0.00	0.06	0.09	
8) Age	21.47	3.40	18	39	-0.06	-0.12	-0.14	-0.16	-0.04	-	-
* $p < .05$, ** $p < .01$, $n = 117$											

Hierarchical linear regression analysis was carried out to test the proposed hypotheses (Table 4). In the independent effect model the perceived learning outcome was regressed independently on intrinsic and extrinsic motivation as well as on team behaviour ($p < .001$). This model makes a significant contribution over the base model ($R^2 = 0.27$, $p < 0.001$), and the results show that the intrinsic motivation had a significantly negative effect on learning outcome ($p = .067$). This does not support the Hypothesis 1a. However, the extrinsic motivation had a positive effect on learning outcome ($p < .05$), which supports our Hypothesis 1b. In addition, the resource dimension of the team behaviour has a positive effect on learning outcomes ($p < .001$) which partially supports the Hypothesis 2.

The results of the interaction model ($p < .001$) with interaction effects suggest an increased negative regression of intrinsic motivation on learning outcomes ($p < .01$) compared to the independent effect. The explained variance improved to 0.26 ($p < .05$) in the interaction model. After adjusting the model for the interaction term, the association between intrinsic motivation and learning outcome changed from a negative significant relationship to a positive association. Of the three latent dimensions of team behavior the resources associated with the team moderates the

relationship between the intrinsic and learning outcomes ($p < .05$). Consequently, our Hypothesis 3 is partially supported.

Table 4. Motivation, group behavior and perceived business idea: basic and interaction effects

	Basic model	Independent Effects	Interaction Effects
Intrinsic Motivation		-0.17†	-1.13**
Extrinsic Motivation		0.24**	0.59
Team Behavior: Resources		0.39***	-0.42
Team Behavior: Trust		0.15	0.18
Team Behavior: Goals		-0.04	-0.02
Intrinsic Motivation * Team Behavior: Resources			1.74*
Extrinsic Motivation * Team Behavior: Resources			-0.62
Gender (1=female)	-0.06	-0.13	-0.11
Age of the respondent	-0.02	0.05	0.05
R ²	0.04	0.28***	0.32***
Adjusted R ²	-0.01	0.23***	0.26***
ΔR ²		0.27***	0.04*
Linear regression, enter-method: † $p < .10$, * $p < .05$, ** $p < 0.01$, *** $p < 0.001$, $n = 106$ Dependent Variable: Perceived learning outcome All coefficients are standardized regression coefficients.			

In order to investigate the nature of the interaction between intrinsic motivation and resources gained through team behaviour their relationship was plotted on learning outcome for high and low levels of the moderating effect of the team-based resources based on +/- one standard deviation from its' mean (cf. Frazier, Tix, and Barron 2004). This is shown in Figure 1.

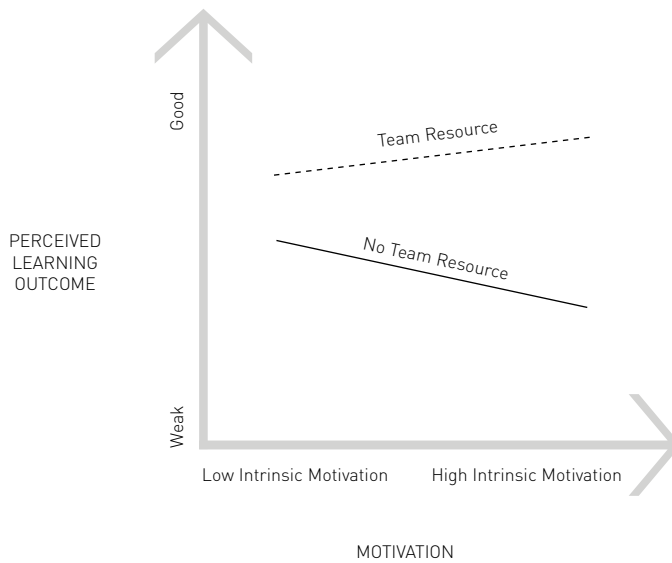


Figure 1. Interaction of Intrinsic Motivation and Resources Gained through Team Behaviour on Learning Outcome.

Figure 1 suggests that the interaction between intrinsic motivation and resources gained through team behaviour is positive. Among students with high levels of intrinsic motivation the team behaviour changes their potential negative association with learning outcome into positive one. The effect of a highly resourceful team's intrinsic motivation on learning outcome is positive. In addition, the team behavior's resources also enhance the perception of learning outcome among students with low intrinsic motivation. Therefore, the availability of team-based resources enhances the intrinsic motivation's effect on learning outcome. Accordingly, this result provides further support for partly accepting Hypothesis 3.

4. Conclusions and recommendations

Developing new learning experiments and experimenting with different methods is in the core of entrepreneurship education. It is necessary to acknowledge the different objectives and contexts for the programmes as well as the different motivational profiles of the students taking part in the programmes. The students may have either extrinsic or intrinsic motivation to study entrepreneurship, both of which are connected to the learning outcomes. The students with intrinsic motivation to study entrepreneurship are motivated by entrepreneurship as a potential personal career objective. Their goal is learning for entrepreneurship. Our findings show that among these students the perceived learning outcome and satisfaction with the business idea is lower than among other students. The students may already have a business idea in mind but the course assignment does not provide the expected hands-on knowledge. For them developing the business idea based on three random industries may seem artificial and they are not able to achieve the result that they wished for, such as a viable business idea.

The students with extrinsic motivation to study entrepreneurship do not emphasise the opportunity to study entrepreneurship, but exploit the course through its instrumental value. These students perceive the learning outcome in a more positive way. After all from them finishing the course assignment has been their ultimate goal, and therefore, the course provided just what they expected. For these students it is sufficient to finalise the business idea and the related report and they may care less about the actual viability of the business idea. These students may also from the outset find it easier to accept the course assignment.

Our findings show that team behaviour and especially the resources that become available through the team moderate the relationship between intrinsic motivation and learning outcome. Team resources have a positive effect among students with low or high intrinsic motivation. For the purpose of this study the latter is interesting. The interaction changes the original negative relationship between intrinsic motivation and learning outcome into a positive one. This suggests that in addition to converting the less-motivated students to do a good job in an entrepreneurship course, the team and its resources also assist the highly-motivated students in achieving their goals. This supports the use of student teams in this kind of a course. The resources that become available through the team provide capabilities, contacts, and support which also help highly motivated students in their efforts. This is also highlighted in terms of networking perspective in learning entrepreneurship (Wang Yan Man, 2007), and supported by previous research according to which the skills and knowledge of entrepreneurs can be partly acquired via their social relationships (Down, 1999). The teams are increasingly being applied in management education (Kalliath and Laiken, 2006). Our results support the positive side of using teams in management studies.

The development of new innovative course designs and pedagogical methods in entrepreneurship education has been blooming (Akola and Heinonen, 2008). However, there has been a lack of development in the field of innovative assessment practices (Pittaway et al., 2009, Hytti and Kuopusjärvi, 2007). The courses are always run in a context of a certain culture and environment of a country, region or school (Hytti, 2008). We need to know more about what entrepreneurship or enterprise education actually 'is' when implemented into practice and that we need to view entrepreneurship education systematically (Pittaway and Cope, 2007). Based on this study we

argue that the student motivations should be taken more seriously in the evaluations. What are the reasons for students enrolling into an entrepreneurship programme? The course planners and promoters may have an idea for the course but the participants may have other aims, such as learning more about world of business in general, improving their curriculum vitae, or simply filling in their study plan. Finally, team-based learning is widely applied in business courses with the assumption that it will enhance learning and increase necessary team skills of students (Kalliath & Laiken, 2006; Ravenscroft et al., 1999; Umble et al., 2008) but it is necessary to learn more how the teams affect the learning.

It is of utmost importance to acknowledge that the students in entrepreneurship programmes have different motivations for studying it. In our case, the programme contributed to the learning of those believing in the extrinsic value of studying entrepreneurship, whereas those who were motivated by learning entrepreneurship for intrinsic reasons were less satisfied with the result. Second, using teams in entrepreneurship and management course seems to generate positive outcomes for students with both low and high levels of intrinsic motivation. Hence, it would be important to include more flexibility in the programme design (Yar Hamidi et al., 2008). In particular it would be important to design programmes that serve the needs of students with high and low motivation to study entrepreneurship.

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WHEN YOU TRAIN ENTERPRISING ENTREPRENEURIAL ATTITUDES INCREASE

Abstract

Formal education, in general, does not encourage entrepreneurship but suppresses it (Peterman and Kennedy, 2003). Jones & Iredale (2006) remind us that enterprise education has become an answer to the “job for life” culture and twenty-first century graduates need to be job-creators (Frank, 2007; Harding, 2006). In fact, entrepreneurial skills can be developed in terms of attitudes (Robison, 1997; Athayde, 2009).

The influence of entrepreneurship education on attitudes, perceptions or entrepreneurial behaviour needs to be tested (Fayolle, 2000; Fayolle, Gailly & Lassas-Clerc, 2006, Coduras, Urbano, Rojas & Martinez, 2008). Our study draws attention to the importance of measuring attitudinal changes of university students and check if studies are getting them closer or further to/from entrepreneurship.

We would like to determine if training enterprising increases entrepreneurial attitudes. To do so, we developed a reliable and valid measurement tool, based on Ibáñez, Iglesias & Marigil (2009), and we measured the change of entrepreneurial attitudes of students of Business Administration after their two last academic years at our university. We used analysis of variance (ANOVA) to determine if significant differences exist between the two different periods when the survey was done.

In this study, we check that entrepreneurial attitudes of university students change and, this evidence, can be taken into account to develop entrepreneurship programs.

Keywords: Entrepreneurship, education, attitudes, enterprising

1. Introduction

Entrepreneurial spirit and behaviour can show up in **different ways apart from start-ups**, and these can be taking initiatives or simply having certain attitudes towards live (Verzat & Bachelet, 2006) or even “thinking in a completely different way to face the challenge of work in the twenty-first century” (Lloyd-Reason, Sear & Mumby-Croft, 2009, 4). There would probably be people who do not want to start a business but everybody needs to be enterprising both for success in their work place and to add value to society.

“Active participation and creativity are key attributes needed if we are to compete effectively and lead globally in the new millennium. Enterprise education provides an exciting environment for the fostering of such a culture, through the encouragement of certain attitudes and competences” (Forsyth, 2000, 2). According to this author, creating an enterprising learning culture will enhance students’ capacity to participate as active and creative citizens in all areas of their life.

We need people able to act independently in an innovative way, with achievement capability and ready to take moderate risks. Socially responsible people who create new sources of job and wealth, ready to change and adapt, determined to define and take advantage of new opportunities and interested in continuous learning, coming up to date and the improvement process (Varela, 2002). Kirby (2007, 23) states that “the education system is being required to create people who can innovate – who can see opportunity and take responsibility for making things happen, and in the process bring change”.

2. Literature review

Authors differentiate between being “entrepreneurial” and being “enterprising” highlighting that the aim is wider and more transversal than just starting a new venture. Surlemont (2007, 258) quotes the European Union’s Guide on Good Practices in Promoting Entrepreneurial Attitudes and Skills through Education published in 2004 to show the **two different concepts “within the definition** of entrepreneurship teaching: a broader concept for education for entrepreneurial attitudes and skills, which involves developing certain personal qualities and is not directly focused on the creation of new business and a more narrow concept of training in how to create a business”. The author explains that this broad view is what we refer to as “enterprising” and it is about competences such as creativity, teamwork, opportunity recognition, risk-taking, perseverance, passion and drive, all of them useful and applicable in any area of life and work.

In addition, the Department for Education and Skills (DfES) “has **defined enterprise capability** as consisting of innovation, creativity, risk-management and risk taking, a can-do attitude and the drive to make ideas happen”(1), all of them necessary attributes for today life.

Quite a long time ago Garavan & O’Cinneide (1994, 4) pointed out that **research on entrepreneurship education was sparse** and that most of the research questions in that area focused on measuring immediate effectiveness related more to acquisition of knowledge and satisfaction with the programme. But nowadays, situation remains quite similar: “a widespread increase in enterprise education has not been accompanied by independent research into the impact it has on young people” (Athayde, 2009, 481). Even though Fayolle (2000, 171) identified some studies, such as Garnier & Gasse (1990), which have attempted to measure the impact of entrepreneurship education on the decision to start-up a new business, he discussed that the quality of entrepreneurship programmes and courses remain to be proven.

Training initiatives to develop more entrepreneurial people have multiplied but there is a **lack research regarding the results and impact** of those education efforts which could help to design criteria and methodology to measure entrepreneurship programs effectively (Fayolle, Gailly & Lassas-Clerc, 2006, 701-703). Also Coduras, Urbano, Rojas & Martinez (2008, 397) argue that there is a lack of empirical studies which check the relationship between university support and entrepreneurial attitudes and activity, even more in the case of Spain. These authors state that the “entrepreneurial intention is statistically related to universities support” (Coduras, Urbano, Rojas & Martinez, 2008, 395). Is a general opinion that, apart of counted exceptions, there is a lack of empirical studies which measure the impact on entrepreneurial attitudes, intentions and activity of education in general and entrepreneurship programmes in particular (Peterman & Kennedy, 2003; Honing, 2004; Nabi & Holden, 2008).

Havnes & Skjekkeland (2007, 343) admit that **the measurement of entrepreneurship programs is complicated** and also point out that the impact of entrepreneurship programmes may be measured too early to show the full potential value of the whole process or so late that a number of other variables may have influence in the results.

In spite of these problems, Henry, Hill & Leitch (2009, 1) highlight the **need for evaluating programmes** and to have a higher understanding of aims to be achieved with entrepreneurship programmes in order to ensure a more accurate assessment of their impact.

3. Research questions, methodology and analysis

Joining these two approaches, enterprising education and measuring entrepreneurial attitudes, we wanted to check if **entrepreneurial attitudes of students** in the Business and Economics Faculty of the University of Deusto in San Sebastian (SPAIN) **changed**. Although very few of them got an specific education on entrepreneurship in a voluntary way (15% approximately), we can say that all of them got an enterprising education developing, through experiential learning, competences such as: problem solving and decision making, open minded respect for evidence, willingness to take on responsibility, effective communication and work with others, recruitment and management of resources to contribute to achieving a project and need for achievement.

In order to have a bigger group of students in our sample for an empirical study, we took **students from 2007 and 2008 classes**. All of them were given the same survey twice: on February 2009 (from now on we will call this survey “post”) and two years before finishing their studies (October 2005 and 2006 respectively – from now on we will call this survey “prior”). Not all of them answered the survey, so the number of students we worked with was 111 for the “post” (32.27% of the population) and 192 for the “prior” (71.11% of the population).

Table 1. Sample distribution by classes

Class	Post	PercentagePost	Prior	PercentagePrior	Total
2007	59 [53.15%]	38.06%	96 [50%]	61.94%	155
2008	52 [46.85%]	35.14%	96 [50%]	64.86%	148
Total	111 [100%]	36.63%	192 [100%]	63.37%	303

The **survey consisted in an attitude scale**, Likert-type scale with 6 positions (1 being “completely disagree” and 6 “completely agree”), based on Ibáñez, Iglesias & Marigil (2009). This measurement tool used had already been evaluated and was reliable so it fulfilled the **validity of content** (3). Following Nunnally (1978) and Morales (1988), the **validity of construct** (4) was checked with a factorial analysis of the data collected in the “post” survey where we got 6 factors (5) which explained 62.341% of the total variance.

Table 2. Information about the factors of the scale and KMO and Bartlett's test

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings			Cronbach's alphas	
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total 0.807	
1	5.382	23.402	23.402	3.459	15.039	15.039	0.829	
2	2.616	11.373	34.775	2.370	10.302	25.341	0.703	
3	2.269	9.864	44.638	2.167	9.422	34.764	0.754	
4	1.468	6.383	51.021	2.161	9.394	44.158	0.676	
5	1.332	5.790	56.812	2.134	9.278	53.436	0.770	
6	1.272	5.530	62.341	2.048	8.905	62.341	0.715	
KMO and Bartlett's Test								
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.						.749		
Bartlett's Test of Sphericity						Approx. Chi-Square		909.290
						Df		253
						Sig.		.000

Source: Self-made. Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

The instrument was also **reliable** (6) and we can see the results of analysing the reliability of each one of the 6 resulting factors in Table 2. The alpha for the total scale is 0.807. The scale has also **convergent validity** (7) because the correlations between the summed scores of the items of the global scale, and a question that measured the intention of creating a new venture are significantly different from zero and high enough to be taken into account (see Table 3).

Table 3. Convergent validity analysis for the total scale

Question to measure convergent validity	Type of correlation	Total scale correlation and significant level
Have you created or would you like to create a new venture?	Correlation of Pearson Sig. [2-tailed]	-0.201(**) .001

** The correlation is significant at a level of 0.01 (bilateral).

To finish with validation we also checked **discriminating validity** (8). In Table 4 we can appreciate that the Cronbach's alphas are higher than the correlations shown by the scores of each subscale with regard to the scores of other subscales which belong to the same tool. That is, discriminating validity exists because the variables measured with the same method do not have any relation with other variables that measure different concepts.

Table 4. Discriminating validity analysis for the total scale

FACTOR		INNOVATION	CONTROL	SELF-ESTEEM	RISK	ACHIEVEMENT	EFFORT
INNOVATION	Cronbach's alphas	0.829					
	Pearson Correlation	1					
	Sig. (2-tailed)						
	N						
CONTROL	Cronbach's alphas		0.703				
	Pearson Correlation	-.401**	1				
	Sig. (2-tailed)	.000					
	N	286					
SELF-ESTEEM	Cronbach's alphas			0.754			
	Pearson Correlation	-.004	-.059	1			
	Sig. (2-tailed)	.951	.315				
	N	285	291				
RISK	Cronbach's alphas				0.676		
	Pearson Correlation	-.486**	-.267**	-.163**	1		
	Sig. (2-tailed)	.000	.000	.005			
	N	288	292	291			
ACHIEVEMENT	Cronbach's alphas					0.770	
	Pearson Correlation	-.227**	-.447**	-.189**	-.196**	1	
	Sig. (2-tailed)	.000	.000	.001	.001		
	N	289	294	293	297		
EFFORT	Cronbach's alphas						0.715
	Pearson Correlation	-.255**	-.429**	-.106	-.129*	-.563**	1
	Sig. (2-tailed)	.000	.000	.072	.028	.000	
	N	288	292	291	294	296	

** The correlation is significant at a level of 0.01 (bilateral)

* The correlation is significant at a 0.05 (bilateral)

Source: Self-made

We wanted to check if entrepreneurial attitudes of our students changed. Specifically, we set up the following **hypothesis to be tested**: Entrepreneurial attitudes of students measured in the post-survey (February 2009) are higher than those measured in the prior survey (October 2005 and October 2006).

After doing an analysis of variance –ANOVA- we found the following differences in means for each factor of the entrepreneurial scale and for the total scale (see Table 5 and check homocedasticity information in Table 6).

Table 5. Means, Standard Deviations, “F” and “p” values with significant differences at the established level of confidence of 95%

Entrepreneurial attitudes measured		POST	PRIOR	F	P
INNOVATION	Mean S.D.	4.3166 .71257	4.0611 .69084	9.168	.003
CONTROL	Mean S.D.	4.8243 .62395	4.4838 .70403	17.648	.000
SELF-ESTEEM	Mean S.D.	4.2733 1.06856	3.7174 .99658	20.395	.000
TOTAL SCALE	Mean S.D.	4.6962 .42422	4.3928 .49173	28.087	.000

Source: Self-made

Table 6. Test of homocedasticity of variance. Levene statistic

	Levene statistic	gl1	gl2	Sig.
INNOVATION	.049	1	289	.825
CONTROL	2.367	1	294	.125
SELF-ESTEEM	.546	1	293	.461
TOTAL SCALE	3.187	1	273	.075

Source: Self-made

4. Conclusions and recommendations

The results of our analysis show that **we can accept our hypothesis**. Entrepreneurial attitudes of students measured in the post-survey (February 2009) are higher than those measured in the prior survey (October 2005 and October 2006). These **students became more entrepreneurial** in general and, in particular, were more innovative, with more self-esteem and more inner locus of control.

As we work at a university we were worried when we read that there is a growing feeling that higher education does not provide the right training for today's business world in terms of management skills, such as wisdom, leadership and interpersonal skills and that there is a growing concern that many of the characteristics of the entrepreneur "are suppressed by the traditional formal education system" (Binks, Starkey & Mahon, 2006, 1-3). Also, other authors, such as Hanke, Kisenwether & Warren (2005, 1), agree that traditional training methodologies do not teach, but hinder, entrepreneurial skills so we wanted to check if that was happening in our university. Results are quite hopeful and support the opinions that say that enterprise education have a positive impact in entrepreneurial attitudes. Nevertheless, this is just one piece of evidence got only in one faculty and with a quite limited number of students so further research should be done to corroborate these results. But, in between, we have can start working on enterprising training as a way of developing more entrepreneurial attitudes as the impact, at least, is not negative.

Notes

1. NATIONAL FOUNDATION FOR EDUCATIONAL RESEARCH (NFER): Assessing Enterprise Capability: Guidance for Schools (<http://www.nfer.ac.uk/enterprise>)
2. Highlights from surveys as EFER (2004) or NCGE (2007)
3. It checks if the items of the scale are correct for making the measurement. The content of the scale is determined looking for the suitable items through the revision of the literature or in other similar scales.
4. As the degree of abstraction of the concept we want to measure increases, the validity of content ceases to be enough to test what we are trying to measure. In these cases it is necessary to verify that our way to measure the construct is suitable. Though a clear and unified method is lacking, there are two methods that have a wider diffusion: 1) factorial analysis that allows identifying the underlying dimensions to a data set; and 2) analysis of the convergent and discriminating validity of the scale (Morales, 1988).
5. The first time we ran the factorial analysis we got 7 factors which explained 62.023% of the total variance, but we decided to eliminate 7 items and run the factorial again. We eliminated 2 items because their factorial weights were less than 0.5, 4 items in order to increase reliability, and one item because it was part of a factor with a unique item.
6. It provides consistent results whenever measurements are taken with it. The reliability of the scale is the degree to which the measurement lacks random error and, therefore, contributes congruent results. As a reliable measure the alpha of Cronbach or level of internal consistency has been used. Although agreement does not exist regarding how much the coefficient alpha should be, in initial and exploratory studies, it is usual to obtain levels of internal consistency of 0,6 (Rahman, 2002; Jones & James, 1979).

7. A scale has convergent validity when it measures the same as those scales which measure the same concept. We checked the convergent validity of the global scale carrying out an analysis of correlation between the summed scores of the items of the global scale, and a question that measured the intention of creating a new venture. Following the criterion of convergence proposed by Campbell and Fiske (1959) the correlations between different measures of a same construct must be significantly different from zero and high enough to be taken into account.
8. A scale has discriminating validity when their measurements have no relation to scales that measure different concepts. In order to test the discriminating validity, Campbell and Fiske (1959) propose analysing the correlations between the scores of different constructs measured with the same method. The coefficient of internal consistency (Cronbach's alfa) of a subscale must be greater than the correlations shown by the scores of this subscales with regard to other subscales which belong to the same tool.

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DIMENSIONS OF QUALITY IN E-LEARNING; AN ENTREPRENEURSHIP UNIVERSITY CURRICULUM

Abstract

Since the late 1990s, e-learning and use of communication and information technologies has attracted increasing interest as a way to overcome many of the barriers of “traditional” campus based education. Such barriers include e.g. unavailability of local courses, work-education personal time schedule conflicts, lack of access, non-effective presentation, geographical isolation and demographic as well as economic disadvantage.

Although the technical and management framework around e-learning in higher education has been discussed there is little information available on dimensions of quality. In a University Master program in Innovation and Entrepreneurship, at Sahlgrenska Academy, University of Gothenburg, we have set out to define the higher education quality framework.

Although e-learning platforms may offer substantial possibilities to overcome previous educational barriers of time and distance, there are new barriers that may arise such as altered time commitment and educational focus as well as availability of training in IT technological support.

In the present work, we define a number of dimensions of quality applicable to e-learning programs derived from established dimensions used for quality assessment for products and services. In our work we have identified the following dimensions; performance, features, reliability, conformance, durability, serviceability, aesthetics, perceived quality, tangibles, reliability, responsiveness, assurance, empathy, price and reach-ability.

These are quality dimensions that are important for the different stakeholders on an e-learning curriculum of Innovation and Entrepreneurship and we report on the implementation of such criteria in an academic Master program of Innovation & Entrepreneurship at Sahlgrenska Academy.

Keywords: E-learning, on-line education, innovation and entrepreneurship, universities, quality dimensions and criteria & IT implementation

1. Introduction

The purpose of this article is to define a framework of quality dimensions for e-learning based education. We aim at using existing established dimensions of quality and put them in the context of e-learning based education as a base for our analysis.

We argue that since education is a form of service, traditional dimensions used for analyzing quality of service will form a rational base for e-learning. We also reflect on experience from

working with entrepreneurship in an innovation and distance education setting. Our aim is to establish a model for quality assessment within e-learning based on important indicators derived by empirical methodology.

Electronic learning or e-learning is a term that has been adopted by most universities to define courses and programs that are on-line and not on-campus based. This type of education where the students and teachers seldom meet face-to-face has sprung from the development of information technologies, such as multimedia computers, internet and the World Wide Web.

E-learning and online education started to develop in the 1990ies (Huntley and Mather, 1999). Also, e-learning and use of communication and information technologies has attracted increasing interest as a way to overcome many of the barriers of “traditional” campus based education. Such barriers include e.g. unavailability of local courses, work-education personal time schedule conflicts, lack of access, non-effective presentation, geographical isolation and demographic as well as economic disadvantage.

Within education and a learning context of innovation and entrepreneurship, the knowledge creation may occur as a complex cyclic process. This process includes innovation, socialization, externalization, combination, internalization and back again to innovation and the theoretical and tacit dimensions of learning differ in relative importance between various academic educations. Tacit oriented knowledge is very important when it comes to entrepreneurship education (Hedner et. al, 2010) and a lot of the knowledge is embedded in the entrepreneurial culture. To be able and support the student entrepreneurs through utilizing tools within e-learning, the teachers have a great possibility of supporting the students in their entrepreneurial orientation during the venture creation process.

When it comes to entrepreneurship, e-learning based education gives the learner a possibility to acquire new knowledge and experience from a global platform. This gives opportunities that are nationally unbound and therefore serves as a great lab-environment for situations that are cultural diversified and widespread geographically. The importance of experience in dealing with internationally based projects is high within entrepreneurship, but locally based and bound education has to put much energy in setting up international lab environments with external parties. This is where an e-learning based education serves as a better platform and utilizes much the same tools and techniques that would be applied to the “real-life” entrepreneurial work. Not only the education and lab environment would resemble real entrepreneurship in this way, but also the venture creation side could take in these aspects.

Online education involves both human factors and non-human factors. According to Piccoli et al. (2001), human factors are concerned with students and instructors, while design factors characterize non-human variables such as technology, learner control, course context, and interaction. To convert learners from being passive to being active, a different learning strategy, which is self-regulated, is needed for online education (Eom et al., 2006).

The effectiveness of a e-learning course compared to a traditional course has been researched and in a newly published article Hadley et. al. (2010) has studied the differences in a medical course through a randomized design between respective course structures. The results showed that both

structures achieved similar scores for overall knowledge improvement and they suggested that the utilization of e-learning can replace a lot of the traditional lecture-based method without loss of knowledge.

In table 1 we outline differences between the old and new paradigm for quality assurance, i.e. the differences between traditional campus-based educations and e-learning based education. We have shown that e-learning has fewer boundaries when it comes to synchronous schedules between students and physical boundaries like a geographical campus. E-learning is set more in a global perspective , which also creates a higher demand on other aspects such as features, serviceability, aesthetics, perceived quality, responsiveness and empathy with all cultural aspects of this broad audience. The next step in our discussion is to apply our discussion so far on a university level innovation and entrepreneurship curricula.

Table 1. Old versus New Paradigms for Quality Assurance in Educational Curricula

Old "Campus" Based Paradigm	New e-Learning Based Paradigm
Teacher/Institution Centered	Learner Centered
Hegemonic	Deferential
One Size Fits All	Tailored
Closed	Open
Us versus Them	Collaborative
Quantitative	Qualitative
Prescriptive	Flexible
Time as Constant/Learning as Variable	Learning as Constant/Time as Variable
Teacher Credentials	Teacher Skills
Consolidated Experience	Aggregated Experience
Regional/National	International/Global
Static	Dynamic
Single Delivery Model	Distributed Delivery Model
Process	Outcomes
Infrastructure	Services

One of the observations related to online education is that less successful students tends to have difficulty on calling upon their self-motivation skills such as goal setting, verbal reinforcement, self-rewards and punishment control techniques (Dembo and Eaton, 2000). In their work (Eom et al, 2006) found that course structure, self-motivation, learning styles, instructor knowledge and facilitation interaction and instructor feedback significantly influences students' satisfaction. Swan (2001) found that student perceptions of interaction with their peers to be related to four components: actual interactions in the course, the percentage of the course grade that was based on discussion, required participation in discussions and the average length of discussion responses. Graham and Scarborough (2001) bolstered Swan's findings as their survey determined that 64% of students claimed that having access to a group of students was important. Picciano (1998) discovered that students perceive learning from other courses to be related to the amount of discussion actually taking place in them.

Although e-learning platforms may offer substantial possibilities to overcome previous educational barriers of time and distance, there are new barriers that may arise such as altered time commitment and educational focus as well as availability of training in IT technological support.

In the present work, we define a number of dimensions of quality applicable to e-learning programs and assessed those criteria in respect to the on-line Innovation and Entrepreneurship Master program.

2. Methodology

When constructing a relevant framework for quality assessment in e-learning based education, it is vital to define the different dimensions associated with e-learning. Such dimensions must hold the quality criteria that are set as ISO standard and the Bologna perspective in order to be implemented in higher education. We constructed a set of indicators to assess e-learning quality dimensions, where an indicator scoring high on one dimension is not necessarily a high scorer in other dimensions and vice versa. Since quality needs to be assessed by the relevant stakeholders, we have first identified the three different stakeholders that the dimensions are set for, namely "quality for student", "quality for financier" and "quality for educator". Since our goals are to assess not only the theoretical but also the tacit/narrative related dimensions of the innovation and entrepreneurship programs we will then narrow our discussion towards that subject.

Further, it is relevant to assess education as a form of service where quality within the educational setting is important. In this perspective, we use the definitions of important criteria from well established measurements of quality derived from Garvin's proposed eight separate dimensions of product quality (Garvin, 1987); performance, features, reliability, conformance, durability, serviceability, aesthetics and perceived quality, as well as Parasuraman et. al's five dimensions of quality for service industries (Parasurman, 1990): tangibles, reliability, responsiveness, assurance, and empathy. The latter five dimensions have received considerable support but have also been criticized for missing out on some areas. Here we see a need that price and reach-ability should have been added to the quality dimension.

3. Case Report – Quality dimensions in Innovation and Entrepreneurship e-Education

The pedagogic aspects in teaching innovation and entrepreneurship impact the success of a new venture creation significantly via the University science parks and business incubation platforms. Traditionally, entrepreneurship teaching has relied heavily on learning by reading. Such approach uses a traditional theoretical knowledge base. At the University of Gothenburg, we have shifted towards learning by doing approach in our innovation and entrepreneurship Master programs, where we emphasize a tacit knowledge approach through combining actual creation of new firms via business plan competitions and venture creation curricula (Figure 1). These activities are implemented through case and problem based pedagogic settings together with classical theoretical learning. This comes out of needs to create novel forms of educational strategies combining theoretical teaching (traditional classroom business management) with tacit learning (real life entrepreneurship case training, venture creation and leadership coaching) in order to prepare students for entrepreneurial careers in the global knowledge society. To take this even further we are creating an international e-learning based masters program in innovation and entrepreneurship where we aim at delivering a education that focuses on the effective pedagogy we use in our campus based programs. Here we have to address both the theoretical intellectual tools necessary for a start-up manager as well as the tacit-oriented establishment of skills in how to utilize them in real life practice and for students to experience the implications of their decisions.

In order to satisfy the needs of the three different quality stakeholders (see Table 2), we have designed the Innovation and entrepreneurship e-learning curriculum to satisfy quality demands relevant in such a wider stakeholder perspective.

The university educational setting mainly address three different stakeholders; the student, the financier and the educator. To manage a high quality education all the dimensions that are important for respective stakeholder has to be met. Therefore we will outline the differences between the stakeholders perspective on the chosen dimensions of quality; performance, features, reliability, conformance, durability, serviceability, aesthetics, perceived quality, tangibles, reliability, responsiveness, assurance, empathy, price and reach-ability (Garvin 1987 and Parasurman et al. 1990). The latter two dimensions have been added by us as dimensions important for education within the field of innovation and entrepreneurship.

Table 2. Relevance of quality dimensions to respective stakeholder (Low-Medium-High)

	Dimension	Student	Financier	Educator
PRODUCT	1. Performance	High	Medium	Medium
	2. Features	High	Medium	Medium
	3. Reliability	High	Low	Low
	4. Conformance	Medium	High	High
	5. Durability	High	Medium	High
	6. Serviceability	High	Low	Medium
	7. Aesthetics	High	High	Low
	8. Perceived quality	High	High	Low
SERVICE	9. Tangibles	High	Medium	High
	10. Reliability	High	High	Medium
	11. Responsiveness	High	Low	Low
	12. Assurance	High	Medium	High
	13. Empathy	High	Low	Low
ADDITION	14. Price	Low	High	Medium
	15. Reach-ability	High	Low	Medium

As seen in table 2 the relevance of quality dimensions differ between respective stakeholders, which is a very important factor in quality assurance. A dimension that has a high relevance to a certain stakeholder gives a strong indication that the operational quality assurance within that dimension should be prioritized to address the needs from that stakeholder's perspective.

The financiers are focused on the outcome of the education in the form of higher levels of valuable competence of their students and that they are associated with an educational institution with a good reputation. They are naturally also very interested in that their investment is handled according to rules and legislations, as well as that they have received a good price for their investment.

The educator has a career focus since it is the educator's job to provide the education in question. Through this perspective the durability should be very important to the educator, since that will provide less work in the long run and therefore heighten the quality for the educator. The quality of the tangibles should also be of importance to the educator since much of the tools used are tangibles and high quality in this dimension will make work easier. Assurance also holds the ability of an educator to attract financiers which of course is important for their employers and therefore this dimension has influence on their career. The reliability and price of the education is indirect influential on the educator's career, but it does not necessarily have a strong influence.

The Student on the other hand has a lot at stake. If seen as the customer it invests in itself when choosing a specific education and most often it is a decision that has a great impact on the individual's life. The student is often in a situation where it is more or less unfamiliar and therefore may not have a good framework from which it can directly see what could be expected when it comes to quality. Therefore the student lacks much of the ability to control performance, features, reliability, assurance and price. Since the student is in a low position it is important with dimensions like reliability, serviceability, perceived quality, tangibles, reliability, responsiveness, assurance and empathy. For the learning situation to be as high as possible it should take in different perspectives which are more easily confirmed if the diversity and number of students are higher, which illustrates the importance of reach-ability, which is to reach a broader and larger base of students.

4. Discussion

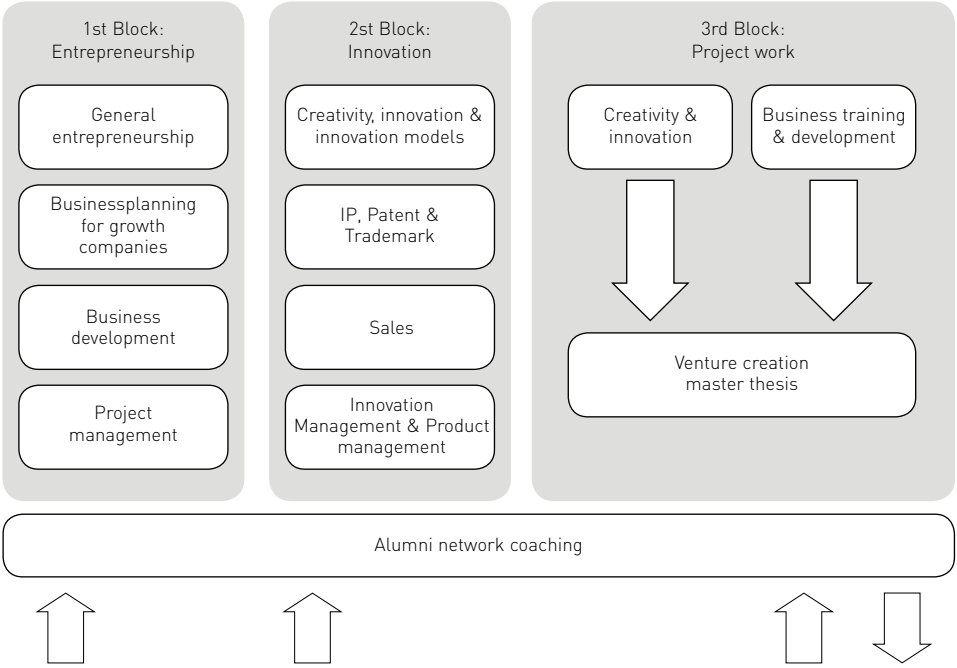
In establishing innovation and entrepreneurship higher education excellence, there is a challenge to address both the theoretical and the more tacit oriented aspects of the education. In an educational setting that is actively addressing real life venturing, there is a need to set up stringent quality assessment criteria for the theoretical as well as for the tacit/narrative parts of the educational curriculum.

In the e-based innovation and entrepreneurship programs, it is important to have a focus on real venture creation. This is delicate work that needs to integrate knowledge of a broad network of individuals with expertise in many fields as well as a close connection to venture capital. In an e-learning perspective, such tacit/narrative parts of the I&E educational program has to be integrated with a high degree of flexibility. In doing this, we have to address the new educational

paradigms (Table 1) from an e-learning perspective. In addition, for the learning outcomes to be as high as possible the students must have a possibility to confront the different actors involved in the venture creation process and get a feel of the different cultures connected to the nature of innovation and entrepreneurship, to be able to interact and negotiate their path forward as the students most often are rather inexperienced and young. Needless to say, this has to be adapted to the distance learning perspective and setting.

The setting we are suggesting for an e-learning based entrepreneurship and innovation curricula is shown in Figure 1. This figure shows a flexible structure with the first two blocks consisting of four courses, establishing a good knowledge base within both the entrepreneurship and the innovation field of expertise. The first two blocks should be build flexible and made possible to study on part time in different order. That creates a much higher reach-ability towards more experienced individuals that have already established a career and bound them self on an employment but would like to get the know-how on how to build a venture. Then after these two blocks the higher commitment starts when they enter the third block, which is highly focused on real venture creation that the students shall establish with two supporting courses, stretched out over one year of full time learning. For the students that wants the whole master in innovation and entrepreneurship it is mandatory that they go through the venture creation experience process, but for the students that just wanted to orient themselves in entrepreneurship, there is the possibility of just picking courses from the first two semesters. This type of setting opens up for collaboration with a lot of actors, where the first eight courses are great for spreading this knowledge to society as a whole and the last semester is a great for producing new entrepreneurs and ventures that is up and running already when leaving the school.

Figure 1. Suggested e-learning Innovation and Entrepreneurship curriculum



In this type of setting there would also be a well structured growing alumni network , which generates a lot of experienced coaches as well as a strong network of different international experts with entrepreneurial drive and a creative innovative mindset. All the alumni would also have experience from driving a venture that resembles the projects that are in the school, and in the end the students will add their experience into the network after graduation.

5. Conclusions

The purpose of this paper is to develop a framework of quality dimensions for e-learning based innovation and entrepreneurship education, by constructing a set of dimensions integrating and satisfying the demands from a theoretical as well as a tacit/narrative perspective.

In our set of dimensions of quality we also emphasize the need for quality to be analyzed in respect to various relevant stakeholder perspectives. By doing that, it is clear that the relevance of the separate dimensions of quality differs from traditional campus based education. Depending on whether e-learning based education is only a minor part of the curriculum or whether it is set as a complete course or even a whole distance program, the the most important stakeholder perspectives should be addressed. When it comes to an educational setting that addresses multiple stakeholders throughout the education in a triple helix setting like within an innovation and entrepreneurship program, the management is complex and quality assurance is critical.

Therefore, the dimensions of quality need to be operationalized into measurable indicators of quality which can easily be implemented and used as an instrument for continuous improvement of the educational program.

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EMERGING STUDENT TEAM COMPANIES: STUDYING THE QUALITY OF DIALOGUE

Abstract

This paper presents an ongoing long-term study of 18 months of fieldwork investigating how student team companies evolve in a higher education organization, specialized in entrepreneurship and leadership education. By studying the development of the quality of dialogue in teams, the research aims to contribute to empirical elaboration of what pertains to a successful team learning practice to evolve over time. To study the quality of dialogue in teams (n= 3 teams of 16-19 freshmen), the teams' training sessions were videotaped (using a 360° camera) as regular measurements of teams' meetings (3 times/semester). The videotaped team meetings were coded at sentence-level in regard to certain pairs of variables (positivity/negativity, inquiry/advocacy, other/self) identifying the quality of communication of participants' speech acts (Losada, 1999; Losada & Heaphy, 2004). In the analysis, the relations between the different ratios were emphasized. This paper reports work in progress. In the paper the preliminary results arising from the first cycle of measurements (first semester) are discussed, highlighting the period during which the teams' first operational units were build and the first team leaders were jointly selected.

Keywords: team company, team performance, dialogue

1. Introduction

The current post-modern turn in work and education requires its actors to develop capacities to resituate their activities in collective unities and to successfully communicate their actions within these multiple local and global social orderings (van den Besselaar et al., 2005; Steinfield et al., 2007). In the globalized world it seems that the trend is towards collaborative organizational culture and collaborative leadership (Rosen, 2008; Knights & McCabe, 2003; McCabe, 2007). Thus to succeed in this setting, and also to stimulate employee commitment through participative management (Knights & McCabe, 2003, p. 1589), modern knowledge-intensive work organizations are increasingly establishing teamwork-based working models and less hierarchical working practices that support rich spontaneous collaboration, innovation and learning (Rosen, 2008).

In educational institutions the climate shift towards collaborative learning mirrors that of the surrounding world. Actually, collaborative learning processes and working as teams in educational institutions and in knowledge intensive work organizations have fairly much in common

(Leinonen, 2008, 15). For example, in both of the contexts successful collaborative learning requires employee or learner engagement and commitment to intentional work towards the goals of the organization or the team (Leinonen, 2003, 15; Billet, 2001, see also Knights & McCabe, 2003).

In this paper, the collaborative learning context can be seen in-between an educational institution and a knowledge-intensive work organization. We present a study that explores the development of student team companies (co-operatives) at Team Academy at the Jyväskylä University of Applied Sciences in Finland. Team Academy is a higher education organization specialized in entrepreneurship and leadership education and team learning. At Team Academy, student teams are supported by teachers (i.e. coaches), senior experienced co-students and an alumni network. From the outset of their studies, students run their authentic customer projects as co-operatives at their own offices in a business-like, technology-enhanced learning environment (Leinonen, Partanen & Palviainen, 2004). Team Academy relies on a communal learning method, where the cornerstones of team learning are learning by doing (e.g. Dewey, 1915) and dialogue (e.g. Bohm, 1996). It is expected that together with developing thinking and practical professional skills, clarification of thoughts and meanings through dialogue is also significant (Leinonen et al., 2004, 31; Senge, 1990, 240). As Bohm (2004) says the aim of the dialogue is not to reach an objective but to understand complicated matters and different perspectives and in this way expand our own thinking. In this study we follow Marcial Losada's research (see e.g. Losada, 1999; Losada & Heaphy, 2004; Fredrickson & Losada, 2005) on interaction dynamics and productivity of business teams. He sought explanations and deeper insights for high-performing teams by studying the quality of interaction, namely, verbal communication among team members utilizing three pairs of variables: positivity/negativity, inquiry/advocacy and other/self). In short, in his study Losada (ibid) placed 60 business teams into three levels of performance, high, medium and low, based on business performance data; mainly on profitability, customer feedback and 360-degree evaluation. A team was assigned to the high performance category if it achieved high levels of ratings in all three measures; to low level performance category if the ratings were all low and medium level performance teams were in-betweens (see Losada & Heaphy, 2004, 746). When studying the quality of verbal communication Losada noticed that teams varied systematically by performance level on the aforementioned three bipolar dimensions ending up with certain ratios for each performance level. In this study, we utilized these ratios for evaluating student team companies' performances over time.

In this paper we will examine, *firstly*, the development of the quality of dialogue *over time* in three emerging team companies over their first semester as entrepreneur students - a critical period during which the teams' first operational units were built and the first team leaders were jointly selected. *Secondly* we ask whether there were differences between the three teams' performance levels and development. Also, while reporting work-in-progress, we will discuss whether the evaluations focusing on the quality of communication in teams *as a method* could enrich and help reach a better understanding of the team performances and in this way, to support emerging teams in their learning.

2. Research design

Participants and contexts of study

The research participants were first-year entrepreneur students at Team Academy at the Jyväskylä University of Applied Sciences in Finland. In the beginning of the first semester the students were divided into three heterogeneous teams of 16-19 students on the basis of Belbin team role test results (see <http://www.belbin.com>). All three student teams participated in this study.

Data collection

The method involved three measurements of student teams' strategic planning meetings at regular intervals over a period of one semester (three months). The meetings were videotaped using a 360° camera, which allowed a panoramic view of all the participants simultaneously.

Data analysis

Two independent coders (research assistants) conducted a time series analysis of the videotaped team meetings using mobile software. Humap Ltd staff trained the coders and conducted the first coding session together with them. For the results, a mean value of the two independent coders' analysis was calculated. In the analysis, the team meetings were coded at sentence level in regard to certain pairs of variables (positivity/negativity, inquiry/advocacy, self/other) identifying the quality of communication of participants' speech acts (Losada & Heaphy, 2004; Fredrickson & Losada, 2005). Following Losada and Heaphy (2004, 745) research on interaction dynamics and productivity of business teams, a speech act was coded *positive*, if it expressed support, encouragement or appreciation. *Negative* speech acts, in turn, expressed sarcasm, cynicism or other signs of disagreement. A speech act or utterance was coded as *inquiry* if it included an open question, widening and examining the topic of discussion. *Advocacy* involved a speech act that was telling a team member's own opinion or argument in favour of the speaker's point of view. An utterance was coded as *self* if it referred to the person speaking or to another member of their team. Correspondingly, an utterance was coded as *other*, if it referred to someone or something outside the team. Next, the ratios of different pairs of variables were calculated and compared first to the original ratios of high-, medium-, and low-performance teams identified by Losada (see Losada & Heaphy, 2004, 747). Table 1 presents the initial results of the coding.

Table 1. The initial results of Team A, B and C.

TIMES	VARIABLES			TEAMS
	I/A	P/N	O/S	
1	0.172	1.334	0.320	TEAM A
2	0.159	1.994	0.216	
3	0.332	3.498	0.042	
1	0.155	1.800	0.329	TEAM B
2	0.228	2.212	0.252	
3	0.183	0.530	0.220	
1	0.235	27.250	0.037	TEAM C
2	0.261	1.976	0.067	
3	0.211	1.844	0.037	

However, we found that for our purposes, namely to create visual representations of the qualitative development of the dialogue in teams in a way that would clearly reveal the balance/unbalance between the ratios of the different pairs of variables, the initial results caused certain problems. The numerical scaling of the initial results was different for each pair of variables. This made it difficult to compare and to visualize the results. Therefore the initial data was first normalized using the Matlab fuzzy logic toolbox (www.matworks.com). The toolbox allows applying fuzzy classification methods (e.g. Zadeh, 1965) for normalizing data (for normalized data, see Table 2). The rules of fuzzy logic classification were defined according to Losada's team performance classification values. Finally, to look at the differences between the teams' performance levels and development, the results were combined in one unified representation (see Figure 4).

Table 2. The normalized results of Team A, B and C.

MEAS.	VARIABLES			TEAMS
	I/A	P/N	O/S	
1	38	45	47	TEAM A
2	37	50	45	
3	46	82	11	
1	36	49	47	TEAM B
2	42	58	46	
3	39	22	45	
1	42	24	5	TEAM C
2	44	50	26	
3	41	49	5	

3. Results

Figure 1 displays the results obtained from the three separate measurements conducted with Team A. We found that the first two data sets were closely alike in terms of all the three pairs of variables (positivity/negativity, inquiry/advocacy, other/self) and there was a balance between the different variables. In the third measurement, in turn, there were evident differences. What is noticeable here is the self-orientated quality of communication within the team. Even though the quality of communication was positive, which is, in the literature, seen to generate emotional spaces that open possibilities for action (Echeverria, 2004, cited in Losada & Heaphy, 2004, 745), it was concentrated only on themselves. In long turn this lack of orientation towards “outside” may result in loss of new possibilities, as for example Ancona (2000) points out. This is also a problem in view of Team Academy’s basic principles and working culture, which seek to encourage students and teams for open-minded transfer and exchange. The figures of speech used in this context include “cross-fertilization” and “travelling”, also with reference to a mindset.

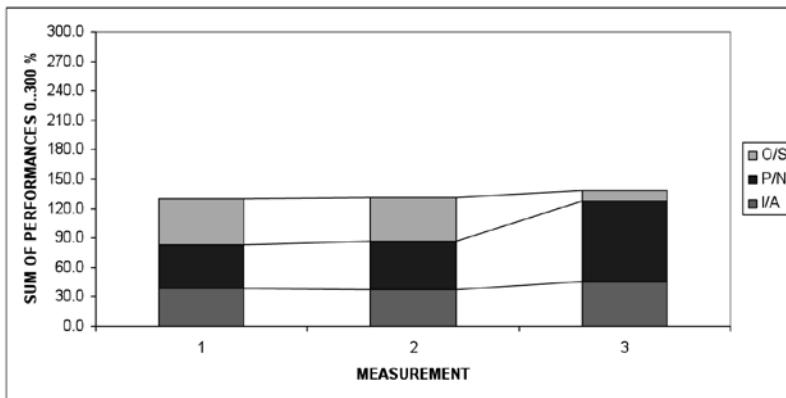


Figure 1. Measurements of the quality of dialogue (Team A).

Figure 2 shows the results obtained from the three measurements with Team B. In line with the first two measurements of Team A, also here the three different pairs of variables were in balance. The second measurement also displays positive evolution within two pairs of variables: other/self and positivity/negativity (the higher the rating of the pair of variables, the better). However, what is noticeable in the last measurement is the negative evolution of the quality of communication within Team B in terms of the pair of variable “positivity/negativity”. As Fredrickson (1998) points out, negatively oriented communication may restrict and close emotional spaces for action and in this way affect negatively on the team’s performance in the long run.

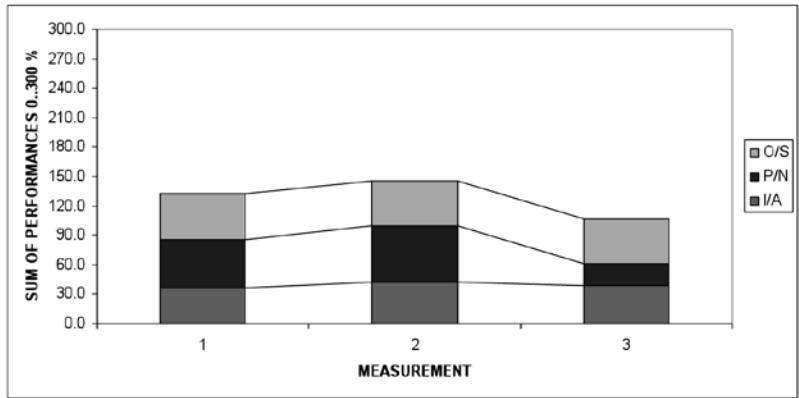


Figure 2. Measurements of the quality of dialogue (Team B)

Figure 3 displays the results obtained from the three separate measurements conducted with Team C. The ratio of the pair of variable “other/self” shows that over the three measurements, the quality of communication seems to stay as self-oriented. Even though the second measurement indicates an increase towards more external orientation, the third measurement shows a decrease in this respect. Albeit the quality of communication is positive, Team C seems to stay unbalanced over time in regard to the other/self pair of variable. As Ancona (2000) points out, a lack of external orientation may hinder the team’s performance and its’ positive development.

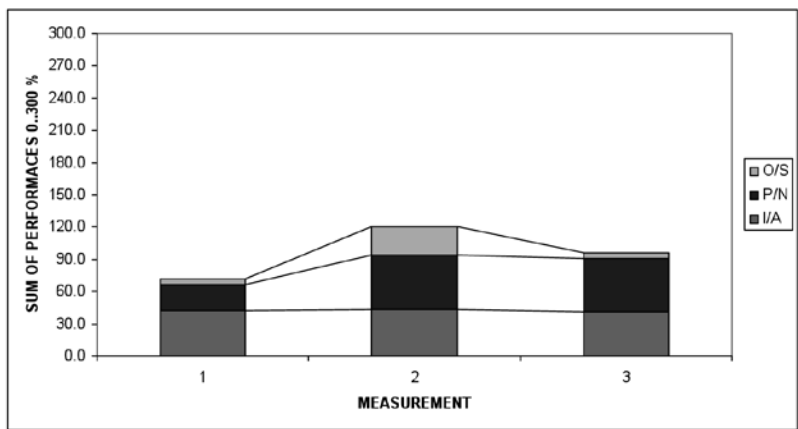


Figure 3. Measurements of the quality of dialogue (Team C).

In Figure 4 all the three measurements of the three teams' development of the quality of dialogue are presented in a single representation. Here we see how differently the development of the quality of communication of Team A, B and C progressed. For example, Team A shows improvement in dialogue measurement by measurement while the progress of Team B and C is less straight forward.

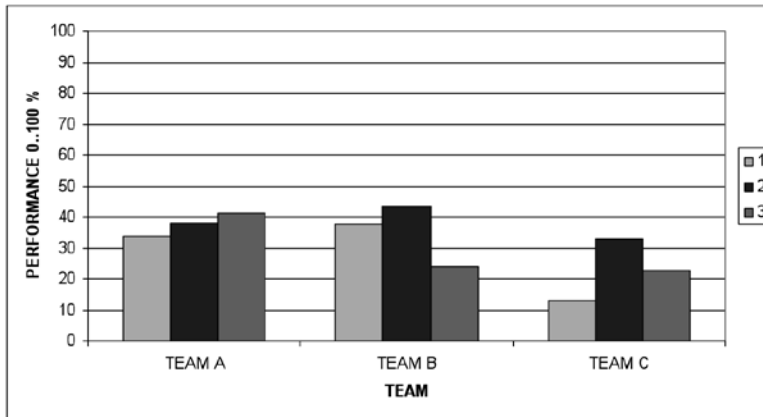


Figure 4. Overall performances of Team A, B and C.

4. Conclusion and remarks

The aim of this paper was to examine the development of the quality of dialogue in three emerging team companies over their first semester as entrepreneur students. This time period involved the selection process of the teams' first operational units and the first team leaders. We also asked whether there were differences between the three teams' performance levels and development. Besides sharing our initial results, we also wanted to discuss whether the evaluations focusing on the quality of communication in teams as a method could enrich and help reach a better understanding of the team's performance.

The three measurements presented here provided an interesting overview on the first three-month process of the emerging collectives during which the team companies were setting up their business activities and organizing their practices. The results indicated differences in the development of teams' performance and provided pedagogically important information concerning teams' diverse working practices, their strengths and weaknesses and their "character". This "first-hand" data may provide information for the coaches, for example, to direct and specify their support over the complex process of team development and learning. The data presented here is a part of ongoing data collection of 18 months of fieldwork including observations, interviews and dialogue measurement data. We find the dialogue quality measurement method as promising. However, there are still questions regarding culture-specific interpretations of Losada's three-level classification of team performance with high-, medium-, and low-performance levels. For

example, low ratings in regard to the pair of variable “inquiry/advocacy” provokes a question whether the ratio is affected by cultural practices.

Also, we wonder whether the classification suits to evaluate “fresh” teams who run start-up businesses in an educational context. Maybe these start-up teams need more optimism than more conventional business teams would need. In order to get a deeper understanding of the teams’ quality of communication and the development process of dialogue in teams in this specific context of business school, the next step is to go back to the initial time series analyses and to look more closely at the discussion data. Also, the next step is to take into account the turnover and other collective learning outcomes such as the number of customer visits and the customer satisfaction data.

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THE IMPACT OF INTERVIEWING AN ENTREPRENEUR ON UNIVERSITY STUDENTS' ENTREPRENEURIAL ATTITUDES

Abstract

The importance of entrepreneurship and enterprise education has been recognised widely. Consequently, favourable attitudes, skills and knowledge relating to entrepreneurship have been promoted. In Finland, the Ministry of Education has given guidelines how to integrate enterprise education in the different levels of the educational system. The aim of this paper is 1) to bring up the importance of enterprise education in universities and 2) to examine what its impacts and effects are on the students. We analysed the feedback collected from the university students who completed the course "Introduction to Entrepreneurship" during 2005-2009. The results show that the course and its assignments 1) shaped attitudes and 2) increased the knowledge about entrepreneurship in general and at the personal level. During the course the students had to interview an entrepreneur and this assignment seemed to concretise the issue and bring it closer to them. It made entrepreneurship less intimidating and, therefore, opened their eyes to see entrepreneurship as a possible career choice. Based on these results, it can be argued that enterprise education is a good means to shape attitudes toward academic entrepreneurship. Traditionally, university students have not necessarily regarded entrepreneurship as a career choice. This view can be broadened by offering versatile and practical information about entrepreneurship. The results send a notable message to policy makers: it is important to ensure sufficient resources so that every university student could participate in enterprise education during their studies.

Keywords: Attitudes, enterprise education, academic entrepreneurship

1. Introduction

Entrepreneurship is an important factor in maintaining a growing and thriving economy (Henry, Hill & Leitch 2003). At the EU level entrepreneurship has been regarded as important because 1) new and small business create more new jobs than old enterprises, 2) entrepreneurship increases productivity and 3) entrepreneurs act as motors in the market economy creating prosperity, jobs and more alternatives to consumers (Green Paper 2003). Consequently, it is widely recognised that entrepreneurship should be supported.

In the Finnish Entrepreneurship Policy Program (2006) special attention is paid to entrepreneurial training and consultancy. The Ministry of Education has published Guidelines for enterprise education (2009) the aim of which is to enhance an entrepreneurial spirit among Finns and make entrepreneurship a more attractive career choice. In addition, the purpose is that the enhancement of entrepreneurship permeates the whole education system.

The aim of this paper is to bring up the importance of enterprise education in universities and also to examine what its impacts and effects are on the students. Entrepreneurship has

traditionally been quite foreign element in universities because emphasis has been on theory rather than practice and it has been assumed that university graduates will earn their living as officials rather than entrepreneurs. At present the general attitude towards entrepreneurship has become more positive also in the universities. (Paasio, Nurmi & Heinonen 2005) Nevertheless it is not as probable career choice to academics than to graduates at other educational levels (Paasio & Pukkinen 2006).

2. The role of attitudes in entrepreneurship

An attitude is defined to be an assessment of an object, whether that object is good or bad (Wiklund, Davidsson & Delmar 2003). It also includes a behavioural element that consists of intentions and predispositions to act in a particular way toward the object (Robinson et al. 1991). Exogenous variables that relate to a situation (e.g. employment status) or an individual (e.g. personality traits) influence attitudes (Krueger, Reilly & Carsrud 2000) and they can change depending on time and situation. The rate of it is affected by how deep-rooted the attitude is and how intensive the experience causing the change is (Robinson et al. 1991).

Empirical findings have supported the idea that attitudes affect planned behaviour, such as becoming an entrepreneur, by affecting intentions (Krueger et al. 2000). In addition, it has been shown that personal attitude is the main predictor of behavioural intentions and that also perceived behavioural control influences students' entrepreneurial intentions. Thus, it could be argued that a positive attitude towards entrepreneurship is a good starting point, but in addition, the individual should also believe that he/she could perform well as an entrepreneur. (Wu & Wu 2008.)

Intentions and attitudes are based on perceptions and thus, they can be learned (Krueger et al. 2000; Krueger & Brazeal 1994). Moreover, as attitudes are open to change, they can be influenced by educators (Florin, Karri & Rossiter 2007). It is argued that at least some aspects of entrepreneurship can be successfully taught (Henry, Hill & Leitch 2005). Consequently, educational institutes have started to offer entrepreneurship education in their curriculum, because it is believed that the key to improving perceptions and attitudes within society is education (Galloway & Brown 2002) and that effective education and training may push some people towards entrepreneurship (Henderson & Robertson 2000).

Heinonen and Poikkijoki (2006) define enterprise education as referring to "activities aimed at developing enterprising or entrepreneurial people and increasing their understanding and knowledge about entrepreneurship and enterprise". In addition to promoting the venture formation, enterprise education has been seen as important regardless of the career choice of the student. Henry et al. (2005) argue that students will benefit from learning an innovative approach to problem solving, adapting more readily to change, becoming more self-reliant and developing their creativity irrespective whether they become entrepreneurs or not. Nevertheless, the objectives of the entrepreneurship education are that students would learn to understand entrepreneurship, to become more entrepreneurial and to become entrepreneurs by integrating the skills and attributes of an entrepreneurial individual with the entrepreneurial process and related behaviour. (Heinonen & Poikkijoki 2006.)

Enterprise education is offered at different educational levels and in Finland it is available also in all the universities, although the quantity and forms may vary (Nurmi & Paasio 2007). Studies suggest that for highly educated self-employment tends to be less attractive career choice compared to wage work, because of lower earning prospects, more unstable stream of earnings and cultural tradition of working in large corporations. At the same time, it is found that enterprises of the highly educated have higher growth probabilities than those run by less educated individuals. (Kangasharju & Pekkala 2002). Consequently, it is expected that universities play an important role in regional innovation and economic growth as they are often seen as key providers of new technologies and business ventures (Laukkanen 2003). Furthermore, it is believed that promoting entrepreneurial intentions can enhance the probability that university students will engage in entrepreneurship (Wu & Wu 2008).

Developing a positive attitude towards entrepreneurship is focal in entrepreneurship teaching and learning (Florin et al. 2007). There are some studies that have investigated the attitudes of students towards entrepreneurship and generally they show that university students have neutral or positive attitudes towards it (Veciana et al. 2005; Volkman & Tokarski 2009; Harris & Gibson 2008). Also the impact of enterprise education on attitudes has been examined and several studies have indicated that enterprise education has a positive effect on entrepreneurial intentions (Fayolle, Gailly & Lassas-Clerc 2006, Kolvereid & Moen 1997) and attitudes (Henderson & Roberston 2000, Florin et al. 2007, Peterman & Kennedy 2003, Souitaris, Zerbinati & Al-Laham 2007).

Some articles on enterprise education emphasise its role as offering information and affecting the mind-set and emotions. Heinonen and Poikkijoki (2006) argue that intention is a necessary but not a sufficient prerequisite for entrepreneurship and that some kind of a triggering event is required. They state further, that in universities the triggering event could be an external opportunity coming top down from teacher to student. Consequently, according to their view the acquisition of deeper knowledge about entrepreneurship and its general relevance in modern society acts as a triggering event that gives intention to entrepreneurship. Souitaris et al. (2007) feel, however, that in addition to information, inspiration is needed, so that the individual “falls in love” with the entrepreneurial career. Their study illustrated that entrepreneurship programmes are a source of trigger-events that inspire students and thus raise their entrepreneurial attitudes and intentions. For example, casual comments by an entrepreneur guest-speaker can help the students to answer a question whether or not they want to be entrepreneurs.

3. Data collection and analysis

The aim of this paper is to bring up the importance of enterprise education in universities and also to examine what its impacts and effects are on the students. In the empirical part of the paper we analysed the feedback (n=353) collected from the university students who completed the course “Introduction to Entrepreneurship” during 2005-2009. During the course they had to conduct an interview with an entrepreneur and write a report on that. It is studied how this assignment affected the students’ attitudes 1) towards entrepreneurship as a societal matter or 2) as an alternative to sell one’s knowhow or as a career choice and 3) by giving information on entrepreneurship.

4. Results

Entrepreneurship as a societal matter

Entrepreneurship and small firms were regarded as *important to the society* as a whole. They were described e.g. as a lifeline, developer, healer, a stone base of the society and a refuge, backbone and engine of Finnish economy. Many had realised how big a portion of enterprises are small or middle-sized. Entrepreneurship's role especially in employment was recognised. It was also noted that by paying taxes and bringing products and services to the markets entrepreneurs and small firms create well-being. In addition, they create innovations, although it was stated that innovativeness may be depended on the field of industry and it is not obligatory in successful business operations. All in all, it was recognised how entrepreneurship and society affect one another.

A lot of attention was paid on how *entrepreneurship is supported or encouraged*. There were mixed opinions about the amount of support offered. Some felt that entrepreneurship should be supported more, while others thought that it was supported well already. In the same way many thought that tax issues hinder entrepreneurship, while some believed that something had already been done to ease the taxation. Besides taxation other factors such as expense of obligatory insurances and unnecessary bureaucracy were mentioned as barriers to entrepreneurship. The assignment had made students think the impact of legislation on entrepreneurship. It was also pointed out that the social benefits for entrepreneurs are not at as high level as they are for wage earners. Nevertheless, some saw entrepreneurship as a possible career choice and thought that the threshold to start a business was quite low.

There were some who thought that the general attitude to entrepreneurship is quite negative. However, some felt that the attitude have become more positive. In addition, there were students who stated that the assignment had turned their own attitudes more positive. Generally it was argued that entrepreneurship enrich culture and diversifies it. Students thought that entrepreneurship *education is important* to young people at every level of education.

Entrepreneurship as an alternative to sell one's knowhow or as a career choice

The students can be divided into those who were already entrepreneurs, had a very positive attitude toward entrepreneurship as a career choice, saw entrepreneurship as a possible career choice among other alternatives or had a very negative attitude toward entrepreneurship as a career choice. Of the students 10 (2.8 %) stated that they were already either full-time or part-time entrepreneurs. Those students who considered entrepreneurship as the most potential career choice after graduating were in the minority among the students (17 / 4.8%). This assignment increased entrepreneurship as a one possible career choice among 122 (34.6%) students. It reduced the obstacles by showing entrepreneurs as normal human beings, not as supernatural creatures, and entrepreneurship as a normal career and thereby made students also to evaluate their own possibilities to become an entrepreneur. Many of these students had never before considered entrepreneurship as a career choice and this course gave them an opportunity to get more information on entrepreneurship and in that way gave them new perspectives and tools to evaluate the process of becoming one. Students who had negative attitudes towards

entrepreneurship before this assignment and whose opinion was not altered consisted of 48 (13.6%) of students. Negative attitudes were related to, for example, their family background or commitment needed in entrepreneurship.

A few students did not directly express their attitude towards entrepreneurship. Instead they evaluated their possibilities to sell their knowhow. They had either some difficulties to define it or they knew what their knowhow might be in the future but they were at early stages in their studies and had not obtained it yet.

Issues preventing entrepreneurship were related to person, commitment and environment. Lack of entrepreneurial traits, such as self-confidence, creativity or an ability to take risks, was stated as barriers. Students compared their personal characteristics with either theory or the interviewed entrepreneur. Some stated that their lack of proper knowhow or business idea took entrepreneurship out of their reach. A lot of attention was paid on entrepreneurs' commitment. Many students felt that entrepreneurs' working hours were too long and demanding especially compared to those of white-collar workers. These long hours would have a negative impact on their family life and leisure time. They also thought that entrepreneurs' responsibilities and income level were not in right balance. Some barriers relating to environment were mentioned. Issues of taxation, bureaucracy and finance were stated, but it was the instability of entrepreneurs' environment in general or in the economy that seemed to create the most negative impact on the willingness to become an entrepreneur.

Students also stated issues encouraging entrepreneurship. These issues were related to person, entrepreneurship in general and environment. Some were positively influenced by the role model given by the entrepreneurs. They also compared their own characteristics, age or education to those of the entrepreneurs. Content of entrepreneurship in general had a positive impact on the students. Entrepreneurs' work was considered to be rewarding, a way of, not only expressing themselves but also developing their skills. Although responsibilities were seen as heavy, the level of independence overbalanced it. Success was possible to achieve through hard work. Environment including education system affected the students by increasing their knowledge and that in turn helps them to become more aware of the support system behind entrepreneurship and thus decreases the amount of false facts about e.g. risks and finance.

Information on entrepreneurship

Many of the students stated that they had acquired a lot of new information through the assignment. They had especially obtained practical information and they also mentioned that they had learned from the theories presented during the course. The assignment had breathed life into these theories. Many of those who declared that they had not acquired much new information stated that they came from entrepreneurial families or they had other close relations to entrepreneurs. Nevertheless, also some of those who came from entrepreneurial families had gained important knowledge through the interview.

The students stated that they had obtained information about the stages and requirements of starting up a business. Some mentioned that it seemed to be easier and require fewer resources than they had previously thought. Many had realised that there are many different forms of

entrepreneurship and that one could be, for example, a part-time entrepreneur. Students had also got wiser to the motives of entrepreneurs and they had contemplated the role of personal traits in becoming an entrepreneur.

Although some stated that the starting up a business seemed to be less difficult than they had previously perceived, they were others that mentioned that the assignment had opened their eyes to see the *challenging side of entrepreneurship*. It was noted that it demands a lot of work and it involves risks and responsibilities. It also includes a lot of paperwork and working through bureaucracy. However, planning was seen to enhance business operations.

Some were delighted to get to see a glimpse of *entrepreneur's world of ideas*. They saw that to some of their interviewees entrepreneurship was an attitude and a way of life. It was stated that some entrepreneurs had a passion for what they were doing. None of the students stated that the assignment would have had a negative impact on their view on entrepreneurship; on the contrary it had had a positive effect. In addition, it had made them think about their own possibilities to become an entrepreneur.

"New to me was that the risks related to the starting up a business are not as big as I had thought. In addition, it was surprising that you can very much influence the risks at the stage of the start-up."

"Interesting in the interview was to find the motives, what the motivation that directs people to become entrepreneurs is."

"Discussing with the entrepreneur made the book knowledge more human and gave it a "face". It gave a feeling that entrepreneurship is really possible."

5. Conclusions and recommendations

The results of this study are in accordance with the previous studies that have indicated that enterprise education raise awareness, help to increase personal motivation and thus affect students' career choice (Henderson & Robertson 2000). They also support the idea that it has a positive effect on attitudes towards entrepreneurship (Peterman & Kennedy 2003, Souitaris et al. 2007). It was indicated that the assignment had affected positively on person's attitudes as well as on desirability and feasibility of entrepreneurship. Furthermore, the students brought up intrapreneurship in their answers. As Henry et al. (2005) suggest students can benefit from enterprise education by learning an innovative approach to problem solving, adapting more readily to change, becoming more self-reliant and developing their creativity irrespective whether they make a career as entrepreneurs or as wage workers.

Based on these results, it can be argued that enterprise education is a good means to shape attitudes toward academic entrepreneurship. Traditionally, university students have not necessarily regarded entrepreneurship as a career choice. This view can be broadened by offering versatile and practical information about entrepreneurship. As Heinonen and Poikkijoki (2006) state the acquisition of deeper knowledge about entrepreneurship and its general relevance in modern society can act as a triggering event that gives intention to entrepreneurship. We also believe

that it is good that enterprise education includes assignments that put the students in close contact with entrepreneurs so that they can gain practical knowledge about the everyday life of an entrepreneur. It has been argued that even casual comments by an entrepreneur can help the students to answer the question whether they want to start their own businesses (Souitaris et al. 2007). In this study it was shown that interviewing an entrepreneur made entrepreneurship less intimidating and opened students' eyes to see it as a possible career choice. All in all the results send a notable message to policy makers: it is important to ensure sufficient resources so that every university student could participate in enterprise education during their studies.

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ENTREPRENEURSHIP EDUCATION IN FINNISH BASIC LEVEL EDUCATION: WHO, HOW, AND WHAT TO EVALUATE?

Abstract

Entrepreneurship education is seen as the oxygen needed to prevent western economies from fading. However, unless the system is monitored, there is no guarantee that the oxygen is actually produced. Considering that it is humans we are dealing with, as teachers and learners, self-assessment becomes highlighted. This article is an outgrowth of observations on the Finnish educational system, further systematic data collection, and analysis of that material through relevant literature around the topic. Our contribution is the specification of who, how and what to assess in basic-level entrepreneurship education.

keywords: entrepreneurship education, teaching, self-evaluation

1. Introduction

Entrepreneurship education (later referred to as EE) has been defined in terms of ‘entrepreneurial’ and ‘enterprising’ (education), the former referring to business activity and the latter to *entrepreneurial attitudes and behaviors* manifested in any context (e.g. Gibb 2005). EE is supposed to have broad implications, introducing entrepreneurship not only as a career choice but also as a way of seeing and doing, teaching and learning (Steyaert & Katz 2004, Berglund & Johansson 2007). However, as with all education, it is not evident that the desired outcomes materialize. This highlights the role of evaluation, and leads us to ask – What is the role of evaluation in EE?

Overall, evaluation (of what is being taught and learnt) has gained a major role in the development of education (e.g. Seikkula-Leino 2007, 2009). This is because learners are seen to acquire the targets that are evaluated (e.g. Virta 1999, Pickford & Brown 2006, Atjonen 2007, Silvennoinen 2008). From this perspective, it is important that also EE is evaluated. What has been evaluated so far is the impact of EE on new venture creation (e.g. Hytti & O’Gorman 2004, Fayolle 2005, Barr et al. 2009), students’ changing entrepreneurial attitudes (e.g. Frank 2007) and opportunity identification (DeTienne & Chandler 2004). However, research in this area has remained on the program-level. We believe it serves the development of EE to bring the analysis to the teacher-student -level. It is towards that direction this article is headed.

Higher education research (e.g. Shepherd 2004, Henry et. al., 2005a, b, Fiet 2001a, b) has acknowledged teachers’ role as the agents of learning and educational development. We believe

that a particular focus on teachers is essential also in the development of viable EE systems on the basic educational level, which includes Primary and Secondary schools (high schools) and basic vocational training. What promotes our belief is the fact that there are educational settings in which the teachers are taught and encouraged to be autonomous, even when implementing a standardized curricula. One of these settings is Finland (Laine & Malinen 2008, 16-20), the context of our research.

In Finland, the Government has long emphasized EE as a topic to be advanced. EE has been included in the national core curriculum since 1994 and currently plays a role in curricula on each educational level, starting from comprehensive schools (Finnish National Board of Education 2003, 2004). However, EE has not yet established its position in teacher education and professional development and, thus, the inclusion of it in school curricula is challenging. According to Seikkula-Leino (2007), Finnish teachers have had difficulties in finding contents and means to respond to challenges posed by EE. In the core curriculum, there is no mention of how to evaluate cross-curricula themes such as EE. (Finnish National Board of Education 2003, 2004).

Making observations similar to those above, we entered the research process with the aim to identify means for developing the evaluation component of the educational system around this important topic. Research materials were produced with teachers reflecting on the question *“How do teachers meaningfully implement evaluation in entrepreneurship education?”* First, the teachers themselves participated in the analysis and organization of data. Later, some of the authors analyzed the data in themes following the idea that interrogatives such as *what, why, how, when, and who* (to evaluate) can help take many different facets into account (Pickford & Brown 2006, 4). Reaching towards the aims of the paper we made use of literature on evaluation (e.g. Chelimsky 1997, Fetterman 1996, Brooks 2002) and on EE (Kyrö 1997, Hytti 2002). Noteworthy, as typical to elaborative case studies, we do not divide our work in theory and empirical sections, but bring in extant literature wherever it is appropriate and useful.

We start by introducing the reader to data and methods used in this study. Going into the main themes we first investigate the ‘who’ in evaluation. Next, we analyze the evaluation methods that were projected useful by the teachers in EE. This analysis is followed by a discussion of what to evaluate, which makes novel use of extant EE literature. After summarizing our work, we conclude by specifying our contributions to the research and practice of EE.

2. Data and methods

We see entrepreneurship and EE as socially constructed phenomena (cf. Bouchikhi 1993, Berger & Luckmann 1969). Thus, we are interested in what is being said and written about EE and its evaluation (see Silverman 2001, 97). As introduced, our research materials compose of teacher accounts on EE evaluation. These materials are analyzed through and partly supplemented with established (institutionalized) meanings of entrepreneurship, EE and its evaluation (i.e. meanings reported by academics).

In data collection, we applied elite sampling. It refers to selecting subjects based on who possesses the best possible knowledge of the phenomenon that is being studied. In this case, the elite were

teachers participating in a European Social Fund (ESF) development project around EE. Twenty-six of the twenty-nine teachers involved in the project devoted their time to our study. These teachers represented different educational basic levels, different educational organizations, and both genders. (more details in Appendix 1)

The materials were produced in a meeting in November 2009. Before the meeting the teachers were via email asked to answer a few questions about EE in order to orientate them for the day. In the beginning of the meeting, teachers individually replied to the question of meaningful implementation of evaluation in EE. Next, the teachers were divided into six groups of approximately four members, each group including representatives of different organizations and educational levels. The purpose of the heterogeneous groups was to establish novel views and share experiences on EE extensively across educational levels. A so-called walk-through was applied to the group work. Each group stopped at six different points to answer sub-questions around the themes of aims, contents, methods, learning environments, culture of action and evaluation of EE. The first group at each point answered the question and the following groups filled in sharing additional viewpoints. The final group at each point was allowed to compile a synthesis of the answers of all the groups after filling in their own comments. At the end of the day, each group presented their analyses and syntheses to other groups on a transparency.

It is clear that this method also has its flaws. Here, we consider only the issues written down by the group, and we have no way of knowing whether all of the participants could make their voices heard, or whether the group excluded comments from the transparency presentation. In any case, the groups eagerly produced material and the analyses and syntheses of the teachers themselves were constructions of their discussions and thus valuable to us.

The materials produced by the groups were documented and analyzed by three of the authors. Being participants to the data production process the corresponding authors had already developed an overall picture of the responses prior to reading the documented data. Thus, they moved on with a more reflective and analytical reading, mirroring the data against EE literature and definitions of evaluation methods. The result of this process is presented in the following.

3. Evaluation of entrepreneurship education

In the Finnish context, provisions on evaluation are stated in the core curriculum and it concerns only student assessment. (Finnish National Board of Education 2003, 2004). Also the teachers say that evaluation is connected more to students than to the work of the teachers. Evaluation is said to concern learning rather than teaching, and therefore teachers' reflections and views on the development of their work are ignored. In this context, the teachers see evaluation as a process in which a student's reflection of one's own learning takes form with the help of questions regarding the process itself and what one has learnt about oneself. Further, they see the process as anchored in incentives and a positive attitude towards evaluation. Considering the aims of this paper, it is noteworthy that the group work also raised the issue of teacher assessment, indicating that there is a need to evaluate teachers as well.

3.1. How to evaluate

It is important that methods used to promote educational systems are in line with the value-systems of educational institutions. In Finland, values of teacher autonomy and independence (Laine & Malinen 2008) speak to the use of self-assessment methods. By definition, *self-assessment* means an evaluation of one's own abilities and flaws. It is categorized as an evaluation for development that can be done for one's own use or for external purposes (see Chelimsky 1997, 10). According to our data, self-assessment is actively used in Finland, but primarily by students reflecting on their own learning (e.g. using learning journals and portfolios).

The teachers also state that evaluation in EE is a continuous process. This description seems to fit the meanings of *improving evaluation* (see Patton 1997), which is formative evaluation (i.e. evaluation with the purpose of improving the targets of evaluation) that emphasizes attendance and ongoing interaction between action and assessment. Improving evaluation supports both development and change, and it emphasizes the participation of the person assessed both in the planning the assessment, in the assessment itself and in improving education through the results of the assessment. Räsänen (2005) emphasizes that evaluation is improving if all of the parties and individuals learn during the process, and the evaluation is utilized also afterwards (Räsänen 2005, 110-118). Patton (1997, 68) writes about this in terms of utilization-focused evaluation.

Our data includes some reference also to ipsative evaluation and criterion-based evaluation. According to Brooks (2002, 47-48), so-called *ipsative evaluation* (i.e. self-improving evaluation) is another form of formative evaluation in which students compete against themselves, improving their own actions. *Criterion-based evaluation* (see Brooks 2002) belongs to ipsative evaluation and involves development the task, a careful definition of the learning targets, an active self-assessment and the possibility for students to choose how to research the aims. Ipsative evaluation is especially suitable for students who suffer from underachievement. Continuing feedback and corrections based on the feedback refer to constructivist learning. The principles of correction lead to criterion-based evaluation, where the student's achievement is divided into smaller parts, which are compared to the aims. Criterion-based evaluation is equitable, because it defines how one is able to succeed, it is fair, and it also gives feedback to the teacher on his/her teaching. Criterion-based evaluation is also transparent.

The group accounts suggest that evaluation is a collaborative process that helps everyone to learn from one another. Further, the data indicate that student assessment should engage the students for example in assessing and observing themselves and their peers in teams (e.g. in different projects). These thoughts are consistent with Fetterman's (1996, 4-6) concept of *empowerment evaluation*, which refers to "Empowerment evaluation is the use of evaluation concepts, techniques and findings to foster improvement and self-determination" (Fetterman 1996, 4). The goal of empowerment evaluation is to assist a person in helping oneself through a process in which everyone learns from each other in collaboration. Further, this is also in line with Fetterman's (1996) idea of learning communities (i.e. intersubjective entities in which all students, teachers and parents are empowered). To be more precise, the teachers see evaluation as a process of involving democracy and dialogue, which are manifested in the cooperation and interaction among students themselves, within the teaching staff, and between the teachers and students.

Considering that the forms of evaluation mentioned above are in use in the context of our research, it seems that engaging teachers in self-evaluation along with the students should be convenient. Further, an idea reaching towards future research is that the creation of learning communities would benefit from all-around evaluation, which includes not only self-evaluation by students and teachers, but by parents as well.

3.2 What to evaluate?

It is maintained in our data that the objects of evaluation in EE should be explicit and the evaluation should be transparent. This is consistent with suggestions put forward in extant literature. Saari (2002, 97), among others, argues that in order to avoid the problem of 'too much description, too little evaluation,' it is important to set frames and criteria for self-assessment. The work of Chelimsky (1997) suggests that although self-assessment is about self-criticism and reflection, some values or criteria may come from external sources. Further, also Fetterman (1996) points out that the aims of evaluation will not be achieved unless what to assess and how to report and interpret the results is recognized. Empowerment evaluation, for example, is based on strengths, not weaknesses.

Evaluation in Finnish schools is generally based on targets set in advance. The teachers divide these targets in two groups: 1) numerical (resources, time and quantities), and 2) non-numerical (working skills, attitudes and outputs). Further, they emphasize that evaluating the process is more important than the end-result. How about targets of EE? The guidelines set forth by the Finnish National Board of Education (2003, 2004) provides us with the following answer: students' progress, working skills and behaviors should be evaluated according to the aims of the curriculum and a sufficient level of competence. Every school subject has its own national criteria, and good competence levels have also been defined for each school subject. As EE is one of the cross-curricular themes that should be taught in connection with all school subjects, there is no mention about its evaluation in the national guidelines. In other words, teachers in Finland are not provided with external criteria for EE evaluation.

The work of Kyrö (1997) helps to elaborate a framework for evaluation. It maintains that EE deals with three main components: 1) *self-oriented entrepreneurship*, which refers to an individual's self-oriented behavior and is the basis for developing the following components (Remes 2004, 84), 2) *internal entrepreneurship*, which deals with entrepreneurial and enterprising behavior, and 3) *external entrepreneurship*, which is about doing business (Ristimäki 2003, 6). The intended educational outcomes that may be drawn from this framework are threefold. First, students gain information and understanding of entrepreneurship as a multifaceted phenomenon. Second, students identify with entrepreneurial values and behave accordingly. Finally, students become entrepreneurs in the formal sense (cf. Hytti 2002). What could be named as potential targets of evaluation, are the first two points. In areas like EE, the results and impacts of education show with a delay. Considering that access to legitimate forms of business is denied before adulthood, targets related to the third point are not likely to be useful on the teacher-student -level evaluation of EE, at least not in the short-term.

The work of Korkeakoski (2004, 167-170) shows that teachers' work is evaluated in a number of areas, such as 1) the teacher's professional expertise (e.g. information and understanding of

targets, contents and their evaluation), 2) learning environments (e.g. materials and time), 3) teaching plans (official curricula and the teacher's own plans), 4) teaching (pedagogical and didactic expertise), and 5) learning outcomes (the quality and quantity of competences, how they relate to the aims and the individual learning styles). According to our data, teachers reflect on categories 4 and 5 in order to develop their operation. However, they do not keep records of evaluation in categories 1-3. There may be undocumented thought processes, or no self-evaluation takes place at all. When it comes to self-assessment of the teacher's EE, our data suggests that there is even less activity, not to mention documentation on that activity.

4. Discussion

On the day our data was collected, extensive discussions on entrepreneurship education in general took place, and especially the role of teachers as entrepreneurship educators and the development of this role through self-assessment were discussed. In this light, it is interesting that the student assessment was so greatly emphasized in our material. The data shows that teachers approach the entire concept of evaluation of entrepreneurship education from the viewpoint of learning. An important example of this narrow view is that the material hardly deals with the teacher's reflection on the development of his or her own work – and even less with the extensive assessment of the teacher's own entrepreneurship education activity.

According to the data, self-assessment is actively used, but primarily by students reflecting on their own learning. The teachers state that evaluation in EE is a continuous process that seems to fit the meanings of improving evaluation. The data includes some reference also to ipsative evaluation and criterion-based evaluation. The group accounts suggest that evaluation is a collaborative process that helps everyone to learn from one another. These thoughts are consistent with the concept of empowerment evaluation.

Potential targets of evaluation could be firstly that students gain information and understanding of entrepreneurship as a multifaceted phenomenon and secondly that students identify with entrepreneurial values and behave accordingly. According to our data, teachers reflect little on teaching, and mostly on learning outcomes in order to develop their work. However, they do not keep records of evaluation in professional expertise, learning environments or teaching plans. Further, they emphasize that evaluating the process is more important than the end-result.

5. Conclusions

This article emphasizes dialogue on evaluation and how it is carried out in connection with EE on a basic education level. In developing the evaluation of EE, one should start from the basic questions: Who evaluates? How is the evaluation carried out? What is evaluated? (See Pickford & Brown 2006, 4). Students are said to assess themselves, but what about the teacher's self-assessment? Our data indicate that teachers do not assess themselves very much. One of the key elements of EE is cooperation with different actors, inside and outside of school (e.g. Ristimäki 2003). Different methods of evaluation, such as self-assessment, empowerment, improving, ipsative, criterion-based and autonomous evaluation (See Fetterman 1996, Patton 1997, Brooks

2002) are suitable for EE. For example, autonomous and ipsative evaluation promote especially the development of the reflection skills of entrepreneurship educators. Empowerment evaluation is highly suitable for the beginning of joint projects in EE and is therefore an appropriate method for teachers and the school community. But the evaluation methods of EE still need development in order for goals to be realized in practice. It is very important to find out a suitable evaluation system of EE for the basic school level, because learners also learn and acquire the subject or the target that is evaluated (e.g. Pickford & Brown 2006, Atjonen 2007, Silvennoinen 2008, Virta 1999).

We are missing the frames of EE and the frames of its evaluation as well as the criteria of evaluation of EE. We haven't had any discussion about the values of the EE and its evaluation. We need to set a strong framework for EE and its evaluation, which demands an extensive discussion of values of EE. That kind of development requires opening a new dialogue on evaluation among both researchers and education policy decision-makers. The aims of evaluation will not be achieved unless it is recognized what to assess and why, or how to report and interpret the results.

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Appendix 1.

The teachers represent different basic levels of education. 16 of them worked at the basic education level (elementary and upper level of comprehensive school), six at the upper secondary education level (high school), and seven in basic vocational training. The teachers represent ten different municipalities and educational organizations and come from different parts of Finland. 17 of the teachers were women and 12 men. Their average age was 40 years, and on an average, they had 10-15 years of teaching experience. 11 of them have worked as an entrepreneurship educator for one to five years, three for six to ten years and ten for more than ten years.

**PATHS TO ENTREPRENEURSHIP AND TRIPLE HELIX
MODELS ADAPTED IN ENTREPRENEURSHIP EDUCATION:
CASE STUDIES**

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INNOVATION AND ENTREPRENEURSHIP CURRICULA IN A SWEDISH UNIVERSITY SETTING – THEORETICAL, TACIT AND NARRATIVE LEARNING ASPECTS

Abstract

Academic curricula in innovation, entrepreneurship and venture creation are increasingly being introduced at Swedish Universities. Innovation and Entrepreneurship programs are today contributing to the surge of start-up companies at University science parks and business incubators. Traditionally, entrepreneurship teaching has relied heavily on *learning by reading* by using a traditional theoretical knowledge base. At the University of Gothenburg and Chalmers University of Technology, we have developed and implemented a *learning by doing* approach in a series of innovation and entrepreneurship Master programs and courses, where a tacit knowledge approach is emphasized through actual creation of new firms via business plan competitions and venture creation curricula. This comes out of the needs to create novel forms of educational strategies combining theoretical teaching (traditional classroom business management) with tacit and narrative learning (real life entrepreneurship case training and venture creation) in order to prepare students for entrepreneurial careers in the local and global knowledge societies.

Our pedagogic approach is emphasizing; 1) theoretical teaching in combination with tacit learning, 2) traditional on-campus Innovation & Entrepreneurship curricula combined with real-life venture creation training. Further, the pedagogic approach is built on 3) an integrated venture creation tacit and narrative platform in order to create tools to be utilized in real life business start-up. Thus, our educational platform is shifted towards real life case training with a focus on commercialization of the business idea, development of the product or service offer as well as the market and sales aspects of the new venture. Such practical business training in combination with high profile business plan competitions have lead to a substantial change in new company formation in the University science parks and business clusters. At Gothenburg University, new Master programs utilizing such pedagogic approaches are increasingly being implemented alongside more traditional core curricula and teaching programs of the University.

In this paper, we report on the concept formulation, implementation and project management of such Innovation & Entrepreneurship curricula at a University Master level with a focus on new venture creation and company start-ups.

Keywords: Innovation and Entrepreneurship, academic curriculum, Swedish universities, new pedagogic approach, venture creation, case training, tacit knowledge, theoretical knowledge

1. Introduction

Over the past century, the continuous creation of new ventures and enterprises driven by entrepreneurs is considered to be a fundamental reason for global economic growth (Acs 2010). Therefore, understanding the entrepreneurial process is critical to understanding individual and collective success in the contemporary global economy. A critical piece of information is to understand how prior innovation and entrepreneurship experience, education or training affects the recognition and exploitation of opportunities (Shane 2000). Since entrepreneurial processes create societal value by facilitating innovation to improve goods, services, and social values, entrepreneurship represents a process of fundamental transformation, from an innovative idea to enterprise and from enterprise to value (Baumol 1990).

The aim of this paper is to summarize the current state of the art of university-wide entrepreneurship education programs in the Gothenburg region in western Sweden which may be seen as one model to build a University Innovation and Entrepreneurship curriculum. The paper outlines how to shape a theoretical, tacit and narrative teaching curriculum in Innovation and Entrepreneurship within the University in order to implement and integrate innovation and entrepreneurship initiatives inside and outside the traditional academic setting.

Innovation and entrepreneurship is one of the fastest growing subjects in European and US University curricula (Clarysse et al. 2009, Vesper and McMullan 1988, Nunn and Ehlen 2001). The development of Master programs as well as discrete courses in innovation and entrepreneurship has virtually increased exponentially at European and US Universities. It is for example estimated that there are currently more than 5,000 entrepreneurship courses offered in academic institutions in the US alone (Kauffmann Foundation report 2007).

Today, universities are increasingly acting as agents of innovation, entrepreneurship and venture creation (Pries and Guild 2007, Laukkanen 2000). Through business incubators and regional innovation clusters, Universities stimulate and enable their students and teachers to create novel venture, product and service ideas for the market. Although research and development (R&D) at universities is important, innovation and entrepreneurship programs point out the important need of a venture creation focus in order to generate novel products and services in new firms and enterprises that ultimately benefit individuals and the society. In order to achieve that, some Universities have adopted a tacit “learning by doing” approach to complement the theoretical “learning by reading” approach in relevant academic fields as a bridge between theory and practice.

2. Theoretical background

Formal or *explicit knowledge* can be codified, systematized, formalized, and easily communicated to others by oral or written means. In contrast, *informal or tacit knowledge* is personal, context specific and represents knowledge that cannot readily be transferred to other individuals by written or verbal means. For example, the ability to speak a language, use a machine or perform a surgical operation requires types of knowledge that cannot easily be theoretically transferred and therefore is difficult to pick up by other users (Polanyi 1966, Nonaka & Takeuchi 1995).

By a process called “externalization”, tacit knowledge can be made explicit, codified in manuals, and incorporated into new products and processes. Also, a reverse "internalization" process (from explicit to implicit) may e.g. occur as employees incorporate knowledge in an organization's formal rules and procedures, derived from various sources of explicit knowledge. In organizations, the term "socialization" is used to define the sharing of tacit knowledge, and the term "combination" to define the dissemination of codified knowledge to the group.

In an entrepreneurship and innovation context, knowledge creation and organizational learning may occur as a complex cyclic process of innovation, socialization, externalization, combination, internalization and back again to innovation. In various academic educations and occupations the theoretical and tacit dimensions of learning differ in relative importance. As an example, for a theoretical physicist as well as for an accountant, the theoretical dimension probably remain the most important one, while for a surgeon as well as a construction engineer, the tacit dimension emerge as an important prerequisite for practice of their occupation as well as the satisfaction of their patients and customers.

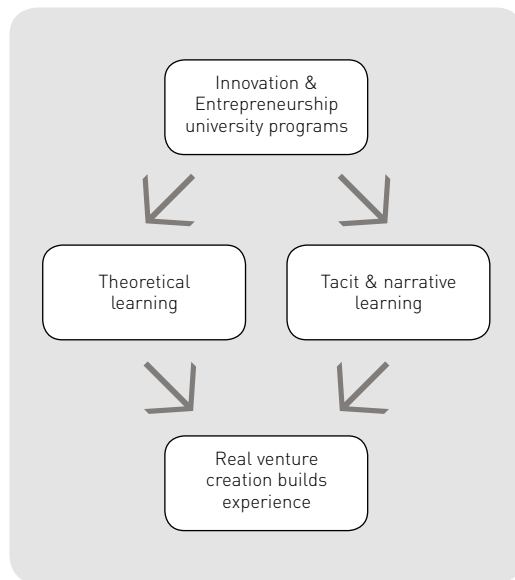
There are three major approaches to the capture of *tacit knowledge* from groups and individuals. They include interviewing experts, learning by being instructed and learning by observation (Stonehouse and Pemberton 1999). All of these approaches remain important components of academic Innovation and Entrepreneurship programs (Table 1).

Table 1. Some characteristics of informal tacit and narrative learning in Innovation and Entrepreneurship programs

- Learning often takes place in professional practice outside the formal educational establishment or in normal life
- Learning is not necessarily following a specified curriculum and is not always professionally organized
- Learning often originates accidentally or sporadically, sometimes in association with change of requirements and cases
- Learning is typically not pedagogically planned by participants, or systematically aware by subjects
- Learning is commonly not test and qualification-related, but rather unconsciously incidental holistically problem-related, and related to common life situation management
- Learning is usually experienced as a “natural” function of everyday life

In addition to *theoretical* and *tacit* knowledge dimensions, entrepreneurs are often guided by an additional type of know-how. This is a form of tacit knowledge often referred to a '*narrative knowledge*' or '*experiential knowledge*'. Specific to *tacit* as well as *narrative knowledge*, is that people are commonly not aware of the knowledge they possess or how it can be made valuable to others. In order to effectively transfer tacit knowledge there is generally a need for tight and extensive personal contact and trust. Another important characteristic of tacit and narrative knowledge is that it is not easily shared. Tacit knowledge is often embedded in cultural habits and actions that we rarely recognize in ourselves. Therefore tacit knowledge is described as "know-how" (actions) -- as opposed to "know-what" (facts), "know-why" (science), or "know-who" (networking). The *narrative knowledge* is a form of knowledge which is derived from successful or unsuccessful real life venture experience. The *narrative knowledge* is often transmitted as stories and narratives of how real innovators and entrepreneurs dealt with real life problems and projects (Figure 1).

Figure 1. Basic learning concepts of academic Innovation and Entrepreneurship curricula



Commonly, the narrative knowledge is transmitted in the form of case examples and stories. Such organizational storytelling may enable emerging innovators and entrepreneurs to make sense of the real life difficulties and challenges which they face. As a matter of fact, professionals such as physicians, engineers, lawyers, business managers, often rely on narrative knowledge (Stonehouse and Pemberton 1999). By careful learning from experience, they may address their own difficulties and problems in the environment that they are acting in. Commonly, business professionals require superior theoretical knowledge as well tacit experience in order to solve the real life difficulties and problems they encounter. Based on this concept, academic programs in innovation and entrepreneurship are increasingly adopting an integrated theoretical as well as individualized tacit and narrative "learning style" approach (Figure 1).

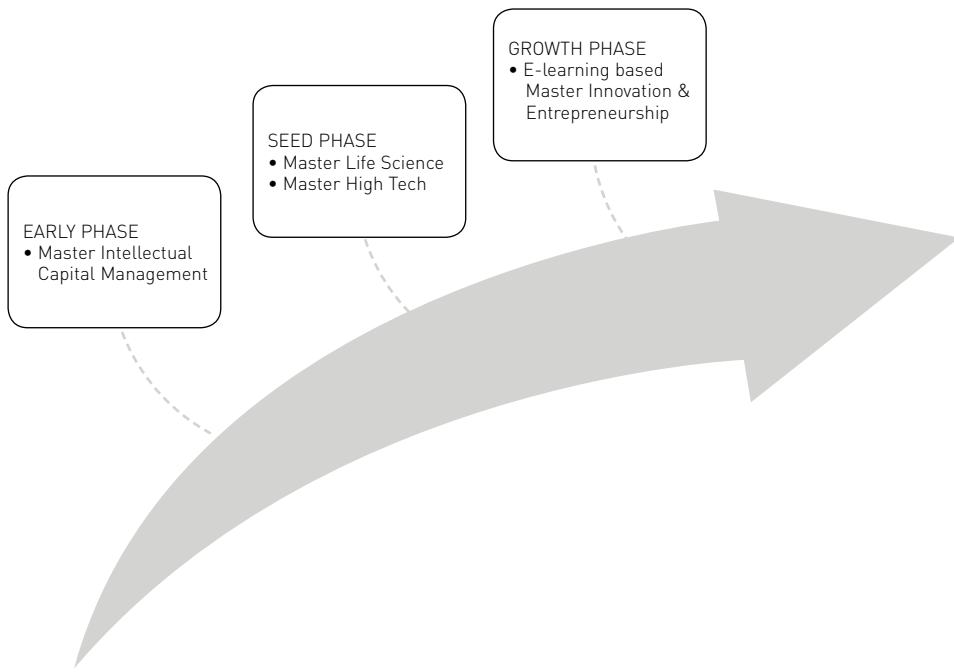
Creating a dynamic academic innovation and entrepreneurship cluster and venture creation program also requires processes of organizational learning and development of human resources. This includes activities such as; continuous education and training, development of skills, creation of resources, local and international networking and real venturing experiences in a neutral training arena. In a learning entrepreneurial and venture creation arena, there is a need to actively create, capture, mobilize and transfer relevant knowledge in order to enable students to adapt and develop in an environment characterized by dynamic changes. In that context, the learning by students in the innovation and entrepreneurship cluster represent a prerequisite to learning in the real world. Thus, the key aspect of organizational learning in an academic innovation and entrepreneurship cluster is that dynamic learning among individuals is actively promoted, facilitated, and rewarded.

Thus, from an organizational perspective it is essential to create and foster, an organizational culture in dynamic academic innovation and entrepreneurship settings that promotes learning and readily adapts to common working practices. The shift from individual to organizational learning in the growing high tech ventures is sometimes a complex and difficult transformation. Importantly, organizations need to create, capture, transfer, and mobilize knowledge before it can be effectively used.

3. Case report - Educational model and course content

The Gothenburg model of developing a University Innovation and Entrepreneurship curriculum is characterized by a combination of theoretical and tacit/narrative pedagogic approaches and relies on real venture creation to foster a deeper understanding of the complexity of venture creation. The University of Gothenburg and Chalmers University of Technology model was initially developed with a focus on technological and biomedical venturing. However with time there has been a gradual shift towards a development and focus on general venturing also including other important aspects and sectors, such as e.g. the service and entertainment segments (Figure 2, 3 and 4).

Figure 2. Overview of University of Gothenburg and Chalmers University of Technology I&E Master programs



Chalmers School of Entrepreneurship (CSE).

CSE started in 1995 at Chalmers University of Technology (CET) in Gothenburg, in an effort to create a business school and an academic master program (Table 2 and 3) that would arrange partnerships between technology inventors with ideas and entrepreneurial start-up students (CSE 2009). The formal start of CSE was in 1997, with a mission to develop entrepreneurs on the theoretical and conceptual levels and simultaneously develop a tacit platform with real-life creation of technology ventures.

From early on, the CSE pedagogy was focused on venture creation and development of entrepreneurs, rather than teaching entrepreneurship on the theoretical level. Today, CSE is developed into 1) an educational Master's Program, and 2) a pre-incubator (Encubator 2009) to harbor the ventures created during the education. Importantly, over time, CSE has developed a network infrastructure and partnerships, as well as an educational model and an increased awareness how to create conditions for high-tech start-up businesses in an academic environment. Since start, more than 220 students have passed the CSE program and more than 30 technology venture ideas have been turned into companies.

Figure 3. Outline of an I&E Master Programs with a focus on technology and biosciences venturing

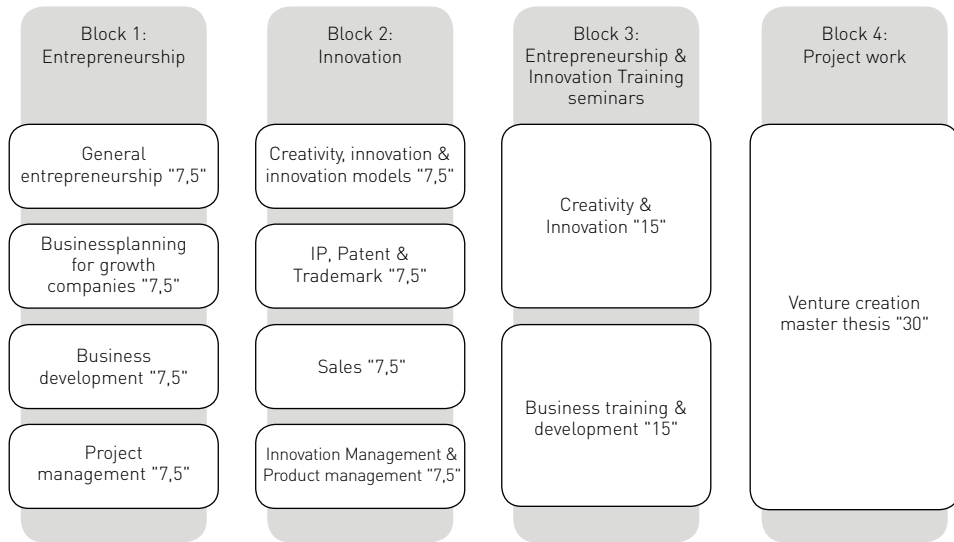


Figure 4. Theoretical as opposed to tacit and narrative learning in innovation and entrepreneurship programs

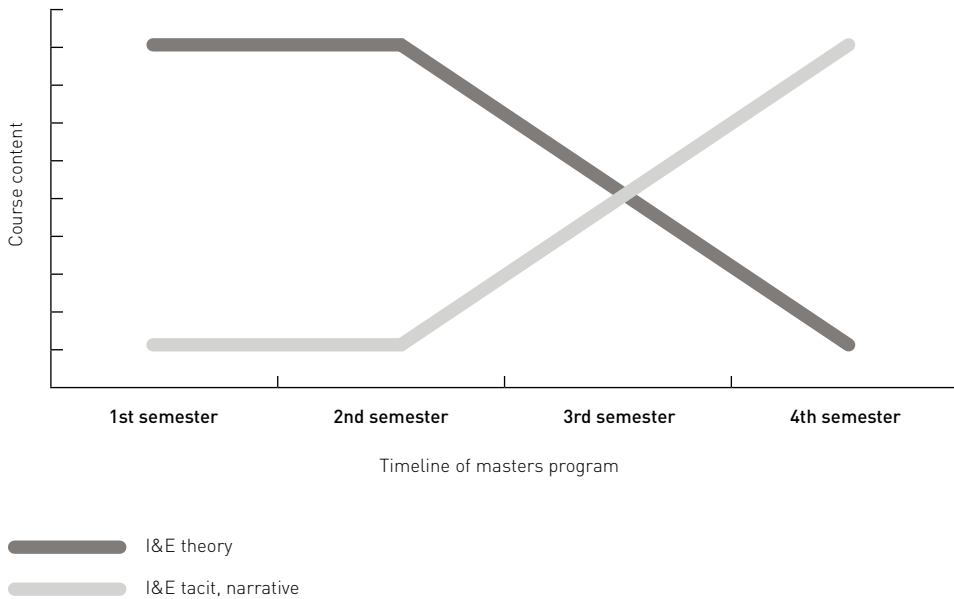


Table 2. Output from the Master Programs in Innovation and Entrepreneurship in Gothenburg at Chalmers Technical University and University of Gothenburg. (CSE – Chalmers School of Entrepreneurship; GIBBS – Gothenburg International Bioscience Business School). Output is calculated from start to 2009.

<i>Program</i>	<i>CSE</i>	<i>GIBBS</i>
Focus area	Technology	Biomedicine
Operational since	1997	2005
Years of study	2 years full time	2 years full time
HEC credits	120	120
No of students admitted	220	46
No of companies started	30	12

Gothenburg International Bioscience Business School (GIBBS).

The Master program GIBBS (Table 2) started in 2005 (GIBBS 2009) in alignment with the pedagogic philosophy of CSE. At present the program is shared between the Business Creation and Entrepreneurship in Biomedicine program at Sahlgrenska Academy, University of Gothenburg and the Business Design program at Chalmers University of Technology, with a curriculum compiled from I&E program courses at basic (First cycle) and advanced levels (second cycle) (Table 3).

Table 3. Examples of I&E Program contents at basic (First cycle) and advanced level (Second cycle) course outlines

<i>First cycle</i>
MED565 Clinical Trials (e-curriculum) 7,5 ECTS
MED570 Business planning for growth companies/biomedicine 7,5 ECTS

<i>Second cycle</i>
MED560 Business development & entrepreneurship in academic 7,5 ECTS
MED575 Sales of Biomedicine/technical products 7,5 ECTS
MED980 Biomedicine for business creation and entrepreneurs 7,5 ECTS
MED981 Biotechnology-based entrepreneurship 15 ECTS
MED982 Idea evaluation and feasibility studies 7,5 ECTS
MED983 Bioscience Intellectual Property strategies 7,5 ECTS
MED984 Design of technological innovations and markets 7,5 ECTS
MED985 Intellectual property and innovation strategies 7,5 ECTS
MED986 Master thesis, Business Creation and Entrepreneurship in Biomedicine 30 ECTS
MED987 Strategy and marketing for knowledge-based business in biomedicine 7,5 ECTS
MED988 New venture creation 7,5 ECTS
MED989 Valuation and entrepreneurial financing 7,5 ECTS
MED990 Ethics in bioscience business creation 7,5 ECTS
MED991 Entrepreneurial leadership and organization, part 1 3,5 ECTS
MED992 Entrepreneurial leadership and organization, part 2 4,0 ECTS
MED993 Project management 7,5 ECTS

The GIBBS educational platform consists of an initial theoretical part followed by a strong focus on tacit venture creation. In agreement with the CSE Master's Program, GIBBS also harbors a pre-incubator where bioscience based ideas are turned into start-up companies. In addition to this, GIBBS is embedded in an infrastructure of networks and partnerships to facilitate conditions for venture and business creation focused on biomedicine. Since its start in 2005, 46 students have passed the program and 12 venture ideas have been formed into companies.

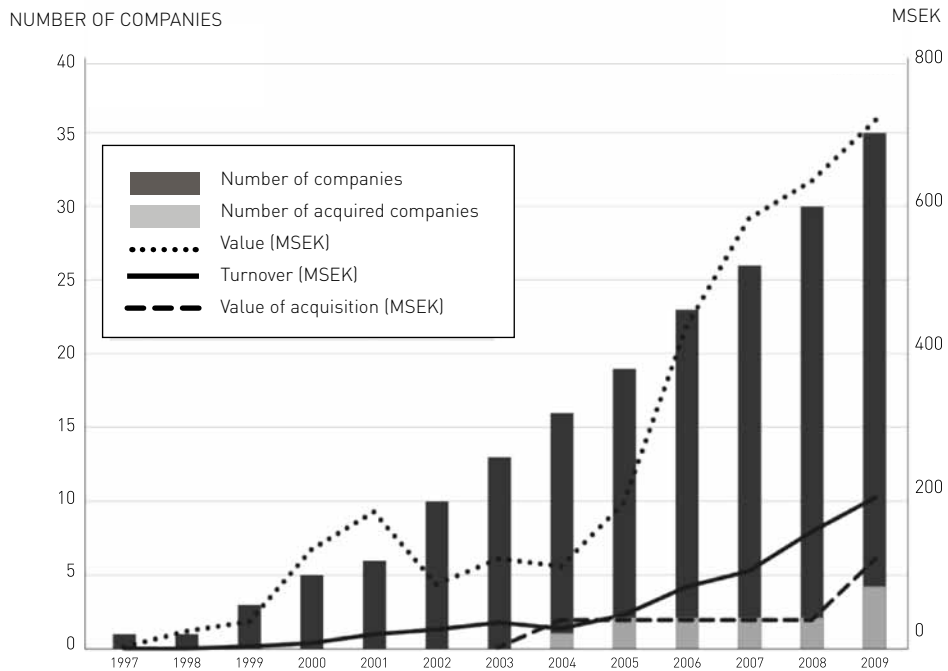
The start-up companies created from the pre-incubated CSE and GIBBS projects are later incubated in the academic cluster incubator settings, and a therefore a special "Encubator" function was created (Encubator 2009). The ownership of the start-up company portfolio is held and managed by the University holding companies in combination with external institutional and angel investors, the inventors, the idea originators and the program students of the respective projects.

Today, more than a decade after initiating the first entrepreneurship Master programs, the Gothenburg cluster encompasses a mix of technology/bioscience and service/entertainment ventures and SMEs derived from the overall academic programs, courses and cluster actors. From a regional development perspective, a majority of Innovation and Entrepreneurship students and academics remain in the Gothenburg and Western Sweden region to develop their ventures, businesses and companies further.

Since a majority of ventures created remain in the regional clusters, they recruit personnel and competence regionally, interact with other innovators and entrepreneurs and often participate in additional start-ups within the regional business clusters (Figure 5).

In terms of societal return of investment (Figure 5), the CSE and GIBBS programs had by 2009 employed 333 persons and created 203 MSEK in turnover. In total, the companies, valued at 714 MSEK, had attracted 240 MSEK in private funding and 63 MSEK in public funding (Figure 5). Also, in terms of creating a sustainable outcome, we have followed up where students work after finishing the programs. Of the 220 students examined in CSE up to 2008, 130 worked within industry and 31 in smaller start-ups, and another 37 were employed within consultancy companies. For the smaller group of students educated within GIBBS, more than 50% were working in smaller biotechnology related start-up companies.

Figure 5. Results of the Gothenburg I&E school project company start-ups 1997 – 2009; number of companies formed, turnover, valuation, private/public funding as well as employment created as a result the I&E school projects and company start-ups.



Results	2009
333	employees
203 Mkr	turnover
714 Mkr	valuation
240 Mkr	private funding
63 Mkr	public funding
29	patents

4. Discussion

Although the creation and development of the different academic master venture creation programs may seem easy, it demands a novel organizational eco-system, which was difficult to comprehend and accept for many traditional academic teachers in various disciplines. At later development stages of the development of the academic Innovation and Entrepreneurship curricula, there has been an emphasis on innovation and entrepreneurship as a society building force. Further, strong efforts have been put on developing alliances between Universities in the broader North European geographical area. Additional efforts have been put on the attraction of a strong financial basis for the seed and growth programs in the academic clusters. Securing an Innovation and Entrepreneurship platform also involves a strong focus on training of a future teacher and research staff to permanent the integrated teaching structure within the academic system as well as securing a strong and continuous educational quality control and quality assurance system (Clarysse et al 2009).

The economies of most developed countries are based on small and medium-sized companies, which are the companies that create new employments. A substantial portion of such progressive and innovative companies have a relatively short history and are growing around strong University clusters. Academic centers of innovation and entrepreneurship should therefore implement an organizational infrastructure to support this process (Norrman and Klofsten 2009). To achieve this, there is a need to develop complementary programs and courses in that they operate at different stages of the entrepreneurial process and are integrated into an innovation and entrepreneurship infrastructure with extensive collaboration between Universities and fully or partly owned incubators, science parks, seed-financiers, business angels and others.

In many traditional university settings, there is an urgent need to develop a novel organizational ecosystem for training 'the agents of change' to renew traditional University programs and pedagogies in order to achieve the needed understanding and forces for change (Davidsson et al 2006). It is important to stress a knowledge economy frame-work in building the basic development platform and couple this with a strong emphasis on entrepreneurship as a society-building force. Also, it is important to implement a broader view on entrepreneurship, including social entrepreneurship in particular as well as the idea of entrepreneurship being an integral part of society (Baumol 1990).

5. Conclusions

In this paper, we describe the interdisciplinary educational setting and alliances needed between regional and national universities and academic disciplines in building an organizational ecosystem to implement an innovation and entrepreneurship culture in a University setting. Such venture development ecosystems need to be anchored in tacit project development and learning as well as in relevant innovation and entrepreneurship research. This was one of the overriding aims when the business school curricula in Gothenburg were designed and developed. The coordinating team for developing such innovation and entrepreneurship curricula usually needs to embrace members from diverse academic disciplines at the strategic and operational levels, in order to succeed in overcoming many of the problems which are typical of such kinds of multidisciplinary

and cross-institutional projects. There is also a need to develop an innovative educational concept in order to attract the financial resources necessary to develop and conduct the program.

A problem in many University environments is that there is a lack of faculty teachers with a competence in Innovation and Entrepreneurship. In the Gothenburg business school Master programs, a significant ad hoc teaching staff has been attracted from the regional venture and business societies. A balance of courses focusing on entrepreneurship and those focusing on innovation is needed, as well as a balance between theoretical, tacit and narrative parts of the educational programs. There is also a need for an action-based approach and active support in stimulating students to create ventures. Further, it is essential to create an educational infrastructure, a functioning organizational structure, as well as a quality assurance system and infrastructure.

The infrastructure building in the Gothenburg Master programs has focused on securing an organizational structure that has a competent management as well as committed teachers with relevant knowledge, experience and abilities in venture creation. This demands a strategy for building a generic educational unit that is not based within a small academic collective that is vulnerable to staff changes. Our experiences also include that forms of teaching and examination need to be designed in accordance with validated learning objectives and expected outcomes. Moreover, quality control and quality assurance in teaching and learning units should be firmly put in place in order to properly analyze relevant factors of educational success and the reasons why some activities lead to exceptional results. Importantly also, in order to gain confidence for the academic staff, it is essential that members of the educational unit are perceived as being entrepreneurial themselves.

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SMES' DISTRIBUTED INNOVATION MODEL FACILITATED BY NETWORKS OF HIGHER EDUCATION INSTITUTIONS

Abstract

This paper explains how small and medium sized enterprises (SMEs) seek for and utilize globally distributed knowledge in their innovation processes. The lack of tradition, resources and ability on the subject is often blended into the daily business activities. Special interest is on the higher education institutions' (HEI) ability to enhance and facilitate SMEs' innovation processes. At Savonia University of Applied Sciences development and experiment for the distributed innovation approach for SMEs has been continuing over five year period. The core of the model consists of an active, demand-driven search for innovation ideas among SMEs to help the implementation of those ideas with a link to best experts and students. Now the activities are organised by R&D Competence Centres. The results and gained knowledge are described and analysed in this paper. The experience indicates existence of the need and potential for the approach. New, growth-oriented SMEs with innovation ability have been helped to connect and utilise national and global innovation services as well as knowledge sources. The process can lead to a spiral of success that accelerates the overlap of building capability with innovation development to a continuous and diversified flow of innovation. The paper proposes a wider study into the feasibility of the approach and a search for good practices. It also enhances ability for HEIs and SMEs to apply and benefit the approach.

Keywords: Distributed innovation, demand driven approach, growth oriented, higher education institutions

1. Introduction

Many countries are faced with the challenge to get more out of their good innovation performance. Innovation efficiency, i.e. how countries and regions manage the transformation of the assets of innovation (education, R&D and innovation expenditures) into innovation results (turnover coming from new products and services, and employment) is of particular interest. The lack of innovative, growth-oriented small and medium sized enterprises (SMEs) and start-ups is one of the identified weaknesses in this context (European Innovation Scoreboard 2008). Thus, increasing the amount of innovative, internationally competitive growth-oriented companies is one of the key focus areas of European innovation policy, especially in the Lisbon Strategy.

Engaging SMEs in process, product, market and management innovation practices in order to sustain the economic development of their regions, is a key question. The research has identified a definite gap between SME requirements and what is being offered by regional innovation services in general. This incompatibility hinders SMEs' access to relevant public development support and collaboration, especially provided by academic sector. In addition, there is an extensive challenge in a development of an innovation culture, in a broad sense, across SMEs, research centres, local

authorities, and academic institutions. A demand-based innovation policy must be strengthened alongside a supply-based innovation policy (e.g. National Innovation Strategy of Finland 2008). This phenomenon causes a challenge particularly for the university sector.

Universities contribute to local innovation processes in a variety of ways (Lester and Sotarauta 2007). Typically the university's most important contribution is in education, and major focus being put on technology transfer. Many universities are seeking to utilize their laboratory findings by patenting and licensing intellectual property to local firms. Centres based on technology and science as well as regional clusters can be seen as an example of this matter where the focus is on universities as a driver for innovation. These underline the introvert capabilities of universities in absorbing, transferring and adjusting concepts and models of regional development from outside the region. By these actions, the universities are also supplementing their basic role in Triple helix, university-industry-government relations, and bringing catalysts for the innovation environment.

In addition to the own findings, universities can, as well, help to attract new resources in the areas of personnel, knowledge, and financial from elsewhere. They can help to adapt knowledge originating elsewhere to local conditions. This is becoming even more important as globalization has moved into third, metanational phase (Doz, Santos and Williamson 2001), which means knowledge “hunting” from global sources for enterprises. Mode2, (Nowotny, Scott and Gibbons 2004) as a model of knowledge formation, emphasises in an unofficial way the multidisciplinary approach and knowledge transfer during ongoing research. The challenge for universities and regional innovation environment arising from overly small geographical proximity is real but solvable dilemma with a help of effective coordination (Boschma 2005). These are some of the reasons why traditional technology and science based “waterfall” model has been challenged by models based on practicality and demand, e.g. non-R&D innovators (Cooke et al. 1997, Arundel et al. 2008, Harmaakorpi, Hermans, Uotila, 2008).

Universities have had a strong role in regional development. In Finland, especially after establishing the Universities of Applied Sciences with an obligation to regional development in mid 90's, the higher education institutions have acquired a pertinent role as a facilitator between research sector and business field, and work as an incubator producing new ideas to make business with. The challenge still remains to pay more attention to SME's needs and, therefore, enhance services. Vitality and dynamics of the local economy depend on the ability of local firms to adapt to changing markets and technologies by continually introducing commercially viable products, services, and production processes by successful innovation.

The role of university in local innovation processes depend on what kind of industrial transformation is occurring in the local economy. New industry formation, industry transplantation, industry diversification, and industry upgrading, are each associated with a different pattern of technology take-up, and with a different set of university contributions (Lester and Sotarauta 2007). It is strongly suggested that the 'one-size-fits-all' approach to economic development should be replaced with a more comprehensive, more differentiated view of the university role. Universities need a strong awareness of ways to move forward, generated by local industries and the innovation processes that are associated with those pathways as well as to align their own contributions with what is actually happening in the local economy. This emphasises issues, such as strong participation in innovation processes, ensuring the enterprise relations as well as demand driven

project activities and strategic partnerships. By this approach, universities can take proactive role in developing regional economy (e.g. Kajanus et al. 2008). Innovation has been identified as a key engine for economic growth, competitiveness and employment, not only for high-tech industries but to all sectors and economies, including forestry and rural areas.

The major problem behind the approach described in this paper is the fact that only a minor share of the “undergrowth” of developing enterprises engage with innovation systems. As well as concerning the start-ups, the problem is also an issue for existing enterprises, especially in the situations of structural changes with, for example, in a change of owners or changes in market situation. Moreover, only minor percentage of SMEs have got RD-activities. This requires more demand driven and practical oriented innovation approach. As also Forsman (2009) suggested, instead of separate discontinuous public services focusing on accelerating the individual phases of the innovation process, innovation service instruments are needed in stimulation of building capability for overlapping with innovation development. For this reason, the whole variety of different ways to innovate (not only R&D) should be taken into account.

Innovation, as a driver for economic growth, with raised competitiveness and employment has gained increased importance in EU. However, there is a lack of educational concepts, courses and teaching tools covering this topic. Nevertheless, at Savonia University of Applied Sciences development and experiment for the distributed innovation approach for SMEs has been continuing over five year period. The core of the model is demand driven active search for innovation ideas among SMEs, in order to help the implementation of those ideas with the best experts and students. Now the activities are organised by R&D Competence Centres. The results and gained knowledge are described and analysed in this paper.

2. Developing innovation concepts

Savonia University of Applied Sciences, founded in 1992, is a multidisciplinary higher education institute having approximately 6000 students. Savonia operates in eastern Finland and is one of the largest and most versatile polytechnics in the country. Savonia provides degrees in seven fields of education and performs R&D and innovation activities extensively by offering services and customised solutions for both the business and public sector. Regional, nation-wide and international co-operation and networking are the driving forces within the university. The general task of the university is to improve professional, business and cultural expertise in the region, as well as to promote competitiveness and welfare of the region by means of education and R&D. According to the vision at Savonia, personnel and students are cooperative facilitators of the expertise required in the future. Therefore the organisation's regional task is to secure economic and social vitality in eastern Finland. At the beginning of 2009, Savonia was reorganised into three profit centres: technology & environment, welfare, and business & culture. Savonia has an annual budget of c. 60 million € and the personnel consists of about 600 employees, of which one hundred works in R&D activities. Savonia has received numerous recognitions, including the quality award of the Higher Education Evaluation Council. Nevertheless, the main challenge of Savonia is to address the needs of the regional business. The region of North Savo has selected four areas of business to focus into: Technology Industry, Energy and Environment, Measurement and Sensor Technology, as well as Welfare Services and Products. Savonia plays a key role in all

these areas. In addition to science- and technology-based R&D, the local SMEs call for support with demand-driven and distributed innovation activities.

The Savonia started a Regional Liaison Program in 2004 in Iisalmi, with a main idea to search for and to transfer the research knowledge to the needs of local enterprises from all over the knowledge centres in the world. The role of the Liaison is seen like the channel and facilitator. In 2006 the model was strengthened by the framework agreement between the region (town Iisalmi as a centre of the region and the local development company), Kuopio and Oulu Universities as a main partner Universities and Savonia as a facilitator. The ministry of education was supporting the development of the model by financing development projects during 2006 – 2009 as a part of the regional university initiative. The development work has been continued by support of Structural Funds. The main purpose of the INNO-STU - project was to develop demand driven model for innovation services at SMEs. The core of the model was an active search for innovation ideas with SMEs, and helping SMEs to implement those ideas with the help of best experts and students. The project was a success by identifying 162 innovation ideas, producing 89 feasibility studies, elaborating 39 development projects, which led to 15 implemented innovations (defined by OECD Oslo manual). Moreover, the project moderated the innovation strategy process for the region (Innovation Strategy for Upper-Savo region 2007-2013). The development is continuing by (the) **KIP (University network's Innovation Services 2008 – 2010) project**, that has a goal to increase the amount and the share of growth oriented innovative firms in the North-Savo region, by means of developing innovation services for the network of educational organizations as a part of the regional innovation system. The same approach was developed also by the **INNO-FOREST project**, which was chosen as an example of best practice in the field of creativity and innovation in the conference on Creativity and Innovation in Brussels at March 2009. The main objective of the INNO-FOREST project “Integrated innovation and entrepreneurship research in higher forestry education” financed by the Erasmus Intensive Programme was set up to develop methods and tools for knowledge transfer among research, education and enterprises. About one hundred students and one hundred enterprises from thirteen countries took part in the INNO-FOREST project during the three year(s) period.

Innovation is the result of a company's efforts to develop new products, new services, new business models or processes in which their customers or clients see a new or additional value added, and for which these customers are willing to pay a price (Engel et al. 2010). Hence, innovation is not just an invention. Innovation has to prove its value in the market. Only then Innovation Management will contribute to the company's sustainable growth. IMP³rove is an innovation management tool, which takes a holistic approach in order to improve the success of innovation (success). It covers all dimensions of Innovation Management including: Innovation strategy, Innovation organization and culture, Innovation Management processes, as well as enabling factors for Innovation Management. IMP³rove provides the user with a highly professional Innovation Management consulting process, into which an assessment tool, (which is) based on benchmarking, is integrated.

Savonia University of Applied Sciences chose the IMP³rove approach to evaluate the university's own innovation management (Engel et al 2010). This evaluation was initiated in the context of re-directing the university's offerings and services for the ability to respond better to the needs of the enterprises in the region. The IMP³rove Assessment revealed the need of systematically deepen the

development of the organization's innovation strategy and the related activities of the university. It also provided guidance for the development of the future service model and the design of the new innovation services at the university. The learning experience for the staff members that were involved in the IMP3rove Assessment included insights in the interrelationship of different innovation activities, facilitation of teamwork, and development of a common innovation strategy.

Savonia is undertaking a major organisation reform at the moment. At the beginning of 2009, the number of profit centres changed from five to three. In the autumn of 2009, five R&D Competence Centres (R&D CC) will start to operate. The R&D CC utilize the expertise of several training programmes. The R&D CC gather teachers, research staff and students into development projects by utilizing the partner network. The topics of the R&D CC are the following: Energy and Environment, Entrepreneurship and Innovation, Welfare Products and Services, Secure Life, and Industrial Design. The R&D CC are demand-driven and serve the region by channelling education, R&D and innovation efforts into targets that are (of benefit for) benefiting the regional economy. Nevertheless, the launch of the R&D CC will bring (about) challenges for the innovation management. The challenges are mainly addressed by the R&D CC for Entrepreneurship and Innovation. The R&D CC are supervised by the deputy headmaster and the executive group of the university. Each R&D CC has a coordinator who is responsible for planning, implementing and evaluating the activities in collaboration with the rest of the staff. The coordinator is supported by team of experts consisting of teachers and R&D personnel. The R&D CC for Entrepreneurship and Innovation is responsible for developing innovation management as a whole. The personnel of the centre possess strong expertise in R&D and innovation activities.

Savonia has developed innovation services in pilot projects (Engel et al. 2010). At the end of 2008, IMP3rove was taken into use as a development tool in a pilot project for innovation services. All the development activities will be integrated into the activities of the centres of expertise. The key factor found in the IMP3rove Assessment was well-working innovation culture, especially concerning external networking and collaboration. The main weakness, on the contrary, was the lack of innovation strategy. While Savonia has established a clear vision and development strategy, strategy for innovation management was lacking. Therefore, innovation activities are fragmented and without systemic purpose. The Root/Cause Analysis was also filled in. It was decided that related development work will continue in the autumn of 2009 along a new large-scale consultation process. Constant communication with the IMP3rove consultant is an ongoing practise at Savonia at the moment. A consultation process will be carried out (in the) with an expert group of the R&D CC for Entrepreneurship and Innovation. A new consultation process is required for connecting the completed work with other development activities at Savonia. The consultation process resulted to a start of preparatory work for the integrated innovation strategy. Savonia follows the principle of single strategy, which means of strategies that were separate before and have now been integrated into one overall strategy. This also implies that the innovation strategy has to be integrated into the overall strategy of Savonia as well as see other measures achieved, for instance, commoditisation of innovation services. It is planned that the innovation cycle of Savonia will be systematized and the procedures addressing the innovation process will be formalized. For instance, a systematic procedure for management as well as a selection of innovative ideas will be designed and put to practise. The work will continue by identifying enabling factors of the innovation activity. It is foreseen that the new organisational

model based on R&D CC will strengthen Savonia's overall performance. Savonia will continue to design the innovation service portfolio provided for the regional business and integrating students, end-users, enterprises and expert to work and learn together under the vision of Open Innovation Space (OIS-model). This will improve the capabilities of Savonia to meet the needs of regional business.

3. Conclusions and recommendations

The above results are pointing to the need to change separate discontinuous public services focused on accelerating the individual phases, but also selected cooperation partners of the innovation process, innovation policy instruments are needed that accelerate capability building overlapping with innovation development; first, starting to improve capabilities for the development of incremental innovations, then forging ahead via radical innovation development. The whole variety of different ways to innovate, also non-RD activities, as technology adoption, minor modifications or incremental changes (learning by doing), imitation including reverse engineering, combining existing knowledge in new ways and adopting solutions developed by users (see Arundel et al. 2008), should be taken into account.

One of the questions are how small and medium sized enterprises (SMEs) do search for and exploit globally distributed knowledge in their innovation processes. Often they have lack of tradition, resources or capabilities for that. Special interest should be on the higher education institutions (HEI), like universities and others, whether their settled international assets e.g. networks, research and education programmes, could be adjusted and developed so that they will enhance and facilitate SMEs' distributed innovation processes.

The approach is based on demand driven activities, the innovation ideas are search together with the enterprises based on the needs and ideas of the enterprise and its clients. The target is the progress of the innovation process and it includes involving world leading experts and knowledge (knowledge "hunting") into the process. This makes the approach very much different compared to what HEIs have been traditionally used to, where the focus is science and technology oriented.

The approach necessitates joint learning pedagogies, where experts, students and enterprise staff are learning together as colleagues. Creativity is emphasised, focus is in selecting the right problem to be solved, not so much in problem solving. This is important especially in the earlier stages in the innovation process, where an innovation idea is interpreted.

In Savonia's case, the regional university liaison has had the key role in organising the activities. The enabling framework for the approach has been the agreement where the network actors (region, HEIs, enterprises) agree the goal, resources and activities for the approach; Savonia's experiences indicate that there is a need and potential for the approach. Several new potential growth-oriented innovative SMEs have successfully been helped to connect and exploit national and global innovation services and knowledge sources.

Universities and consulting firms also need to utilize new know-how created in science, practice and by end-users. This is a challenge for universities and to other actors as there is a requirement

to develop the services and capability to meet the needs of SMEs with a manner that SMEs can implement innovation processes alongside the daily business. Such policy instruments of innovation are needed that accelerate capability building overlapped with innovation development. Moreover, there is a need to enhance enterprises' option to utilize knowledge that is created and situated elsewhere in the world's knowledge centres. This can be put into action, for example, by developing a channel for higher education institutions' international networking assets and by developing research and education programmes to enhance and facilitate SMEs' distributed innovation processes.

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LEARNING ENTREPRENEURSHIP BY DOING BUSINESS AT SOTEEKKI – SOCIAL AND HEALTH SERVICE CENTRE

Abstract

Soteekki in SAMK is an innovative solution, in which enterprise activities, entrepreneurship and teamwork are combined in the production of services. The service providers are students in health and welfare education. The services are based on the customer's needs from both the public and the private sector. Students are active in customer-oriented and creative production of services and in their marketing and implementation.

The aims

- to support students' learning-by-doing and action learning processes which enhance a creative working style, as well as team working, entrepreneurship and marketing
- to support the establishment of new enterprises by students
- to implement Soteekki actions which support both working life and regional development

The results

Soteekki responds flexibly to the urgent needs in the society: health examinations of refugees together with the Red Cross, participation in the vaccination campaign against the H1N1-virus. An example of creative services is the Happy Healthy Birthday–package where a healthy lifestyle, motor learning and social interaction are supported through amusing and enjoyable games.

The data of the evaluation study (2009-10) was conducted by using the e- questionnaire from the students in Soteekki. The quantitative data was analysed by ZEF® programme and in qualitative data content analysis was used. The study confirms that Soteekki – practice has developed the students' sense of responsibility as well as team and independent working skills. A lack of learning risk-taking skills, marketing and cost awareness was found. The entrepreneurial skills were strengthened by various connections with clients and partners together with responsibility and freedom in work.

The latest achievements are the increase in the number of new agreements with the Enterprise Accelerator and the first student's company contract to produce services together.

Keywords: Entrepreneurship, students, health and welfare education, teamwork, Soteekki

1. Introduction

Soteekki in SAMK is an innovative solution, in which enterprise activities, entrepreneurship and teamwork are combined in the production of services. Soteekki has two service centres, one in Pori and one in Rauma. The service providers are the students in health and welfare education:

nursing, public health nursing, social service and physiotherapy students. All services are based on customer's needs from both the public and the private sector. Students are active in customer-oriented and creative production of services and in their marketing and implementation. Soteekki is continuously developing new functional services to meet the customers' needs. Services at Soteekki are offered by students under the supervision of qualified teachers. The role of the teacher is more like a coach.

Soteekki responds flexibly to the urgent needs in the society: health examinations of refugees together with the Red Cross, participation in the vaccination campaign against the H1N1-virus. This co-operation was carried out together with nearby health centres and garrisons. An example of creative services is the Happy Healthy Birthday-package where a healthy lifestyle, motor learning and social interaction are supported through amusing and enjoyable games.

Main aim in learning entrepreneurial skills is to develop students' knowledge, skills and attitudes that will be useful in working life (Lassila, 2008, 196 – 205). Learning environment has been shown to have a positive effect as well as experimental learning is important when learning to learn entrepreneurial skills (Lassila, 2008, 196 – 205, 238 – 239; Pihkala, 2008, 206 – 211; Dhliwayo, 2008, 329 – 340).

The evaluation study (2009-10) confirms that Soteekki – practice has developed the students' sense of responsibility as well as team and independent working skills. A lack of learning risk-taking skills, marketing and cost awareness was found. The entrepreneurial skills were strengthened by various connections with clients and partners together with responsibility and freedom in work.

The latest achievements are the increase in the number of new agreements with the Enterprise Accelerator and the first student's company contract to produce services together.

2. Case Soteekki

The purpose of the study was to find out how entrepreneurial skills of nursing, public health nursing, physiotherapy and social service students were developed at Soteekki-LivingLab service centre in Satakunta University of Applied Sciences. Also another purpose was to find out what actions during the Soteekki-practice have enhanced learning. The information will be used to develop Soteekki LivingLab to more effective learning together environment.

The aim of the study was to find out how well Soteekki

1. supports students' learning-by-doing and action learning processes which enhance a creative working style, as well as team working, entrepreneurship and marketing
2. supports the establishment of new enterprises by students
3. implements actions which support both working life and regional development

The study was conducted by using the e- questionnaire. The data reported in this paper was collected from October 2009 to February in 2010. The data collection will be continued until

the end of May 2010. The study group was all students N= 79 at Soteekki during October 2009 – February 2010, from this group 58 (73.4%) students responded.

The survey had eight background questions, 21 questions that defined the possibility to start an enterprise of their own and described the development of entrepreneurial skills. With two open questions the students could define the actions at Soteekki that enhanced or blocked their learning. Strengthening of entrepreneurial skills was assessed by Likert scale from 1 to 5 (1 = some and 5 = a lot). The quantitative data was analysed by ZEF® programme and in qualitative data content analysis was used.

The sample was formed by 52 (89.7%) female and 6 (10.7%) male students. Number of nursing students was 18 (31.6%), public health nursing students was 15 (26.3%), physiotherapy students was 13 (22.8%) and social service students 11 (19.3%). Mean age of the respondents was 22.5. Over half of the students (57.1%) were third year students. Only five (8.8%) of the students had some entrepreneurial background. The students practised at Soteekki about 4.7 weeks (7.4 ECTS).

Twelve (24.5%) students considered that one of their options in future was to become an entrepreneur. The most common ground why not to become an entrepreneur in the future was "I am not interested in that".

According to this study, it seems, that Soteekki – practice has developed the students' team working skills ($x= 3.9$), sense of responsibility ($x= 3.8$) and independent working skills ($x= 3.7$) as well as flexibility ($x= 3.7$). Also customer orientation, activity, independent initiative and creativity were those kind of skills that students estimated to be quite good ($x= 3.6$). A lack pricing principles ($x= 2,8$) and learning risk-taking skills ($x=2,9$) was found. Students also found their abilities in productisation, marketing and cost-awareness to be in average level ($x= 3.0$). (Table1.) The entrepreneurial skills were strengthened by various connections with clients and partners together with responsibility and freedom in work "Appointments and meetings with the clients, doing things alone or together with other students etc".

Students also suggested that the entrepreneurial skills would have developed more at Soteekki if they would had had more guiding from the teachers and more knowledge about each others competence. The students missed services that would have been based on their special professional expertise although that is not the main goal during Soteekki- practise. For example they would have liked to practice "more services dealing with nursing or social competence".

Table 1. Characteristics and know-how that were assessed during practice at Soteekki

Competence or capacity	Average (Scale 1 – 5, where 1 = some and 5 = substantially)
Co-operation skills	3.9
Responsibility	3.8
Flexibility	3.7
Independency or autonomy	3.7
Independent initiative	3.6
Activity	3.6
Creativity	3.6
Customer orientation	3.6
Ethically approved actions	3.5
Ability to make decisions	3.5
Ability to prioritise	3.4
Courage	3.4
Prepare offers	3.4
Formulate written contracts	3.4
Assessment of own know-how	3.3
Leadership	3.1
Marketing own know-how	3.0
Cost awareness	3.0
Service productisation	3.0
Risk-taking ability	2.9
Service pricing principle	2.8

3. Conclusions and recommendations

Soteekki is a true LivingLab that provides unique learning experiences that students will not have anywhere else. The students negotiated offers, contracts, orders and marketed Soteekki services. All this and the study results support the existence of Soteekki. It has already been shown in other studies that the learning environment and experimental learning are extremely important in entrepreneurial education (Lassila, 2008, 196 – 205, 238 – 239; Pihkala, 2008, 206 – 211; Dhliwayo, 2008, 329 – 340).

The latest achievements are the increase in the number of new agreements with the Enterprise Accelerator and the first student's company contract to produce services together with Soteekki. The entrepreneurial skills of students could be strengthened more by combining together theoretical studies of entrepreneurship and at least 4-week practice at Soteekki.

The data collection will continue until the end of May, this will increase the reliability of the study results. The results achieved by now help the educators and researchers systematically develop Soteekki LivingLab environment, actions and tutoring entrepreneurial skills.

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JAMK BUSINESS INCUBATOR – ENABLING ENTREPRENEURSHIP

Abstract

JAMK Business Incubator, aimed at Bachelor's and Master's level students, provides tailored coaching and platform for entrepreneurial ventures already during University level studies. Students with different backgrounds (existing entrepreneurship, students with business ideas, and/or just highly motivated students with no current business idea) receive tutoring and coaching based on their current situation. Proceeding from one level of entrepreneurial path to another during the studies is possible and advisable. This diversity on the starting level also allows and enables to reaching multifaceted goals: new entrepreneurs, enabling existing companies to grow, improving students' entrepreneurial capabilities, enhancing teamwork and leadership skills, among others, are all valid and desired targets.

The highly skilled and motivated staff of the JAMK Business Incubator focuses on enabling students to launch and develop their Entrepreneurial paths as well as creating a solid funnel from basic studies all the way to local and national development agencies. Commercialization of the entity and selling it abroad is a lucrative option.

The key elements in success of the Incubator are motivated students, skillful staff, and excellent co-operation and high involvement by local development agencies and companies, using some of the same tools and joint coachings.

To qualify for the incubator, the students' attitude and motivation are evaluated. "Commitment" and "persistence" are the key words in student selection. In return, the students will receive unique, tailored coachings during degree studies providing a platform for Entrepreneurial development and Internationalization.

Keywords: Entrepreneurship, coaching, Globalization

1. Introduction

JAMK Business Incubator, aimed at Bachelor's and Master's level students, provides support for students in their growth on the Entrepreneurial path. Tailored coaching and platform for entrepreneurial ventures are available already during the studies. Students with different backgrounds (with existing entrepreneurship or with business idea, and/or just highly motivated students with no current business idea) receive tutoring and coaching based on their current situation. Proceeding from one level of entrepreneurship to another during the studies is possible and advisable. This diversity on the starting level also allows and enables to reaching different goals: new entrepreneurs, enabling existing companies to grow, improving students' entrepreneurial capabilities, enhancing teamwork and leadership skills, among others, are all valid and desired targets.

Covering and reaching out to all Units of JAMK University of Applied Science, JAMK Business Incubator has the ability to draw together truly multidisciplinary operators. The aim is to find new qualified entrepreneurs and enable existing companies to grow, in addition to improving students' entrepreneurial capabilities and enhance team working and leadership skills. For students, who have a business idea, innovation, or are about to inherit or acquire a business, we smooth out the process from idea level to profitability. Our job is to coach and enable students to establish or further develop a profitable business. Perälampi (2009) described this process with detail..

On a higher level, the process enables commercializing students' knowhow and broadening perspective and business making opportunities to other professional fields. This means that students will continue enhancing their skills in their majors such as Information Technology, Engineering, Healthcare, creating solid substance knowledge. The Incubator, on the other hand, gives advice on how to further develop competence knowledge in practice, primarily in Entrepreneurship, but also in International matters. This makes JAMK Business Incubator unique when compared to other operators in the same area (cf. to Juma 2007 and Remiers 2009, for example).

2. The Entrepreneurial Growth Path

The JAMK Business Incubator guides students in different steps of their personal entrepreneurial growth path. It is designed to be very interactive and have continuous co-operation between the student(s) and the coach(es). This can be done without excessive resources by applying a three-model framework, with the following high-level structure for students who

1. are already running an entrepreneurship, or
2. have a business idea, or
3. are interested and motivated in carrying out projects with real customers.

A special toolbox is defined, which provides different procedures and methods for different phases of the entrepreneurial growth. Together these allow the creation of a solid, personal path for growth. During the Incubation process, the student has a viable business idea, ability, and motivation to establish or further develop a business, a solid business plan, as well as financial-, sales-, and marketing plans.

Specifying the learning outcomes and course contents of the Business Incubator is important for securing the process' position within the educational framework. These typically contain (but are not limited to) from prerequisites for becoming an Entrepreneur, further development of the business idea, profitability and CRM to more concrete items such as business plan, financial-, sales-, and marketing plans, company forms and even to the task of how to register a company. In general, these cover the area of understanding, developing, and applying all these concepts in practice.

The course will be heavily tailored out according to the student's starting point and goals. There is also a possibility to do the internships and Bachelor's or Master's Thesis in the Business Incubator. Also other parts of studies are integrated into the incubator process so that Entrepreneurship

works as a "common thread", providing both an outline for the day-to-day activities and a holistic view over the field of Entrepreneurship at the same time.

Time span of the Incubator phase is 6-24 months, which corresponds to 15-60 ECTS credits as a part of student's academic degree of Bachelor's (210 ECTS credits) or Master's (120 ECTS credits) degree level. (To be accepted for Master's degree studies the student should already have a Bachelor's Degree.) These credits can be divided into three main themes of coaching (15 ECTS), practical training (30 ECTS) and graduate thesis (15 ECTS).

Considering the three target groups, the following distribution of students may be found:

- 1st category: Existing entrepreneurs, who work under the theme of "How to become a growth oriented entrepreneur". Approximately 10 students per year.
- 2nd category: Students, who have a business idea, innovation or about to acquire or inherit a business. They focus on the theme "From a business idea into a profitable business". Approximately 10 students per year.
- 3rd category: Students, who are highly motivated to become entrepreneurs in the future but, do not have a business idea, yet. The "Entrepreneurial springboard" is their choice. Approximately 200 students per year are involved in this part.

Being aware of this ratio further allows more focused use of teaching and mentoring resources.

3. Recruiting

Recruiting for the Business Incubator applies both Bachelor's and Master's degree students. The recruiting process is focused on the entrepreneurial attitude and motivation of the students, quality of the business idea or innovation, or profitability of the existing company of the student(s). Commitment and persistence are also considered very important.

The recruiting process covers the whole intake of students within the University. All incoming students fill out a questionnaire on their entrepreneurial situation and motivation. To qualify for the incubator, the students' attitude and motivation are evaluated. "Commitment" and "persistence" are the key words in student selection. As a return, the students will receive unique, tailored coachings during degree studies providing a platform for Entrepreneurial development and Internationalization.

4. Global Competence

Our goal is to enhance the quality and quantity of JAMK-based enterprises as well as increase innovativeness among the students. According to our experiences tools, coaches and methods that we use can only take us so far. In order to build a truly innovative and growth oriented atmosphere, we must include the "Global Competence" aspect to JAMK- Business Incubator. According to the authors, "Global Competence" includes the following phases, especially in Finland in this chronological, though reiterative, order:

1. Communication skills
2. Global Mindset
3. Global Processes

According to the latest research (Maddux and Galinsky, 2009), people who have lived abroad and speak several languages are more creative and may have lost some of the fear factors that prevent, in general, embarking on Entrepreneurial paths. Innovative is a synonym for creative and it takes a lot of innovativeness in terms of culture around you as well as individual entrepreneurs to create growth orientation. The key behind this process seems to be the adaptation one must go through to survive under unfamiliar circumstances.

In addition to this, business nowadays is increasingly global in nature. Excellent ventures are made out of, not only technology or material, but understanding what appeals to customers and how to actually make sales in different countries of the world. For this we need to have people who are “Globally Competent”.

JAMK-Business Incubator is a very concrete platform for increasing entrepreneurship, innovativeness and global competency systematically and hand-in-hand. In all three categories a big percentage of students are either from a different country or Finns with international background. Some forms of coaching are only offered in English and many may be done either in English or Finnish.

Currently we are recruiting students from abroad from our partner Universities to apply for the Business Incubator. The most qualified companies, or applicants, will be given similar coaching process as the degree students, within possible timeframe. With this we want to achieve more international interaction in the field of Entrepreneurship as well as have those companies setting up branch offices in Finland and recruiting highly skilled Finnish workforce.

5. Innovativeness

What makes the JAMK Business Incubator special? What is innovative about this concept? In short, it is the unique combination of several details:

First, students are entitled with tailored coaching already during their studies. This, in turn, leads to a solid funnel from basic studies (at JAMK all Degree Programs and Units) to development agencies (see Technopolis Ventures JSP Oyj, Jykes Oy, and KS-Yrityskehitys Oy)

Second, an excellent co-operation and high involvement by local development agencies and companies using same tools and joint coaching. Again, the “solid funnel” is provided.

Third, there are three different types of coaching models where proceeding from one level to another is possible and advisable. The tailoring is also applied within each level, based on each student’s personal goals and needs. This is a definite strength of the process.

Fourth, combining JAMK-Business Incubator with innovations and patents accumulated by the staff produces a unique environment, called JAMK-INNOVATION.

Fifth, commercialization of the entity and selling it abroad.

Sixth, very high International dimension aimed at developing entrepreneurs and students who are "Globally Competent".

Together these items provide a platform for growth. The student has all the possibilities available, but within a local, familiar context.

6. Conclusions and recommendations

The highly skilled and motivated staff of the JAMK Business Incubator focuses on enabling students to launch and develop their Entrepreneurial paths as well as creating a solid funnel from basic studies all the way to local and national development agencies.

The vision is to create a true platform for innovative and multidisciplinary cooperation and development. Commercialization of the entity and selling it abroad is an option. The Global Competence dimension of the JAMK Business Incubator supports this work effectively.

In brief, the key elements in success of the Incubator are motivated students, skilful staff, Global Competency, and excellent co-operation and high involvement by local development agencies and companies, using some of the same tools and joint coachings.

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ENTREPRENEURSHIP CAN BE TAUGHT: AN EXAMPLE OF A LEARNER-CENTERED APPROACH

Abstract

In most European countries entrepreneurship is one of the top priorities on the national agenda, to stimulate individual and organizational innovativeness and (regional) economic growth. As a consequence, embedding entrepreneurship in education to achieve this goal has gained importance and momentum especially at universities of applied sciences. Two questions need answering when trying to embed entrepreneurship in a curriculum. First of all: can entrepreneurship be taught and second: how should entrepreneurship be taught. In this paper we focus on an educational programme based on a learner-centered, constructivist approach, which is offered in a multidisciplinary, inspiring and entrepreneurial setting. It is competency-based and is tailor-made to individual student demand and goes beyond the classic business school approach based on instruction. The programme caters for students from at least 40 different departments of the university. The starting point in this programme is the assumption that entrepreneurship can indeed be taught but that the pedagogical climate and approach is crucial and should contribute towards the development of entrepreneurial competencies and skills.

In this paper issues such as the dynamics of learning are dealt with as well as some a discussion on learning paradigms. We elaborate on the programme developed at The Hague University of Applied Sciences, The Hague in The Netherlands. So far, over 250 students have participated in the programme and since September 2007 longitudinal research has taken place to establish the effects of the programme and the pedagogical approach on the development of entrepreneurialism. We then describe the research design and draw preliminary conclusions about the relation between pedagogical climate and entrepreneurial behaviour, competencies and entrepreneurial behaviour and finally the relation between entrepreneurial behaviour and the choice to become an independent entrepreneur. Our findings show that such competencies as self-discipline and vulnerability are positive influencers of entrepreneurial ambition. We also found negative influencers of entrepreneurial ambition in depression and inadequacy, yet interestingly also in sincerity.

The role of the business partners involved in the programme is discussed and an account is given of the experiences of a population of students over a period of three years on the basis of a number of issues: what works, what doesn't work and what needs to be improved. Interesting drivers for entrepreneurial behaviour are distilled from our research, on the basis of which recommendations are given on how to best implement these drivers into an educational programme. The paper finalizes with a concluding note in which some of the drawbacks of a learner-centred approach as opposed to an instruction-based approach are discussed and suggestions for future research are made.

Key words: entrepreneurship, innovation, constructivist, learner-centred, behavioural

1. Introduction

In general, innovation and entrepreneurship are important in the realm of national economies because they hold the key to the continuity and growth of companies (e.g. Hage, 1999; Cooper, 1897; Van de Ven, 2007) and economic growth within a country. That innovation and entrepreneurship are vital for economic growth was already asserted by Schumpeter in 1934. It is therefore obvious that national governments are investing money and paying attention to the stimulation of entrepreneurial and innovative behaviour.

In a recent survey carried out by the Ministry of Economic Affairs in The Netherlands a picture emerges of The Netherlands as lagging behind when it comes to starting a company, whereby start-ups of students coming directly from an educational institution score even worse (Van der Sijde et al, 2008). The average age of start-up entrepreneurs in The Netherlands is around 38 (Thijssen, 2005). Against this background the Ministry of Education and the Ministry of Economic Affairs defined the stimulation of entrepreneurship and innovation education as a policy item in 2005. Entrepreneurship and innovation are closely linked, according to Schumpeter (1934) who regarded the entrepreneur as the driver of innovation. Through innovation a process of creative destruction is set in, which alters the institutional context and context of companies. In The Netherlands ambitions to improve entrepreneurialism and stimulate students at academic and vocational levels to become an entrepreneur are high.

Educational institutes can stimulate or constrain entrepreneurial and innovative behaviour. Given the importance of both phenomena, a lot of effort is geared towards implementing entrepreneurship and innovation in higher education. The objective is to stimulate students to start up their own business and develop knowledge and competencies about how to do that. In the Netherlands there are several initiatives that purposefully try to embed entrepreneurship as a subject within a diversity of professions varying from industrial management to behavioural science and business students. Despite all these efforts the number of students that decide to follow a career as an entrepreneur is low compared to other countries, especially to the United States. This partly has to do with aspects in our national culture, such as a risk avoiding attitude and uncertainty avoidance. In The Netherlands failure is not easily accepted. Yet, it is well-known that many endeavours of entrepreneurs end up in failure, before finally becoming a success. It is therefore a challenge to change the self-concept and self-esteem of students (Heikkilä, 2006) as well as their behaviour and give them enough tools to have a fair chance of becoming an entrepreneur or an intrapreneur at an existing firm.

Within The Hague University of Applied Sciences, the Centre for Innovation & Entrepreneurship has taken up this challenge. Key aspect is to stimulate entrepreneurial behaviour among students. Until recently, there was a notable lack of reliable data on the effects of entrepreneurial education on behaviour. On the assumption that entrepreneurship is not singularly an innate characteristic, but that it can be taught, the Centre for Innovation & Entrepreneurship has started research to elicit a set of indicators predicting innovative entrepreneurial behaviour.

2. Instruction-based learning versus a learner-centred approach

A teacher-centred approach is primarily concerned with the transmission of knowledge. It is an approach based on instruction and the transfer of knowledge. Essential in a learner-centred approach is that the diversity of learning characteristics of all learners are taken into account with specific emphasis on low-performing learners. According to McCombs (1997) the focus in a learner-centred approach is on individual learners' experiences, perspectives, backgrounds, talents, interests, capacities, and needs. She defines learner-centred, from a research-based perspective, as a foundation for clarifying what is needed to create positive learning contexts to increase the likelihood that more students will experience success. To create an effective learning situation, McCombs says that three conditions need to be met:

- The learning environment should facilitate the exploration of meaning. Learners must feel safe and accepted, and they must understand the risks and rewards of seeking knowledge and understanding. The environment must create a setting wherein involvement, interaction and socialization are combined with a business-like approach to accomplishing a certain task.
- Learners must be given frequent opportunities to confront new information and experiences in their search for meaning and understanding. Those opportunities should not be provided in a passive receptive form by merely giving information
- New meaning and understanding should be acquired through a process of personal discovery. These methods should be tuned to the individual and adapted to the learner's own style and pace of learning.

The issue whether entrepreneurship can be taught is highly relevant, since there are those that contend that being an entrepreneur is more a talent or an innate aspect rather than a competency that can be acquired. In our view entrepreneurship can certainly be taught, but it depends largely on the pedagogical approach.

When speaking of learning, a clear distinction is made between a cognitive approach and a more behaviourist oriented approach. The classical definition of learning is that it is a change in *behaviour* as a result of experience or practice. The emphasis lies on behaviour and not necessarily on the transfer of cognition.

A more recent definition is the one by Kim (1993) that says that learning is the acquisition of knowledge, whereby he makes a distinction between the (a) acquisition of know-how and (b) acquisition of know-why. The first refers to the physical ability of an individual to produce some action and the latter to the ability to articulate a conceptual understanding of an experience. Other authors, for instance Argyris and Schön (1978), define learning as the development of knowledge. They distinguish three phases in the learning process, namely:

- *Single-loop learning* – Organizational learning takes place when errors are detected and corrected and firms carry on with their present policies and goals – they have merely been improved. According to Dodgson (1993) single-loop-learning can be compared with activities that add to the knowledge base, firm specific competencies or routines of

an organization without altering the fundamental nature of the organization's activities. Senge (1990) speaks of adaptive learning in this context.

- *Double loop learning* occurs when in addition to detection and correction of errors, the organization questions and modifies existing norms, procedures, policies, and objectives. Double loop learning involves changing the organization's knowledge base, firm specific competencies or routines
- *Deutero learning* occurs when organizations learn how to carry out single-loop and double-loop learning. This awareness makes the organization recognize that learning needs to occur and tells us something about how organizations learn to learn. It takes place at the highest aggregate level, where the way of learning is questioned and adapted.

Fiol & Lyles (1985) define learning as the process of improving actions through better understanding and knowledge. Baets & Van der Linden (2000) define learning as the process whereby knowledge is created by the transformation of experience. Learning is not seen as an abstract process but it is contextual: it occurs while the experience is taking place, so that it can be applied immediately. This is an interesting point of view when it comes to teaching students a topic such as entrepreneurship, especially against the background of the question raised whether entrepreneurship *cán* be taught. We observe that it depends on *hów* it is taught. We will elaborate on this line of thinking later.

Definitions of learning largely depend on the perspective from which the phenomenon is regarded and the level of its analysis. These two are connected. There are two distinct learning paradigms on which teaching and learning are based. In general two strands of thought are defined in literature: a behaviourist one and a cognitive one.

The emphasis of behaviourism lies on observable indicators that learning has actually taken place. The father of behaviourism is J.B. Watson (1878-1958), who defines learning as a sequence of stimulus response actions in observable cause and effect relationships. The best-known example of behaviourism is Pavlov's experiment. Skinner developed Watson's ideas further. According to Skinner voluntary or automatic behaviour is strengthened or weakened by the immediate presence of reward or punishment. Whereby the assumption is that new learning occurs as a result of positive reinforcement and old patterns are abandoned as a result of negative reinforcement. At the individual level learning is regarded as a change of individual behaviour resulting from changing stimulus-response mechanisms (see e.g. Kolb, 1984).

Contrary to this view cognitivism places the emphasis on mental processes of the mind. Behaviourists do not deny the existence of these processes; they simply regard them as an unobservable indicator of learning, which cannot be established empirically. Cognition is seen as an important driving and explanatory force for understanding behaviour. Jean Piaget (1896-1980) for instance regarded human development in terms of progressive stages of cognitive development. These four stages – sensorimotor, preoperational, concrete operational and formal operations stage – characterize the cognitive abilities necessary at each stage to construct meaning.

Generally speaking a clear line separates the behaviourists from the cognitivists. There are however alternative views on learning, which also try to link individual cognition with organisational behaviour. Leroy and Ramantsoa for instance argue (1997) that a strict separation between

behaviour and cognition is constructed and also Nicolini and Meznar (1995; p. 738) argue that the distinction between behaviour and cognition is inadequate to serve especially as a basis for defining organisational learning.

Furthermore, Baets (1998) defends the situational character of learning. In this view the emphasis is changed from learning as a transfer mechanism, to learning as a construction mechanism that starts at the individual level. This idea that learning is a construction process is laid down in ideas on constructivism. Constructivism is an example of a learning theory that focuses on the mental processes that construct meaning, whereby cognition is regarded as situated. According to Walker (2003) the constructivist approach assumes that individuals impose meaning on the world, rather than it existing in the world independent of us. Constructivists believe that all humans have the ability to construct knowledge in their own minds through a process of discovery and problem-solving. Constructivists focus on the learner as the one responsible for learning, and they assume learning takes place via a process of learning-by-doing or experimentation and practice (McDermott, 1981; Baets & Van der Linden, 2000). The main consequence of a constructivist paradigm is that knowledge and learning cannot be isolated from practice and situation (Seely, Brown & Duguid, 1991). Whereas transfer models isolate knowledge from practice, constructivism primarily sees learning as a process of social construction. From this perspective learners can only develop understanding of a wide range of aspects through interaction.

Reflecting on the practice of teaching and education at knowledge institutes, one cannot but conclude that the instruction-based approach of learning prevails. In a learner-centred approach, learning cannot be isolated from practice, which implies that learning in a classroom setting when it comes to entrepreneurship is far from ideal. The programme developed at The Hague University is based on ideas of constructivism and the premises upon which it rests. Competency-based thinking likewise fits within a constructivist paradigm, which places the individual at the centre of the learning process. Competency based thinking works on the assumption (Van der Sijde et al, 2006) that the individual, as a holistically functioning and learning being, employs his or her knowledge, skills and attitude situationally successfully in an integral way, while reflecting on the process and the results, subsequently translating these reflections into continuously changing and improving competences. The consequences for the design of a curriculum are far-reaching. The design of the curriculum, traditionally the school's prerogative, is transferred to the owner of the learning process, the student. In an authentic work field situation, in a rich learning environment, the student learns to match his personal curriculum and the corporate curriculum. Upon this view rests the programme developed in The Hague.

Taking these considerations into account, a series of elective courses in "Innovation & Entrepreneurship" were developed at The Hague University of Applied Sciences consisting of three 10 week periods of full-time work for students throughout the university's forty departments. Against the background of growing concerns that the number of students that make a choice to become an entrepreneur should increase, a setting was created in which it is expected that students perform better, are stimulated to search for knowledge and understanding in order to be able to take the step to become an entrepreneur or agent of change in an existing organization. In the next section this elective programme is discussed.

3. An educational programme in innovation & entrepreneurship

We mentioned earlier that educational institutes can promote or constrain entrepreneurship education and entrepreneurial behaviour. In the Netherlands the education environment is in turmoil. New learning methods, distance learning technologies, changes to students' demands and fierce competition are putting pressure on traditional learning paradigms and management of education. Policymakers have put entrepreneurship as a top priority on the national agenda and regard entrepreneurship education as an important vehicle to stimulate economic growth and create new jobs. Within this context The Hague University of Applied Sciences established the Centre for Innovation & Entrepreneurship where education, research and collaboration with local SME's merge and where entrepreneurship programmes are developed.

The idea is for this Centre to act as an important change agent for the university by linking internal and external stakeholders through entrepreneurship around three central themes: education, research and environment (see Figure 1).

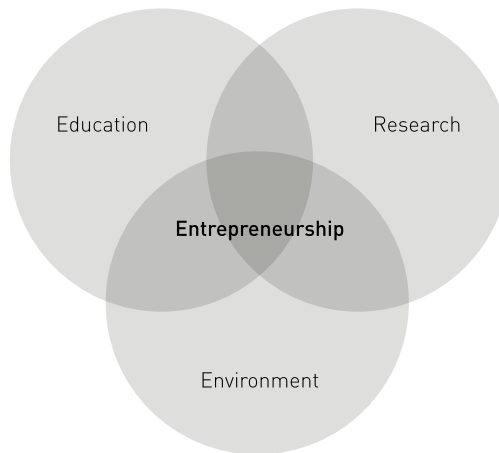


Figure 1. Overview of the three themes for The Hague Centre for Innovation & Entrepreneurship

The Centre is located close to, yet outside the main university building. This was decided upon to create an environment in which students learn and work and are directly confronted with the external world instead of working within the safe haven of a university setting.

Another important decision was related to the *content* of the programme: the integration of innovation and entrepreneurship in the curriculum since practice shows that these domains are not separated as was already asserted by Schumpeter (1934). In our view the need for continuous change and renewal (innovation) as the central issue in entrepreneurship does not only relate to timely deployment of new technological applications, it also requires rethinking and reworking internal processes – the innovation of strategy, policy, marketing and distribution,

the organisation and its management. Consequently, entrepreneurship and innovation are not regarded as the exclusive responsibility of the independent entrepreneur. Equal demands need to be met by individual employees in larger organisations. As a consequence the technical aspects of entrepreneurship and innovation are not exclusively taken into account, but also the non-technical aspects of innovation: creating an entrepreneurial climate and an entrepreneurial mentality, facilitating experiments and learning, enhancing an organisation's adaptive abilities and ability to learn, searching new ways of organising the innovation process, balancing the need for individual autonomy with corporate strategy and finding the right mix between exploiting and exploring.

The programme is aimed at developing entrepreneurial and innovative competencies. Competencies are defined as a combination of knowledge, problem solving skills and individual attributes deployed in a situational context. The attributes and skills refer to the capability to deal with problems and solve them and in the process find solutions to achieve the defined objectives. Success in this sense is the ability to meet one's own objectives.

As to the students also a number of steps were taken. Participating in the programme requires motivation on behalf of the student to become active as an innovative entrepreneur. The decision to enrol in these electives has to fit with the student's personal development plan and be complementary to his major programme. To this end a specially devised psychological test and an intake interview are held to identify problem areas and help set targets. The test was developed in collaboration with a locally based psychological consultant, Kuiper and Partners, and focuses on a number of personal characteristics such as: thinking capacity, personal qualities and dedication. The intake interview also deals with students' personal ambition and commitment to create added value.

From the start of the programme the student works on his own idea in a dedicated area of the Centre, following one of three optional routes (see Figure 2):

- feasibility study of an innovative concept or idea
- business plan for his own start-up of an innovative business
- innovative contingency plan for an existing organisation

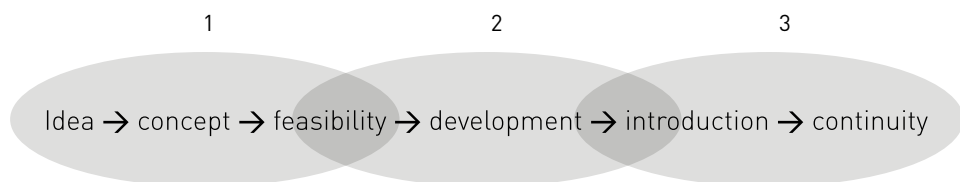


Figure 2. Overview of the 3 optional routes within the entrepreneurship programme

Each of these routes is supported by a competency profile:

- for the feasibility route the successful student demonstrates that he can operate as a professional innovative entrepreneur in an (inter)national environment by recognizing or developing a breakthrough idea by making innovative suggestions and translating these into technological, commercial and organizational specifications.
- for the business plan route the successful student demonstrates that he can operate as a professional innovative entrepreneur in an (inter)national environment by methodically analyzing a business process or a product-market combination in order to implement innovations leading to organizational results and customer satisfaction
- for the contingency route the successful student demonstrates that he can operate as a professional innovative entrepreneur in an (inter)national environment by anticipating developments and analyzing risks influencing the position and opportunities of his organization and by making innovative suggestions and translating these into technological, commercial and organizational specifications leading to improved organizational results and augmented customer satisfaction

This competency-based programme is tailor-made to individual student demand. The programme follows two routes: one aimed at developing knowledge and skills, and another at developing a view on personal strengths and weaknesses and defining requirements how to overcome them in the process. Students' individual experience is taken as a starting point and used to develop a vision of the concepts of innovation and entrepreneurship. Students report on the route they have taken towards their personal goal through a so-called *innovation-experience report* they have to write during each of the 10 week courses. Student output is thus twofold. On the one hand they have to write a report in which they demonstrate that they have been able to carry their idea forward and write a feasibility plan, or a business-plan. On the other hand they have to write an innovation experience report in which they report on their own individual learning process and the pitfalls and problems they have encountered along the road.

The 10 week entrepreneurship programme (15 European Credit Points) starts with a two week introduction period during which some basic themes are discussed, after which the student develops his own individual route (see Figure 3).

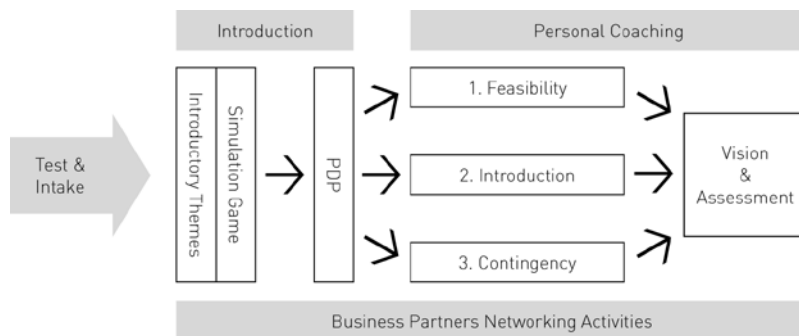


Figure 3. Overview of the Elective programme

Personal coaching throughout the programme is provided by an experienced member of the Centre as well as a representative of one of the business partners with hands-on entrepreneurial experience, or someone from the Chamber of Commerce, branch organisations or the Dutch CBI. The introductory period leads to a personal development plan (PDP), including the student's personal aims, targets, planning and deliverables. An important aspect of this PDP for the student is to indicate his individual demands and requirements for training and schooling. The idea is that the student will acquire the knowledge necessary to fulfil the programme and that in the process he will gain the necessary knowledge required for the further activist approach. Various specialists and experts are called in to support the process. Because of the multi-disciplinarity of the group, student demands are diverse, ranging from business organisational problems, via marketing aspects through to financial queries or questions on industrial property rights. Students with a major in Commercial Economics have previously developed rather different competencies than students with a background in any of the Accounting, Social Sciences, Health Care or Engineering majors. Within this set-up this is not a problem but forms the added value of the programme.

Monitoring and tracking of activities is supported by a digital portfolio, similar to the Blackboard environment, but specially developed by the start-up company of an alumnus from the programme. Personal coaching is supported by peer review sessions and networking activities with members of the business partners. Assessment of activities is based on the student's final product in any one of the three optional routes, on his personal portfolio and on the innovation experience report, supported by a body of knowledge. Assessment criteria to ensure the appropriate level of higher education and to ascertain national accreditation have been devised in collaboration with the University's department of Educational Development.

4. Evaluation: pitfalls and potentials of a constructivist approach

The programme is evaluated at the end of each 10 week run. In September 2007 research was started to study the effects of the programme on the development of individual entrepreneurial characteristics. The evaluation procedure consists of an evaluative meeting of half a day with all the lecturers involved in supervising the students, an evaluative meeting with coaches that had been appointed to the students in the course of the programme, and analysis of the innovation experience reports of the students. The evaluation is based on a number of aspects:

- format of the programme
- content of the programme
- individual student outcome of the programme

On the basis of an evaluation of the electives run so far, we were able to identify some pitfalls and potentials. The evaluations have led to various adaptations and improvements and also some interesting insights on the role of competencies, the pedagogical approach and the learning environment. The pedagogical approach is the most fundamental aspect of the programme. We mentioned in earlier sections the programme was developed on the basis of ideas of constructivism and learner-centred theories. This implies that besides some lectures at the start of the programme,

each individual student defines his or her own trajectory on the basis of the problems encountered along the road. The learning process is a process of personal discovery. The idea is that an entrepreneur works in this way and that the ability of an entrepreneur to deal with problems is one of the important competencies of an entrepreneur. On the basis of the evaluation one of the most important things that came to light is that some students have great difficulty in dealing with what they perceive as lack of direction in comparison to a traditional classroom setting. As a consequence, coaching the student – instead of teaching him – is one of the most important aspects of the programme. It is a mechanism which is crucial in the learning process and which invites the students to search for solutions to tackle a problem. Within the programme, coaches support students in achieving their learning objectives. The coach hails from a company, has an entrepreneurial background and has the role of confronting students with real-life situations and they guide the learning process of the student. All in all the student is the director of his or her own learning trajectory.

On the basis of the evaluations the following aspects came to light:

- Within this approach students do not work in a classroom setting but are stimulated to work together in an open space to take advantage of the multidisciplinary character of the group in which they work. Students show difficulty in taking the initiative to work together and express that this is due to the fact that they are not used to working in this way. In order to overcome this problem in the subsequent programmes students were given a group assignment to stimulate group dynamics and make them responsible for a group project.
- Students showed a lack of experience with project management, which is a skill that in this setting is a very important success factor for their own project. In a traditional classroom setting students know beforehand what is expected of them, while in this setting they have to manage their own project as would be the case in a real-life situation.
- The elective is open to students of a broad range of bachelor programmes, which means that the students have a wide diversity in backgrounds. Participants of the elective had to adapt to this situation and had to learn that instead of reverting to the teacher for knowledge they could also revert to fellow students. An engineering student could thus profit from a marketing student and vice versa.
- One of the problems with the pedagogical approach and challenges of this programme is that the quality of the programme has to be managed. Giving students a lot of room to design their own programme and learning process, harbours the danger that the knowledge and skills are not benchmarked against a set of quality parameters. These parameters are defined by the students themselves in their personal development plan and the action plan they have to write. It is one of the major tasks of the coaches to ensure that quality standards are met.
- An e-learning environment is an important supportive tool within this pedagogical approach, since it allows for monitoring the progress a student is making and it creates the opportunity for students to gain insight in each others' processes. Students showed great problems and reluctance in working within this environment, again because it required a lot of discipline and ability to reflect on one's own progress.
- An important element within the pedagogical concept was that each student had a personal coach from a business network which was set up with companies in the region. This worked very well, though from the perspective of the educational institute we were confronted with the fact that quality criteria have to be designed for these coaches. Within The Netherlands

there is now a trend – against the background of stimulating entrepreneurship in education - to ask entrepreneurs to give lectures and get involved in educational programmes. The idea is that best practices may have a stimulating and motivating effect on students. The aspect of quality is however a real concern because specific skills are required to teach students.

5. Research design

The longitudinal research started in September 2007 was set up in order to assess more precisely whether effects can be measured on the development of individual entrepreneurial competencies that can be attributed to the pedagogical approach or other aspects related to the programme.

Our empirical research is both quantitative and qualitative. Students take a psychological test at the start of their first elective programme (feasibility study) and one on completion of the second (business plan). These tests are specially developed for our Centre for Entrepreneurship and Innovation in collaboration with locally based psychological consultant Kuiper & Partners. The tests focus on five personal characteristics:

- self-confidence
- sense of performance
- perseverance
- ability to influence
- interpersonal sensitivity

These full-day tests measure a vast amount of individual character traits such as self-esteem, sincerity, dominance, vulnerability and fear. In addition to these tests, semi-structured interviews are held to elicit student perceptions on the educational method and pedagogical approach and perceptions on their own development in personal ambition and commitment to create added value.

Four small groups of students were included in the research (n=51) and took the psychological tests before and after their elective programme. We measured the difference of the individual scores on the five personal characteristics (see Figure 4).

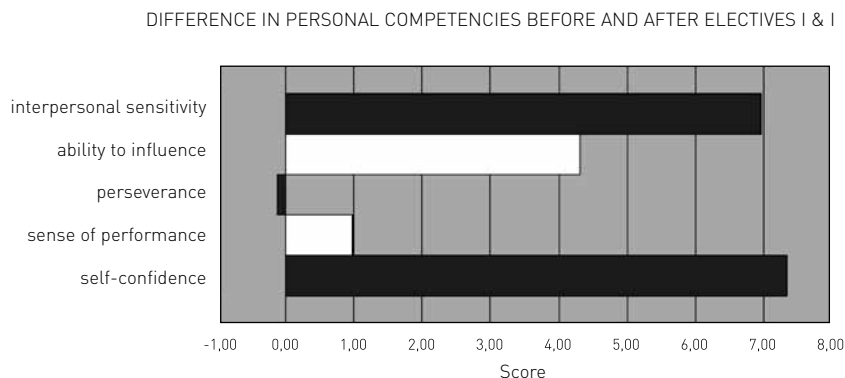


Figure 4. Difference in Personal Competencies before and after two electives Innovation & Entrepreneurship

Four out of five characteristics show an increase in scores. Self-confidence and interpersonal sensitivity show a significant improvement as does the ability to influence. It is noteworthy that students show a slight decrease in perseverance. Self-confidence is perceived as the most important characteristic by 42% of the students in the research, whereas 30% of the respondents indicate that perseverance is most important. Students perceive the characteristic ability to influence as least important. Furthermore, the student interviews indicate that from the means of support they get personal coaching is appreciated most at 83% and that results are successful at 72%. Overall student satisfaction with this elective programme is high at 96,3%. In order to improve our pedagogical model of student-centred learning using a constructivist approach, we analysed the psychological test scores trying to elicit indicators of entrepreneurship ambition.

In a single stepwise regression analysis (PIN=.05, POUT=.10, Sig.= .095, Adj. R2= .587) we found that self-discipline, vulnerability, self-esteem and fear are the most significant positive predictors of entrepreneurial ambition. On the other hand a sense of depression appears to be the most negative indicators of entrepreneurial ambition. Striking as a second negative indicator is a sense of sincerity (see Fig. 5).

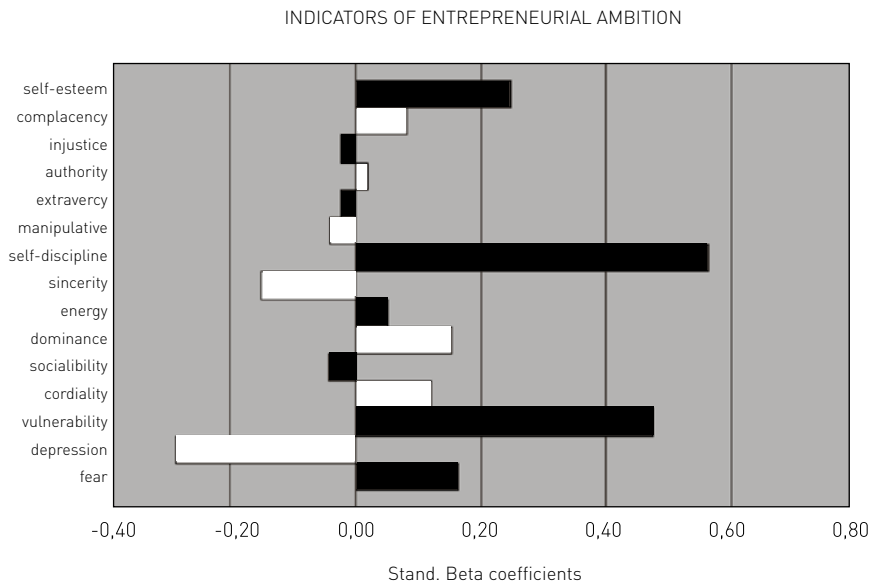


Figure 5. Indicators of Entrepreneurial Ambition

Based on the outcome of our research, we suggest that coaching students in the development of these positive indicators of entrepreneurship ambition and in helping them try to overcome the negative predictors will noticeably improve their success in entrepreneurship.

6. Individual competencies

One of the main issues in teaching entrepreneurship is the question what competencies students need to acquire. There are those that contend that entrepreneurship cannot be taught, but is mostly inherited. We regard competencies as a mixture of skills, attitude and knowledge and especially focus on the problem-solving abilities of students: how do they deal with a problem they encounter?

As to the *individual competencies*, students are tested on personal qualities, intellectual capabilities and working skills before starting the programme in order to assess their aptitude to becoming an entrepreneur. The test is not used as a selection mechanism, but as an instrument to establish individual strengths and weaknesses. Especially the weaknesses are aspects to take into account and to work on during each 10 week elective.

- During the introductory period most students indicate they are ill-at-ease with their newly found freedom of self-centred learning activities. They struggle with what they view as lack in direction and as a consequence they have the feeling they lose momentum in developing their dream. Some are insecure about what criteria are set to assess their deliverables. This shows how students are conditioned to work in an instruction-based environment and their struggle to deal with problems they encounter on the road to increase their own understanding and gain the necessary knowledge. As a result personal coaching in this period is intensified and assessment is centred on PIMS: Passion, Investment opportunity, Market value and Service orientation.
- Many students showed a lack in discipline in producing progress and status reports. This has to do with the fact that in a learner-centred approach students are responsible for their own learning trajectory. Consequently, deadlines for milestones in their project were introduced in a subsequent programme. This showed improved results, as students now had their own clear goals to work toward.

The emphasis in the programme lies on developing a personal vision on entrepreneurship and innovation. The purpose is for students to learn to reflect on their own role and take their own strengths and weaknesses as a starting point in their learning trajectory.

7. Concluding remarks and practical implications

From the above theoretical background and the discussion of the practical implementations we can conclude that constructivist student-centred learning implies that students are stimulated to set their own goals, formulate their own targets, collect their own luggage and select their personal mode of transport (or build their own) for their journey towards innovative entrepreneurship. It also implies that students formulate needs and demands in the course of their learning process. However, at the start of that process the student is unaware of his needs, so that personal stimuli from real-life experiences are required. Keywords in this process are ownership, partnership, diversity and ability to learn. These do not only apply to students, they apply to educational institutes in general. The question whether management and faculty embrace entrepreneurship is a prerequisite for a successful programme. Management commitment to whatever is necessary

to set up a successful entrepreneurship programme is vital. As long as entrepreneurship is not widely accepted by members of the faculty as being part of academia, it requires a few champions within the institute to embrace the subject. Yet, entrepreneurship is not just the responsibility of economic departments of business schools. Successful implementation of entrepreneurship education should take place cross campus and multidisciplinary. The Hague University of Applied Sciences has recognized this and stimulated the Centre of Excellence for Innovation and Entrepreneurship.

To this end the Centre developed its elective programme within the University's profile without clashing with departmental curricula. Furthermore, the Centre has started a research programme to obtain further insight into the influence of individual competencies in innovation on the success of the innovation process. This should enable us to eventually improve a professional's preparedness for future innovation processes. In line with the Dutch innovation agenda the Centre aims at stimulating a percentage of the student population of The Hague University of Applied Sciences towards innovative entrepreneurship that is equal to the national average of people who are entrepreneurs. Currently; this national average hovers around 10%.

Innovative entrepreneurship can be a powerful instrument towards business excellence. It should be the hub of activities, bringing together and matching various disciplines in every combination possible. Innovative entrepreneurship is not about solely following the cognitive route; it is about using competencies, about experience in practical situations. Our research seems to indicate that the effects of entrepreneurial education can be positively influenced by the pedagogical climate we have created. Furthermore, there are indications that entrepreneurship in education is worth investing in. Innovative entrepreneurship comes in many shapes and sizes. In the United States a number of important output indicators are used to measure the success rate of entrepreneurial education: the number of start-ups, contribution to regional development in terms of employment and economic growth, the number of students with entrepreneurial elements in their curriculum, or the number of entrepreneurs in front of a class. Further research into these indicators may prove the assumption on which the Centre for Innovation and Entrepreneurship is founded: *teaching innovative entrepreneurship pays*. Research carried out within the Centre into the effects of the pedagogical approach on the development of entrepreneurialism among students will continue.

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OPEN INNOVATION AND THE ENTREPRENEURIAL UNIVERSITY

Abstract

The need for extreme partnerships has led to the development of new forms of collaboration that cross traditional organisational, geographic and discipline boundaries. New ways of collaboration such as open innovation is a key mechanism for meeting key economic and social challenges. Open innovation is a model that identifies that businesses can and should use external ideas as well as internal ideas, and internal and external paths to market. Open innovation poses a number of challenges, and significantly many businesses do not realise the importance of collaboration, lack the resources to pursue it and find managing it difficult. In this context there is a clear failure in supporting the aspirations of entrepreneurial businesses, providing them with appropriate knowledge and skills and enhancing opportunities for growth through business innovation. Within this context, entrepreneurially orientated universities can assist in and facilitate the process of open innovation within regions. This paper will discuss the proposed approach of Coventry University to address this failure by supporting the creation, development and implementation of entrepreneurial ideas through the utilisation and exploitation of open innovation to drive forward improvements in research and development output and productivity.

Keywords: Open Innovation, Entrepreneurial University, Entrepreneurship

1. Introduction

Within a knowledge driven environment one certainty is that there will be more changes triggered by the availability of information. The availability coupled with technological innovations create a hyper competitive global environment. Within such an environment entrepreneurs find it difficult to keep track of all changes and constantly seek more and better ways of surviving and competing in such an environment. Competing and collaborating becomes opposites of the same coin. Organisational collaboration poses a number of challenges, and significantly many businesses do not realise the importance of collaboration, lack the resources to pursue it and find managing it difficult. NESTA (National Endowment for Science Technology and the Arts) of the United Kingdom have concluded that the UK needs to understand and harness collaboration, highlighting that to date, when it has sought to build collaboration, policy has tended to focus on the development of formal closed networks, frequently confined to an individual geographical location or sector.

Collaboration can have a fundamental influence on how companies approach innovation. A fast changing environment necessitates that the time from idea to innovation to the market also accelerates in order to earn the initial investment back. The increased mobility of employees, access to venture capital funds, the changing role of supplier companies and the increasing number of ideas that remain undeveloped within the corporate environment has seen a new

focus on the utilisation of knowledge which is held not just by a company but by its employees, suppliers, customers, clients and competitors.

Open innovation are gaining prominence within the environment explained in the above paragraph. Open innovation is in essence a paradigm that dictates that internal and external resources and pathways are needed to create new innovative products and services. In this regard, open innovation needs to collaborate with external companies to achieve desired results.

This developmental paper explores the concept of open innovation, the need for a supportive open innovation approach for businesses within the West Midlands region of the United Kingdom and the development of a business support concept to address these needs and engage regional companies with this approach to innovation collaboration. To facilitate this new approach necessitates an institution that is geared for this. In this paper, it is argued that an entrepreneurial university should and could indeed fulfil this facilitators role.

2. Open innovation and the entrepreneurial university in the context of a region

Within this paragraph, the constructs of open innovation and entrepreneurial universities are discussed within the context of a specific region.

2.1 Open innovation

Innovation (defined as the successful commercialisation of ideas according to Gann and Dodgson, 2007:7; Von Stam, 2003:1; Bessant, 2003:3) within a fast changing environment is no longer a fashionable strategy for the few. In this regard Bessant (2003:1) argues that innovation is actually becoming a survival imperative - something a normal company cannot do without. However, the nature of innovation is influenced by innovation itself - innovation practices of the present will probably be different within the near future. This is supported by Gann and Dodgson (2007:7) who indicate that innovation practices moved from a predominant research-push to more collaborative and integration approaches currently. The former approach focuses more on a linear innovative process starting from idea generation, followed by production, marketing, distribution, servicing, financing, and support at the company level. This perspective has seen the creation of internal research and development facilities with responsibility for the development process of bringing new products and services to market.

Contrary to the traditional approach, open innovation is a model that identifies that businesses can and should use external ideas as well as internal ideas, and internal and external paths to market. In this regard, Chesbrough, Vanhaverbeka and West (2006:1) defined open innovation as "the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation respectively. Open Innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology". This definition is based on the assumption that useful knowledge is widely available.

Although the advantages of open innovation is widely accepted (e.g. less costly than to develop and maintain an in-house research and development department) there are a number of disadvantages which according to Fredberg, Elmquist and Ollila (2008:20) include loss of know-how, dependency on customers views, limited to incremental innovation and only serving a niche market.

2.2 Entrepreneurial university

According to Fredberg et al., (2008:14) there are basically three types on organisations involved in open innovation i.e. those that fund innovation, those that generate innovation and those who bring innovation to market. Universities are important organisations in this regard who can support the creation of innovation, fund innovation through their internal processes and even assisting the route to market. As innovation is an integral part of entrepreneurship, one can assume that universities that are more entrepreneurial in nature can achieve better results as an important player within the open innovation field.

According to Gibb (unknown date: 2) the entrepreneurial university is a concept "which defines those universities providing opportunities, practices, cultures and environments conducive to actively encouraging and embracing student and graduate entrepreneurship. They are places where entrepreneurship is part of the fabric of the institution". This concept is characterised by various factors such as incentives to learn and innovate from mistakes, reward system geared to success, maximum autonomy and individual ownership of initiatives, flexible strategic thinking, and delegate responsibility to see things through (Gibb, Haskins and Robertson, 2009: 17).

2.3 Regional influences

The West Midlands is a diverse and vibrant region that has the unique benefit of being located at the heart of the UK. The West Midlands comprises the counties of Shropshire, Staffordshire, Warwickshire and Worcestershire; the unitary authorities of Herefordshire, Stoke-on-Trent and Telford and Wrekin; and the seven metropolitan districts of Birmingham, Coventry, Dudley, Sandwell, Solihull, Walsall and Wolverhampton. The West Midlands boasts a world-class business environment, with highly developed supply chains and professional service networks.

The West Midlands lags behind the rest of the UK for innovation and has arguably suffered more from the effects of the recession than other regions due to the heavy focus on traditional sectors such as manufacturing. To remain competitive in an increasingly uncertain and changing environment businesses and particularly those small and medium sized within the West Midlands need to move beyond their core competencies. Only 55% of West Midlands firms are considered 'innovation active', lower than the national average (Advantage West Midlands, 2008). Investment in R&D in the West Midlands is falling further behind the UK average (Advantage West Midlands, 2008). More specifically, the Regional Innovation Scoreboard (Hollanders, H. Tarantola, S. Loschky, A., 2009) shows that only 49% of innovative SMEs are collaborating with other businesses compared to the UK high of 61% in the South East. Additionally, only 58% of SMEs are innovating in-house (UK high - 74% Yorkshire and Humber).

Within the West Midlands there is a recognised gap in specialised innovation interventions relevant to the particular business sector. This is in part due to a recent repositioning of the West Midlands economy away from its traditional manufacturing roots towards new knowledge-based industries. Whilst the current model of business support has a valuable focus, additional support is needed if the region's businesses are to diversify and grow within the emerging sectors. There is an identified need to provide collaborative support that is closer to the needs of emerging industries and encourages businesses to diversify for growth opportunities. This will be solved by bringing together businesses from across the sector to generate new ideas and solve problems. This will lead to higher productivity and a greater tendency for innovation activity.

2.4 Conceptual intervention

In response to these competitive challenges Coventry University have developed a business development programme linked strongly with its profile as an entrepreneurial university. This programme aims to transfer knowledge on the skills, processes and technologies required by growth businesses to support product, service and process development within Open Innovation environments.

It will do this through the delivery of structured work packages, building in intensity according to the type of target individual or business, stage of development and sophistication (technology adoption and/or existing entrepreneurial culture).

In the first phase of the programme Coventry University and project partners will recruit the appropriate staff to deliver the project and establish the appropriate systems and procedures to support engagement and delivery to beneficiaries financial management and output monitoring. The ultimate outcome of the project is businesses in the West Midlands region gaining new business through the adoption of open innovation approaches. To this end the project will work with key partners in identifying suitable growth businesses that have the opportunity to generate new business opportunities within the global corporate marketplace.

A specialist open innovation audit will determine the particular requirements of businesses identified for support through the programme and their potential to realise the outcomes identified for the project. This phase of the project will see the identification and filtering of potential beneficiary companies that will become more actively engaged with the project and secondly the engagement of large companies to identifying their open innovation processes and related business priorities.

The proposed support for open innovation will focus on developing company frameworks for open innovation building an open innovation culture, setting up open innovation procedures and acquiring open innovation skills. This work package will engage businesses, which may have a low level of innovation activity or business collaboration approaches. This activity grouping will target the largest volume of organisations of all the project activities. The following indicative activities will take place within this Work Package:

- Engaging with businesses, to carry action planning based on the open innovation audits and business engagement within the project

- Development of internal company frameworks for developing and delivering in open innovation
- Professional development of company staff to support open innovation
- Action planning for open innovation implementation

It is anticipated that businesses supported in the development of collaboration platforms and market making will be established companies and high technology/high growth entrepreneurs and new businesses. This will be based on a market perspective exploring industry opportunities', hostility and industry uncertainty to ensure businesses are informed regarding the open innovation perspective for their business sector.

Company matching will be driven from the needs of the Large Enterprise and their identified open innovation approach and the specific offer of SMEs. The project will additionally support regional businesses in undertaking "Open Innovation" with medium and large sized companies through direct channels predominantly and working with intermediaries including InnoCentive, Hypios, InnovationXchange, NineSigma, yet2.com and Tekscout in US, PRESANS in France, Innoget in Spain, and Fellowforce.

The project will provide a review process for all businesses addressing the issues raised in the initial business assessment and an ongoing support following the main intervention with each of the companies. This will include referrals into the business link brokerage system for further advice and support.

3. Progress to date and lessons learned

Within a global changing environment that is plagued by a world-wide recession, changing and innovating are sometimes perceived as opposites poles from surviving the current challenges. Universities find themselves midst within this environment and therefore planned changes are not always implemented as originally envisaged. However, these environmental shocks can also sometimes be a catalyst for new changes previously conceived as impossible. If an entrepreneur is challenged between current and future realities to survive and grow their businesses, entrepreneurial universities are experiencing the same. Therefore, a number of initiatives planned for stimulating open innovation at the Coventry and Warwickshire region changed which caused certain plans to be changed. This paragraph briefly outlines critical changes made and progress up till now promoting the concept of open innovation. There are other changes implemented as well, but the following are perceived to be the critical ones guiding other activities.

3.1 Conceptual model

A conceptual model supporting the entrepreneurial and innovation process were created in Coventry University (see Figure 1). This model presupposes that, within the changing world of education, it is possible and plausible to be engage in the education process alongside the development and implementation of business ideas.

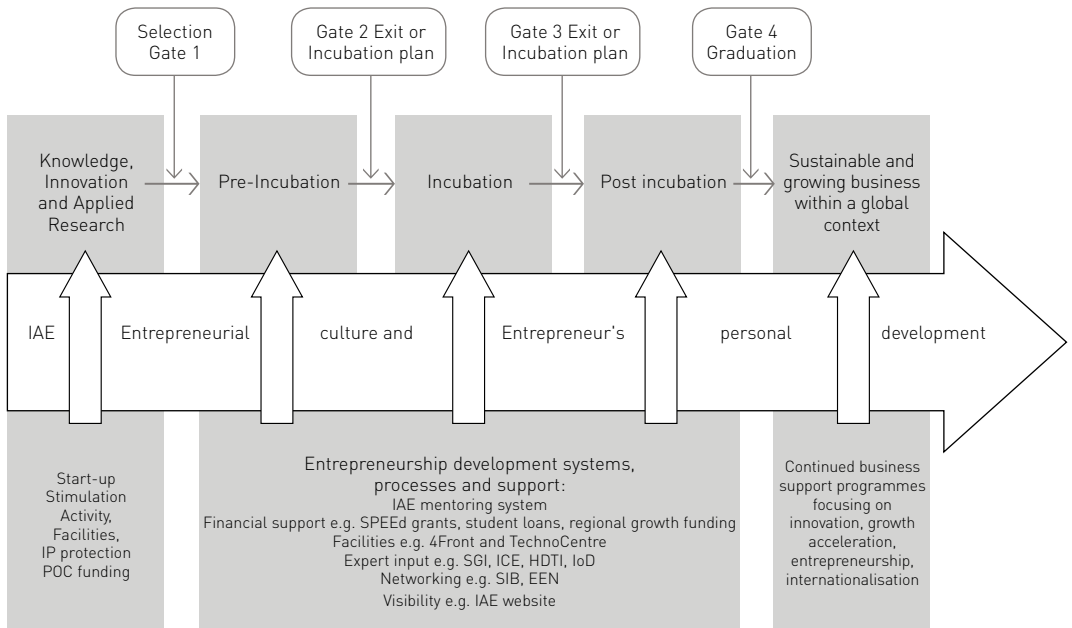


Figure 1. Coventry University conceptual model

From Figure 1, it is clear that knowledge and input from applied research projects form the basis of the creation of innovative businesses. Knowledge in this model is not only lecture or researcher bound, but are created from a combination of internal staff members and external specialists in their respective fields. From this basis, where innovation is a result of input from various internal and external resources, businesses are supported through a system of pre-incubation (where ideas and a draft model is formed), to incubation (i.e. early commercialisation), and post-incubation (i.e. accelerated commercialisation). Due to the specialist nature of innovation, individualised development plans are created for businesses at each phase. A more focused approach regarding innovation is obtained in this regard.

In Figure 1, the focus is not only on the business idea and the innovative nature of that. It is accepted that the individual should be empowered to be able to transform their personal creativity into innovative ideas. Therefore, a constant theme in all phases will be attention devoted to developing the individual entrepreneur's ability to be innovative.

An important point of the conceptual model is the support provided by all specialist units within the university. Without a coordinated system, this will not be possible which again might have a detrimental impact on the success of stimulating innovation. Therefore, the Institute of Applied Entrepreneurship as central point in this process, draws upon the strong capabilities of all three pillars of Coventry University namely Coventry University itself, Coventry University Enterprises Ltd and Acua Ltd.

3.2 Staff involvement and external partners

Open innovation presupposes a sound balance between internal and external knowledge and experience. In terms of internal entrepreneurial knowledge and experiences especially regarding entrepreneurship, various measures have been implemented to facilitate an improved internal entrepreneurial basis. Inventions includes staff and team ideas competition to get staff members actively involved in an entrepreneurial and innovative process, staff remuneration incentives according to sliding scales and a merit system taking innovative behaviour into consideration. In terms of external partners various systems are in place such as the Coventry and Warwickshire Branch of the Institute of Directors who are involved in mentoring and the presentation of master classes to would be and existing student entrepreneurs, guest speakers involvement in lecturing, and entrepreneurs and researchers forming partnerships to address and solve specific problems.

3.3 Mentoring and funding

In the previous paragraph, it was already mentioned the involvement of external partners in mentoring. A crucial issues going hand-in-hand with mentoring is the funding of potential innovative ideas. In Coventry University, a Student Enterprise Fund has been created through the involvement of external benefactors. This supports student entrepreneurs in the initial phases of incubation to apply for funding which can help them to accelerate to a commercial phase where they would be able to apply for funds from the banking sector or other financial intermediaries. This financial support system is based on the assumption that too many innovative ideas are not getting beyond the idea phase due to a lack of soft loans supporting the further developing of such ideas into opportunities.

4. Conclusions and recommendations

The ambition of the project is to deliver a change in business approach among growth businesses based on enhancement of the opportunities to gain knowledge and skills and appropriate experience. The measurement framework for the project will include hard measures of new development collaborations and new business innovations but will develop a soft measurement approach exploring the propensity of people towards innovation collaboration.

Given the uptake of open innovation it is of fundamental importance that West Midlands companies align their business models to the open innovation models of their industry. A failure to do this may result in a decline in innovation performance including innovation activity, R&D investment and collaborative innovation.

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The third bi-annual FINPIN Conference took place in April 2010 in Joensuu, Finland. This event was organized by the FINPIN Network (Finnish Entrepreneurship and Innovation Network for Higher Education) together with North Karelia University of Applied Sciences. This third conference continued the idea found rewarding already in the previous FINPIN conferences of sharing experiences, research results and best practices in the field of promoting entrepreneurship and innovation.

The theme of the third international FINPIN Conference 2010 was: Entrepreneurship and Innovation in Universities. It seems that in the promoting entrepreneurship and innovations we promoters are returning to basics: How the pedagogy of entrepreneurship education and learning environments should be arranged for achieving the best results for all the actors. The pedagogical issues for the entrepreneurship education are discussed from many interesting point of views. In close connection to the pedagogical studies also measuring and evaluating the results of the entrepreneurship education are suggested in many articles. The third part of the proceedings articles tackle very concretely with cases that present, how pathways to entrepreneurship should be supported and how the cooperation with enterprises could be arranged by implementing the idea of the triple helix models.



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