

Survey of

Entrepreneurship

in Higher Education in Europe

Appendix **B**

Good-practice examples

This survey was requested by the European Commission, Directorate-General for Enterprise and Industry.

The document does not represent the point of view of the European Commission. The interpretations and opinions contained in it are solely those of the authors.



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in Higher Education in Europe

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Reading instructions

This appendix contains 46 interview reports. They are structured as follows:

The first part of the appendix consists of the good practice cases from HEIs around Europe. They are listed in alphabetical order after the name of the institution in question.

Then follows the three interviews with representatives of pan-European organisations, also listed alphabetically, and finally three interviews with representatives of European governments, who give insight into how they support entrepreneurship in higher education in Europe.

A number of keywords have been attached to each good practice case. The consortium has put together this list of 50 keywords that can be used to search across the cases.

The keywords are:

- Action learning
- Action plan
- Advisory service
- Alumni involvement
- Art
- Business studies
- Close to praxis
- Collaboration with local business
- Community engagement
- Compulsory course
- Cross-discipline collaboration
- Cross-institutional collaboration
- Curricular embeddedness
- Design
- ECTS
- Engineering
- Entrepreneurship centre
- Entrepreneurship professor
- EU funding
- Evaluation and assessment
- External funding
- Extracurricular activity
- Facilitation
- Funding
- Goals and objectives
- Growth entrepreneurship
- Humanities
- Income generation
- Incubator

- Innovation
- Intrapreneurship
- Involving process
- Knowledge-intensive
- Lecturing
- Media coverage
- Medicine
- Meta-competencies
- Mission statement
- Motivational structures
- Natural sciences
- Pedagogical tool
- Person-driven
- Policy
- Problem-based learning
- Process-oriented learning
- Professional development
- Project
- Second-generation entrepreneurship
- Self-realisation
- Simulation
- Social sciences
- Student camp model
- Student incubator
- Workshop



1. BOCCONI UNIVERSITY, ITALY

Interviewees: Associate professor Carlo Salvato, Director of the Master of Science in Management

Keywords: EU funding, ECTS, entrepreneurship professor, business studies, policy

Context

The Bocconi University was founded in 1902 and is regarded as one of the top universities in Italy within business and management. The university has had entrepreneurship courses for a long time. The current courses are around four or five years old. The university is a private school with 80-90 percent of the courses within business, finance and management.

The university has had entrepreneurship courses for a long time. The current courses are around four or five years old. The Bocconi University is not very focused at entrepreneurship education compared with other business and management universities. There is no entrepreneurship department, as entrepreneurship is part of the Institute for Strategic Management. Entrepreneurship plays a more central role at the Bocconi Business School, which cooperates closely with the Bocconi University, but is an independent entity. Some of the teachers at the business school do give lectures at the university, but the institutional infrastructure is largely absent at the university.

Strategy

There is no unifying strategy for entrepreneurship at the Bocconi University. Entrepreneurship is not mentioned in the mission statement, which in any case does not play a central role at the university. The university president and vice president make the main strategic decisions. In recent years the main focus has been on internationalisation within the university.

The executive board – who are appointed by the university president – includes people from outside the university. Also, several entrepreneurs on the board to some extent help generate support for entrepreneurship at the university. However, entrepreneurship is not central for the board as the main focus is on internationalisation.

Instead, the entrepreneurship courses and activities are initialised at the department level. Because the university departments were reorganised last year, there is no strategy for entrepreneurship at the department level. This will probably change in the

future when the organisation is completed as the departments will have a more central role in defining the strategic choices for the university.

In the future a new entity at a lower level – the board of the graduate school – which was recently formed might also help form a coherent strategy for entrepreneurship at the department level.

Institutional infrastructure

The institutional infrastructure in regard to entrepreneurship is not very developed at the Bocconi University. The university does not have an incubator, mainly due to lack of funds. Previous discussions on starting an incubator have not been supported by the executive board.

Furthermore, Carlo Salvato points to the fact that most of the students at the university regard employment as better than starting up a business of their own, and therefore pursue a traditional career, for instance in a bank or in a consultancy firm. This reflects the fact that entrepreneurship in Italy is to some extent need-driven rather than opportunity-driven. Therefore, entrepreneurs are often dropouts from college, which is reflected by the fact that most of the students at the Bocconi University aim at a managerial career rather than an entrepreneurial career.

There is no chair in entrepreneurship at the university. This is partly because it is not possible to become a professor solely in entrepreneurship in Italy. The reason is that the professorial appointments are conducted centrally at the Ministry of Education in Rome where entrepreneurship is not included in the list of professorial professions. Therefore, professors have to do most of their research in a related subject. The result is that there is probably not a chair in entrepreneurship anywhere in Italy.

Teaching and learning

At the Bocconi University there are several courses on technological entrepreneurship, intellectual property right etc. at the society level, but not many courses for students at the micro level.

There are some entrepreneurship courses in the curriculum, for instance on start-up finance. Most of the courses are offered by the different departments, such as business management by the management department or start-up finance by the finance department. In the entrepreneurship courses entrepreneurs and venture capitalists are also giving guest lectures.

There is, however, a course on writing a business plan. For the bachelor level the course is primarily focused on the actual writing of the business plan. At the master level the course is also focused on what comes before the business plan, e.g. idea generation. The teaching methods are case studies, brainstorm sessions, and group work. The students are given examples of creative business firms in order to unfold what the core creative business idea is and to identify the value proposition.

There are no extracurricular activities at the University. This is primarily because there is no entrepreneurship department within the university to carry out such activities. The result is that there is no business-plan competition, although there are courses in

making a business plan, and that very few of the business plans result in an actual start-up by the students. This is probably also because there is no incubator to provide start-up finance to the students.

Within the management department there are seminars and research in entrepreneurship but with a very limited spillover of generating entrepreneurship at the university since the research concerns the historical background for entrepreneurship in society. Most of the staff are historians. According to Professor Carlo Salvato there is probably a larger need for an incubator or an entrepreneurship department than for more research in entrepreneurship at the university.

Development and obstacles

One obstacle is that education in entrepreneurship is supposed to be practically oriented. However, at the university level in Italy the students need to get credit with the ETS system. These credits equal 48 hours in class and a number of hours out of class doing homework. The structure of the credit system can be an obstacle because students need to be in class. For instance, writing a business plan takes up much time, most of which is outside the classroom. Also the writing of the business plan is done in groups, but the exam needs to be individual. A more flexible system would encourage more creative courses, which would support more entrepreneurship education.

A way of developing entrepreneurship is viewed as direct finance to specific entrepreneurship projects aimed at facilitating entrepreneurship, e.g. an incubator. Furthermore, the EU Commission is important in co-financing new research in European universities. If entrepreneurship research were encouraged within DGI Research, more research would be carried out at the European universities. A benchmark of European universities that are providing entrepreneurship education would also be helpful, especially on how the education and activities are conducted.

2. BUCHAREST AKADEMY OF ECONOMIC STUDIES (ASE), FACULTY OF BUSINESS ADMINISTRATION, ROMANIA

Interviewees: Vice-Dean Professor PhD Adrian Tantau, Professor Dr Carmen Paunesau and Ass. Dean Irina Bena

Keywords: business studies, collaboration with local business, curricular embeddedness, growth entrepreneurship, lecturing, simulation

Context

Founded in 1913, the Bucharest Academy of Economic Studies (ASE) is the oldest and the most prominent economic university in Romania. In Romania, the term academy is reserved for the highest educational level.

Today, the academy has ten faculties and is organised according to the same model as the economic university in Vienna (Wirtschaftsuniversität Wien).

The Faculty of Business Administration is also a faculty of foreign languages. It combines education in business administration and foreign languages to enhance the student's ability to work in international companies or operate in foreign markets. The faculty has three departments; an English-, a German- and a French-speaking department.

The faculty has developed gradually since a careful start in 1991 with 25 students studying business administration in English. Two years later the French department was launched, and in 1996 the German department was started. The curriculum is developed to be very similar to the curriculum of Wirtschaftsuniversität Wien to make the education as easy to adapt to EU standards as possible.

In 2005 the faculty started courses in entrepreneurship, partly because the faculty wanted to give professional help to students with business ideas, partly because the faculty wanted to contribute to enhancing the entrepreneurial spirit in the country.

The response among students was very positive, and the application for the faculty grew steadily. Today 1,800 students are studying business administration (1,000 in the English department and 400 in the German and French departments, respec-

tively). Measurements of the motivation of students show that 20 percent of the students want to be entrepreneurs. The rest want to work in large companies. 10 percent of graduated students have actually started their own business, mostly within services, ICT and media.

Strategy and goals

Fostering entrepreneurship is now a clear goal for the ASE as a whole, with strong support from top management. The goal is to be a truly entrepreneurial university. The goal is also written into the strategic plan for the academy, and the curriculum has a clear focus on entrepreneurship.

The faculty has plans to establish a new research structure to do more academic research on entrepreneurship. The research will try to include different kinds of business partners.

The top management sees education in entrepreneurship as a competitive advantage in the competition for students. ASE is on the winning side at the moment and advertisements for ASE as an institution is highly visible in Bucharest.

Resources

The academy is a public university and is financed by governmental funds (50 percent) and by student fees (50 percent). The governmental funds partly come from governmental grants (30 percent), partly from governmental research projects (20 percent). The academy has also been able to attract financing from business to certain research projects.

Teaching methods

Both ASE as a whole and the Faculty of Business Administration are primarily a teaching institution, although they want to develop more academic research.

Lecturing is the most normal teaching method, but in teaching entrepreneurship skills other methods are actively used as well. The most important are:

- Guest speakers with real business experience, both from Romania and from abroad
- Setting up structured interview guides for interviewing active business leaders
- Cases studies
- Simulating enterprising to learn decision making
- Involving graduated students who have started businesses in having classes/ presentations
- Team teaching, where i.e. German and Romanian teachers share classes

The involvement of foreign speakers or business representatives usually takes the form of intensive programmes from Friday to Sunday (the whole weekend). It is hard for the students (and the staff), but it is popular.

The main challenges are that it is both very resource demanding and time consuming for the teachers/professors. It is also a challenge to find good cases from Romania, which is particularly motivating for the students

The use of guest teachers are much more used in the entrepreneurship courses than in any other course or faculty.

Obstacles

The biggest obstacle for further development of education in entrepreneurship is the lack of financing. The teaching methods are costly and the faculty is not able to pay guest speakers, which restricts the use of such valuable external resources. For the same reason it is difficult to bring education in entrepreneurship to other faculties, although the Faculty of Business Administration does this to some extent.

It is also an obstacle for relevant teaching that the market conditions are changing so fast that the theoretical models are not always up to date/ relevant enough.

Factors of success

Visible success stories are important as motivating factors, both in teaching and regarding recruitment. ASE tries to use such stories actively.

Recommendations

It is necessary to work more on how to strengthen the venture capital environment; and access to financial support should be better. Also, it is necessary to work on how to simplify application forms for support to research projects, both on EU and national level.

3. CENTRO DE INICIATIVAS EMPRENDEDORAS (CIADE), UNIVERSIDAD AUTONOMA DE MADRID, SPAIN

Interviewees: Isidro de Pablo and Francisco Pizarro. Interviewed on 22-5-2008

Context and background

Universidad Autónoma de Madrid was born in 1969 as an academic institution with a critical approach to society. The university is now well acknowledged as a university with high academic standards and results, even though its critical approach is still present. Today the University has 45,000 students and offers a wide scope of degrees in social sciences (e.g. psychology, business and economics, law), experimental and life sciences (e.g. biotechnology and physics), arts and the humanities (e.g. geography, history, linguistics).

Centro de Iniciativas Emprendedoras (the Enterprise Initiative Centre, abbr. CIADE) is an independent centre at the university and is close to a faculty. The Centre started as an idea proposed by Isidro de Pablo. Isidro de Pablo, who was an early graduate from the university and had worked several years as a consultant in Spain and in the USA, wrote a proposal to the university in 1986 to develop a programme which could encourage students to develop their own jobs and careers as an alternative to traditional academic careers. Isidro's proposal was spontaneous. He saw the need for knowledge in entrepreneurship both among research staff and students. Research staff were (and still are) poorly paid, and students needed help to get jobs.

The proposal for an entrepreneurship course was first rejected by the university. Isidro instead started to consult students and academic staffs on how to start business outside the university institution. But in 1988 it became a graduation project inside the university. The interest in the entrepreneurship courses grew stronger as it developed – both among banks and other promoters of entrepreneurship outside the university and among the university leadership. In 2000 the Enterprise Initiative Centre got its name and its own building, financially sponsored by the *Fundación Caja Madrid*. *Fundación Caja Madrid* also provides financial support to the activities at the centre. From 2001 the centre was fully integrated as an independent centre inside the university reporting to the Vice-Rector of Student Affairs.

The centre by itself has a relatively small staff, four technicians and a secretary, but it works with a wide range of independent consultants and trainers. Three professors and twice as many teachers are connected to the centre as a research group in Entre-

preneurship within the Department of Business Organization from the university. Thus, the Centre has a very flexible structure, which enables the participation in a wide range of activities (see below).

Most initiatives are developed in the fields thought by the university, with special reference to the Humanities. Of the companies set up to date with CIADE's help, 43 percent belong to the Humanities or are social projects (principal area of business creation is education), 13 percent are in the environmental field and 23 percent are in archaeology & history, 13 percent are NGOs, 6 percent are in psychology, 3 percent are in music, 6 percent are in art and 3 percent are others.

Strategy and Goals

The main motivation of the centre is to contribute to fostering business creation and self-employment among students. Entrepreneurship education is now a distinct part of the university's strategic plan, which from 2003 has the strategic objective of becoming an entrepreneurial and socially profitable university.

CIADE's own mission is to change the mindset of both students and research staff in an entrepreneurial direction. CIADE encourage them to look for business opportunities, regardless of their academic subjects.

Since 1998 CIADE has contributed to the start-up of 120 companies or non-profit organisations. Now approximately 20 start-ups come into existence each year. Given the wide range of knowledge fields approached by the university, throughout the years the centre has developed specific methodologies to foster entrepreneurship in each of those main fields: Technical and Experimental Sciences, Social Sciences, Humanities. This segmentation is also complemented with two transversal approaches to entrepreneurship: gender and non-profit. Furthermore, since entrepreneurship promotion is already a priority of many institutional programmes from the Spanish government, CIADE has concentrated efforts in the other fields, which account for about 60 percent of the entrepreneurial potential within the university.

Stakeholders

In order to carry out this task CIADE works closely with the different bodies within the university community or in partnership with related agents, mostly government, regional and local agencies. They also get cooperation and financial support from several company foundations as part of their Social Responsibility programmes. The agreements the centre has with some city councils to locate newborn companies in their territories is also remarkable. These institutional relationships (both contracts and agreements) are signed via the university's general foundation.

As stated earlier, CIADE reports directly to the Vice-Rector of Student Affairs, although it also works closely with the Vice-Rector of Research.

Teaching methods

Given the wide range of knowledge fields found in the university, CIADE has adapted the general methodology for promoting entrepreneurship to three different entrepreneurial profiles: technology-oriented, Humanities and Social Sciences, and Social Entrepreneurship. Each of them requires a unique work methodology regarding vo-

cabulary, opportunity analysis, business model definition approach, intellectual property protection, financing, etc.

In particular, subjects related to the Humanities and Social and Environmental Sciences have been a constant source of ideas and projects, making it necessary to develop a specific work methodology, and filling the void left by institutional policies in Spain, which focus exclusively on promoting technology-based companies. This effort also had to handle the ideological reluctance of people in these fields of knowledge toward the role of the enterprise in the economy and the potential of private initiative to have a rewarding professional future.

The general methodology followed by CIADE consists of the following sequence of steps:

- Information and sensitisation,
- training,
- tutoring, and
- coaching of university students and research staff.

The general approach to work could be described as consulting from inside the institution. The students are seen by the CIADE staff as if they were clients, even though they do not pay for the service.

Two significant catalysts of the work methodology and teaching methods of CIADE are:

- **Organise entrepreneurial incentives such as the University Entrepreneur Prize.** The prize offers special cash prizes to the best Human and Social Sciences project and to the best Social Entrepreneurship project, amongst other categories.
- **The School of Social Entrepreneurs**, which is aimed to provide a specialised training and service platform to people promoting social initiatives mostly in Madrid's metropolitan area, although social entrepreneurs from other origins are also welcome.

CIADE is also very active in research in entrepreneurship education and technical assistance in all areas where entrepreneurship serves as a development tool. As stated above, this is carried out in co-ordination with a research group in entrepreneurship chartered by professors from the department of Business Organization from the university.

CIADE's **working methods** can be summarised as follows:

- **Information and awareness raising.** This is carried out in coordination with professors and near-to-graduate students in the classrooms and is, particularly in research groups, aimed at spreading entrepreneurial values and identifying business opportunities.

- **Training**, covering not so much theory and practice in business administration as such, but the specifics of the entrepreneurial process, emphasising the detection of business opportunities and idea definition. This is particularly important in Humanities and Social Sciences, where projects are service-oriented rather than product-oriented, and a potential market definition can be very subtle.
- **Tutoring by experts and professionals** from these sectors, with access to specific network services related to incubation, commercial alliances, financing advertising, etc. This service is used to assess the opportunity, the idea and the business model and to provide support to the entrepreneur in developing his or her business plan.
- **Technical assistance in the process of company creation.** Everyday problems of business start-up, search for finance, premises, specialised staff, commercial and industrial partners, market development, internationalisation and so on.

A very intensive work is done in different departments of the university related to Humanities and Social Sciences, such as Social Anthropology, Applied Psychology, Social Psychology, Geography, Archaeology, Linguistics, History, and in university services like the UAM Solidarity Office. CIADE organises research teams involved in intense results-transfer activities likely to give rise to spin-off projects, either in commercial form or in non-profit-making bodies or Social Economy initiatives.

Obstacles

In the start-up process of CIADE, the Centre met scepticism and reluctance from the top university management. This is no longer the case. On the contrary, today education in entrepreneurship and CIADE have full support from the university.

However, social attitudes are to a certain degree real obstacles for academic entrepreneurship. Starting risky business based on own ideas is not necessarily seen as a respectable way of earning money. And, earning money on risky business is not necessarily seen as a respectable motive for work. Traditionally, leaders and managers of political bodies, cultural institutions and incumbent companies are the ones that dominate media and public debate. Hence there is a general scepticism towards entrepreneurship, especially when parents give educational advice to their children. From CIADE's point of view it is important to gradually change this social scepticism towards entrepreneurship to enhance the entrepreneurial activity in Spain. Obviously, this is a long-term burden beyond the capabilities of any entrepreneurship programme.

Factors of success

CIADE's experience points at three important factors of success for the development of education in entrepreneurship at the university level: First, it is necessary to develop a body inside the university that is in charge and responsible for promoting entrepreneurship in practice. The body should have both practical and theoretical knowledge of how companies are created and how entrepreneurial attitudes can be thought. Secondly, a clear support and commitment from the top management are decisive to make entrepreneurship an integral part of university life. Thirdly, the technicians of the Entrepreneurship Centre should have a proven practical expertise in business management and technology transfer.

Recommendations

Entrepreneurs as academic role models are a key asset to encourage students toward self-employment. Such role models are lacking today and should be promoted both nationally and on the EU level.

4. CORVINUS UNIVERSITY, BUDAPEST, HUNGARY

Interviewees: Professor Szirmai Péter and Katalin Szakács

Keywords: Close to praxis, collaboration with local business, funding, extracurricular activity, goals and objectives

Context

Earlier, the Corvinus University in Budapest was the only economic university in Hungary. After the fall of communism, the institution had to fight to keep its monopoly position, but today it is still the largest economic university in the country and also very well known across Eastern Europe.

The university counts about 14,000 students.

Strategy

The rector of the university and Prof Szirmai himself were those who initiated the entrepreneurship teaching at Corvinus. However, entrepreneurship is not embedded in the university strategy. Among other faculties it is regarded as a non-science. But because the courses are so popular among the students, the entrepreneurship department sees the strategy problem as a challenge rather than an obstacle. The problem occurs when there are too many students coming!

Goals

The goal of the entrepreneurship teaching is to give the students the basic entrepreneurial skills. They are supposed to become specialists in the field, but not necessarily entrepreneurs.

Pedagogical tools/teaching methods

The theory at the Corvinus University is that entrepreneurship has to be taught very practically and in close contact with Hungarian business life. The subjects are very practical, but also comprise elements of Hungarian business history and background studies. They have also developed their own Hungarian case studies. Further, they often make use of guest lecturers and do company visits. The students also have the possibility to participate in an SME business plan competition. The winners get mentoring for carrying out the project. Last year, 15 spin-offs were established.

The best method for teaching a subject always depends on target group and subject. Teaching at the university means that theory has to be based on science. However, Prof Szirmai underlines that entrepreneurship teaching has to be practical: "One can only swim in water. One cannot swim in a chair."

Another positive feature is that several of the entrepreneurship lecturers are entrepreneurs themselves and run businesses beside their job at the university.

The teaching focuses on small businesses because 99 percent of all companies in Hungary are SMEs.

The entrepreneurship courses are very popular among students, and about 700 students follow these courses every year.

From next year, Corvinus will offer both BA and MA degrees, according to the Bologna process. At the bachelor level the subjects will be: basic entrepreneurial knowledge, business planning, the classical business plan, taxation knowledge, enterprises in practice, financing enterprises and business ethics. At master's level the courses are: enterprise counselling, entrepreneurial relationship with budget, enterprise-friendly economic politics, finance, SMEs in globalisation economy and strategy.

The Corvinus University also offers courses at PhD level, aimed at training new teachers in entrepreneurship.

Stakeholders

The entrepreneurship department regularly organises conferences for people outside the university and for students. Examples of these are the European Academy of Science and Arts, round table discussions and workshop with spin-offs and mentors.

Staff from the department also participate in conferences in the Budapest industrial park in order to keep in touch with important actors and to keep up to date on the latest discussions and trends.

In addition, the entrepreneurship department have agreements with for example incubators and foundations. Among other tasks they make teaching material in co-operation with these partners.

Obstacles

The entrepreneurship department at Corvinus finds that they have to put a lot of energy into finding money. As they say, "there is always a way", but it takes time to find the right way. The university gets funding from the state, but they need additional funding. They usually get the additional funding from different funds, but these are often very specific, meaning that they get much money from one fund to buy PCs, and there is no money left to buy commodities such as toilet paper. Much of the funding is also short-time based.

Factors of success

The main factor of success is a good strategy. Every year the department sits together to develop next year's strategy. They put a large amount of time into this task be-

cause it is considered so important. The second factor of success is to attract the appropriate people to carry out and realise the strategy.

The indicator which shows that a university has succeeded is the number of students who come to do entrepreneurship courses.

5. DELFT UNIVERSITY OF TECHNOLOGY, THE NETHERLANDS

Interviewees: Director Martijn Kuit and Project Manager Leonie Lispet

Keywords: incubator, cross-institutional collaboration, entrepreneurship centre, external funding, goals and objectives

Facts

- 15,000 students
- Is regarded as one of the top technical universities in the Netherlands
- Has had entrepreneurship activities for the last ten years
- Works closely with MIT Sloan Director Ken Morse who gives lectures on a regular basis as part of the universities' awareness activities
- Eight faculties at the university with different levels of entrepreneurship. The university is working actively to have entrepreneurship spread throughout the whole university and to have all faculties involved in entrepreneurial activities

Summary

Today, the Delft Technical University is widely engaged in entrepreneurship activities with a wide range of entrepreneurship courses, awareness activities, a vibrant incubator, an entrepreneurship centre, and three professors and several PhD students doing research in entrepreneurship. Even though the university has been engaged in entrepreneurship activities for the past ten years, a major shift came in 2006 when entrepreneurship was put at the heart of the university strategy as part of a broader effort of knowledge valorisation.

According to Martijn Kuit, Director of the Entrepreneurship Centre, a key success factor in making this shift has been the large number of deans at the university who were formerly employed in the private sector as well as on the executive board. The board has been decisive in putting entrepreneurship education on the agenda, and the deans have actively supported the process. Furthermore, the students themselves have pushed for more courses in entrepreneurship due to awareness initiatives throughout campus as well the presence of role models in the campus incubator and

entrepreneurs giving guest lectures. Finally, the university has engaged in cooperation with two other universities – financed by the Dutch government and supported by several private partners– in the HOPE programme, which has largely expanded the available entrepreneurship courses for students by financing part of the entrepreneurship scheme at the Delft University.

Key findings:

- Broad perspective on entrepreneurship
- Inductive entrepreneurship teaching
- Proactive government role
- 80 percent of the deans were formerly employed in the private sector

Context

The Delft Technical University has around 15,000 students and is regarded as one of the top technical universities in the Netherlands. For the last ten years the Delft University has had entrepreneurship activities. However, these activities were fragmented throughout the university.

Three years ago an incubator was set up in Delft to facilitate students who wanted to start their own business, and ever since the university has been more and more strongly engaged in entrepreneurship. Today, the university is one of the leading entrepreneurial universities and, for instance, works closely with MIT Sloan Director Ken Morse who gives lectures on a regular basis as part of the universities' awareness activities.

There are eight faculties at the university with different levels of entrepreneurship. For instance, the faculty of applied physics is less entrepreneurial than the faculty for industrial design. However, the university is working actively to have entrepreneurship spread throughout the whole university and to have all faculties involved in entrepreneurial activities.

Three main parties are involved in reaching the goal of valorisation and getting a more entrepreneurial university: the Valorisation Centre, the Centre for Entrepreneurship, and the Delft incubator. The university and its entrepreneurship activities are mainly funded through government (10 percent privately funded).

Strategy

At the end of 2006 "knowledge valorisation", which refers to the transfer of knowledge from one party to another – in particular referring to disclosing scientific knowledge to the business sector – was included in the university mission statement with entrepreneurship as one of the concrete examples of how to valorise from the university.

Being an entrepreneurial university therefore has a broader meaning at the Delft University than for instance the number of start-ups among students. For instance, it can

also mean that the university collaborates with industry and established companies or public organisations. As a result the university has a lot of contact with society, for instance university researchers doing contract-based research for industry. The goal is to get the many innovations and new technologies, which are created at the university spread out to the surrounding society.

According to Director Martijn Kuit at the Entrepreneurship Centre the main driving forces for the shift was the executive board together with a large number of university deans who have been employed in the private sector:

By the end of 2006 the executive board decided that these entrepreneurship activities had to be more concentrated and more structured. The background for this decision was the following:

“The board believes that entrepreneurship is very important for the university. It is one of the main strategies of the university to strengthen these entrepreneurship activities. They call it “valorisation”. Next to research and education, valorisation is one of the three main pillars or core tasks of the university. Setting up your own business is one element of the valorisation or collaboration with the main users of the knowledge the university produces.”

“Some of the people on the board were enthusiastic about the shift. The chair of the executive board was from Shell, so he encouraged the shift. (...) There are several members from the private sector on the board, and several of the deans are also from the private sector, e.g. Philips, Unilever and Shell. At present 80 percent of the deans are from the private sector. It started 20 years ago with deans from the private sector who have a strong academic background.”

Furthermore, the Dutch government has played a proactive role in developing entrepreneurship activities at university level through the HOPE programme.¹ The Delft University participates in the programme together with the Erasmus University in Rotterdam and the Leiden University. The three universities are setting up joint programmes in entrepreneurship education, awareness programmes, summer school, e-labs, incubator etc., which are financed through the programme. In the HOPE programme, the Dutch Ministry of Economic Affairs is giving a government grant for these activities for a total of EUR 3m.

It is also worth mentioning, that in the process of applying for the grant, the executive boards at the three universities decided to continue the joint activities even if they would not have been awarded the grant.

¹ For further information on the HOPE programme see “Holland Programme on Entrepreneurship. Grant Application Subsidy Programme Entrepreneurship and Education” from 2007.

INSTITUTIONAL INFRASTRUCTURE

The Entrepreneurship Centre

The Entrepreneurship Centre is the starting point for entrepreneurship education at the Delft University providing the courses, awareness activities and entrepreneurship programmes.

The main goal of the Entrepreneur Centre is to create more awareness among students and staff of entrepreneurship and the fact that they can start up their own business. In this respect, the centre is paving the way for the incubator in order to have more start-up with a higher quality by students taking the entrepreneurship courses and getting the entrepreneurship skill and mindset.

The second goal is to embed the entrepreneurial educational activities in the several curricula throughout the university on the bachelor and master levels, and thereby create a coherent entrepreneurship framework for the entire university. The centre is also about to set-up research programmes with PhD students.

Besides courses within the curricula, the Centre provides several extracurricular awareness activities, e.g. summer school or an inspirational guest lecture. The activities, which are university-wide, focus on how to start a business from the student's specific discipline, as it will be different to start a business from architectural faculty than from life science. Often students starting up from the incubator are used as role models in the awareness activities.

The centre also invites staff from other faculties to help them develop their entrepreneurship courses. The entrepreneurship courses are taught by an interdisciplinary group of staff, and the students are interdisciplinary which is good for getting commitment and ownership from the faculties.

In overcoming the barriers of academia opposition, the Centre for Entrepreneurship has followed a strategy where the entrepreneurship initiatives initially were extracurricular so that the entrepreneurship courses did not push out other curricular activities. This prevented potential opposition from rising, and it is advised as a general strategy for overcoming such obstacles. Therefore, it is recommended that entrepreneurship education and entrepreneurship activities are started at whatever easy entry there is at a given university.

At the Entrepreneurship Centre the connection with research is deemed important to get the academic credibility for the programmes they offer at the incubator. The research is also used by the staff in the education. At present, the Centre is applying for five PhD students to expand the research in entrepreneurship.

The incubator

The incubator, which is focused at the whole population of students in Delft, is providing housing facilities, awareness and coaching programmes, seed-finance etc. At this moment there are some 45 start-ups at the incubator where around 80 percent are graduates both from the university and from other schools in the region. The incubator, which is a foundation, is funded by the City of Delft, the Delft University of

Technology and a large bank. Besides, the incubator generates some income from what the start-up companies pay for the housing etc.

The incubator was established before the Centre for Entrepreneurship and is independent of the university, even though it is located on the university campus. It is recommended that the incubator be placed on campus so that students get role models.

Teaching & learning

The entrepreneurship education at Delft is regarded as *technology-based entrepreneurship*. As the university is primarily a technical university, entrepreneurship education is adjusted accordingly. In the words of Mr. Kuit, there is a large difference in teaching entrepreneurship to students from industrial design or from applied physics. Because the Delft Technical University is a technical university the entrepreneurship education is not focused on entrepreneurship in general, but on entrepreneurship based on technology. For instance, the education is not focused on setting up a new grocery store, but on technology-based start-up. Here it is more difficult to find investors with a long time to market and long demonstration phase.

It is important that a range of teaching methods are used that actively involve the students – especially as entrepreneurship education is all about changing the minds of the students. Therefore, the teaching is not so much entrepreneurial in the sense of the students starting up their own business as that the students are learning to step outside their normal focus and being innovative. Seeing chances and reacting on them is also part of being entrepreneurial.

At the university the starting point is that the classic teaching measures are not very well-suited for teaching entrepreneurship:

“If I am teaching you how to swim, I could give a lecture on how to do the movement, and you could pass a test on how to swim with an A. But if I go outside the classroom and throw you in the water, are you really able to keep your head above the water?”

Instead of deductive learning focus is on inductive learning, where the students get their learning experience as close as possible to the real entrepreneurial environment:

“You want to go outside the classroom and give the students the real entrepreneurial environment, you want to get them to learn actively instead of passively with group work, assignments instead of tests, guest lectures with people from business or start-up, actually drawing up their own business plan with the assistance of external coaches. Students have to get outside of the classroom in order to obtain authentic entrepreneurial experiences.”

“In the teaching you have to figure out what the entrepreneur actually needs, and then translate that into the teaching. For example, when they have to do an assignment in a business, they have to find their own company instead of getting one as-

*signed in order to build their own network capacities which entrepreneurs need, ”
Director Martijn Kuit, Delft Centre for Entrepreneurship.*

6. DEPARTMENT OF ENGINEERING MANAGEMENT AND CENTRE FOR INNOVATION, TECHNOLOGY AND POLICY RESEARCH, IN+ INSTITUTO SUPERIOR TÉCNICO, TECHNICAL UNIVERSITY OF LISBON, PORTUGAL

Interviewees: Associate professor Rui Baptista, Maria José Francisco, Head of IST's Entrepreneurship Office

Keywords: Curriculum, entrepreneurship centre, funding, engineering, motivational structures, policy

Context

Maria José Francisco is the head of the IST Entrepreneurship Office. Rui Baptista was brought back to Lisbon from a position in the USA to run the entrepreneurship studies and research at the IN+, Centre for Innovation, Technology and Policy Research, Instituto Superior Técnico (IST) of the Technical University of Lisbon. IN+ was the driving force when it comes to entrepreneurship education in IST.

As has been the case most places, entrepreneurship education began as a personal effort – by the then director of the institute, Professor Manuel Heitor. Professor Manuel Heitor developed a programme together with the university of Texas, Austin, based on a master degree in entrepreneurship offered by the IC2 Institute. Professor Manuel Heitor offered that programme at IST as an extracurricular activity focusing on the commercialisation of technology as one of the very first ones at the IST and Portugal.

The hiring of Professor Rui Baptista to boost entrepreneurship education was again a result of a personal effort on the part of Professor Manuel Heitor – not the result of an institutional strategy. Professor Rui Baptista was hired in 2004 as a result of a personal approach to the government by Professor Manuel Heitor whose idea was to obtain a more scholarly approach to entrepreneurship education through the employment of a targeted professor.

The university top-management has taken an active part in the promotion of entrepreneurship but that does not mean that there will be financial support for the effort. The creation of the entrepreneurship office was supported by the president of IST, but it was an effort. The original skeleton for the office was 7-10 people; the reality

being two people with the prospect of enlarging into a permanent staff of three during this year.

Strategy

The entrepreneurship office takes a highly instructed approach to entrepreneurship education; they find it of the utmost importance that the entrepreneurship education performed there is research-based. Their prime interest is the transformation of technology to the market place, and in all areas of research they experience an increase in the recognition of opportunities to commercialise the findings. Rights protection and patents came first, but now the interest in commercialisation is becoming more and more predominant. It is becoming a different world where value created from research is applauded. IST claims to be the biggest higher-education institution in Portugal when it comes to patents.

The change was brought forward and promoted through a number of events in the university; events that promoted the fact that you can gain economic value from your research. A number of interesting cases were brought forward (cases of people who had started companies); the idea caught momentum and proved contagious.

The focus of the events were IP rights, business plans and opportunity recognition, and, in the opinion of Rui Baptista and Maria José Francisco, they added a new dimension to the life of the students, which was very important in the beginning. However, at this point focus has shifted, and the entrepreneurship office is, they claim, in the second phase. Now entrepreneurship education is not just extracurricular but also an elective course taken by 50-60percent of all students in year 5 of their degree.

Entrepreneurship at IST

Entrepreneurship education at IST takes three different forms:

- Extracurricular
- Curriculum – optional course with ECTS-points in second half of the degree
- Research – PhD in entrepreneurship education

Extracurricular activities

In 1997-1999 some students and entrepreneurs participated in the programme started by Professor Manuel HEITOR – the IMPACT Programme. Some of the students went on to create firms which are now playing in the global market (Critical Software www.criticalsoftware.com, Biotecnol www.biotecnol.com and Grupo Stab www.grupostab.com). Maria José Francisco, one of the Impact students is now in charge of the technology transfer and entrepreneurship office at IST. At the time it was clear to Professor Manuel Heitor that entrepreneurship had to be strongly connected with technology and he initiated the programme, which was taught from the University of Texas, Austin through video conferencing. However, there was precious little interest in society at the time and the programme stopped through lack of funding. Now it is obvious that Professor Manuel Heitor was ahead of his time and that the ideas he put forward at the time were indeed sustainable.

VECTORe (www.vectore.com.pt)

Now the most significant extracurricular activity at IST is the VECTORe programme which was first launched in 2003.

The VECTORe programme is a two-pronged approach directed both at technology students and at people working in the private sector with technology. It is a six-month programme where participants apply with an initial idea of a specific business project. From the start teams are formed and all teaching is done in a process-based approach to cater for the needs of the specific projects and teams. There is one class or course per week sometimes supplemented with an on-site visit to a company. In addition to this, teams are offered various kinds of interaction with professors, advisors and specialists where the teams discuss or present their project. VECTORe is an organisation of IN+ and the entrepreneurship office with partners – schools of agriculture, schools of medicine, bio-medicine and bio-science, all Lisbon-based.

IN+ and the entrepreneurship office see the VECTORe programme as having an important demonstration effect on students in general and on staff in terms of showing that technology can be commercialised and that you may obtain an income from your efforts.

IN+ and the entrepreneurship office help the participants in every way they can and in every way the participants need but not in a structured way. The number of participants per year is approximately, 30 forming 10-12 projects.

Funding for the VECTORe programme comes from government and to some limited extent from private companies, which pay for instance for international experts who act as coaches for the teams.

The six-month term is ended with a competition in which participants present their project (normally 6-7 projects of the 10-12 have a quality worth presenting) in front of a jury of specialists and venture capitalists.

Several companies have come out of the effort – IN+ estimates that 40 percent of the ideas evolve into businesses (examples are TimeBi www.timebi.com and Albatroz Engineering www.albatroz-eng.com). Some have developed into growth entrepreneurs; some have obtained venture capital and seed capital.

The course fee is 500 Euro.

*“Diversity is necessary – entrepreneurship has helped bring the outside world into IST,
” Rui Baptista.*

Curriculum

In IST bachelor students only have one course in business aspects as this is not a priority in the curriculum. However, from 2005 students have been able to take an optional course in entrepreneurship in the second part of their degree. IN+ experiences that participants are highly motivated for the course.

One optional course is followed by 50-60 percent of all students in computer science, engineering and industrial design. The course follows a process-based teaching method but there is still a strong component of theory. During the course students interact with researchers from research units about market strategies. At the end of the semester the students present the result of their research.

A second optional course based on mechanical engineering focuses on product development and is essentially a course in product development with a module of business planning. This particular course is less about assessing the commercial potential of an idea and more about developing technology into a project or product.

The ideal use of the two courses in the opinion of IN+ is that they were a sequel, not two independent courses.

PhD programme

The interdisciplinary PhD in technological change and entrepreneurship at IST is realised in collaboration with Carnegie Mellon University. Aspects of the PhD are information and communication technology, technology change and entrepreneurship. The programme was launched in September 2007 with six students. In IST it is financed by the national government. Professor Rui Baptista sees this programme as a successful research-based programme that fills an important gap as there are not many educators at this point who are experienced in this area and thus can teach it. He explains that they have had very strong applicants for the first two rounds and that the students come from a number of different countries.

Incubators and technology parks

Government has financed technology parts that have incubator facilities. Thus IST has decided that their focus is to act before incubator level by trying to motivate science students to pick up ideas instead of ignoring them – and to provide them with contacts to venture capitalists. The opinion of Professor Rui Baptista is that it is not difficult to find a place in an incubator in Portugal – it is difficult to find enough people with good ideas. Thus his focus is the idea generation and the first phases of marketing. This is where he believes that IST and IN+ can be of most value.

Barriers against entrepreneurship education

The general opinion of directors of study is that there is only room for so many courses in a diploma and that none of the technical courses can be removed. Thus there is little room for entrepreneurship in the curriculum.

"I would say that perhaps 25 percent of professors in IST are interested in technology commercialisation," Rui Baptistai.

Incentives for entrepreneurship education

Entrepreneurship is a fashionable subject in Portugal right now. It is generally spoken about by government and has been one of the significant subjects of the present government. Thus, obtaining national funding for activities concerning entrepreneurship has been comparatively easy since March 2005. Before that entrepreneurship as a dimension in teaching was practically ignored. The strategy of the current government is based on innovation and entrepreneurship as the way towards development.

IN+ reports that it is a completely new discourse and that entrepreneurship has rapidly become fashionable through the promotion of the prime minister. The media has adopted the idea and brought forward the trend.

Private funding for science and technology is traditionally very low. Thus development in this area has to be carried through by public funding.

However, IN+ fears that investments in science and technology are still not seen as productive investments within the time frame of an election. Therefore they doubt that the current focus on entrepreneurship and technological change will continue when budget constraints become tighter. When asked about the prospects of entrepreneurship education IN+ are not too pessimistic, though, as they report, by now a cohort of students have been exposed to entrepreneurship issues and through their interest advanced studies and research in the area will continue. After the present interest from the current government has waned, only the personal agents of change will remain, and IN+ fears that entrepreneurship will once again fall back into becoming an economic discipline. In engineering schools graduates will be left only with the opportunity to take an MBA after studies if they want support to starting their own business.

IN+ sees some professors change towards a more market-driven approach, but certainly not all of them are willing to change their teaching, their behaviour and their point of view. One problem is that with teaching duties and administrative duties being awarded, there is very little incentive for entrepreneurship, and professors gain absolutely no credit for involving themselves in entrepreneurship education.

“Most research units have one or two “champions” who care about entrepreneurship and who see that entrepreneurship activities are of value. But many completely refuse to address matters outside research, as commercialisation does not advance their careers,” Rui Baptista.

Particularly young educators are motivated and see collaboration with private companies as a way of offering their students new opportunities. However, the majority is still unaware or uninterested in the commercialisation of technology, and Rui Baptista has the feeling that the faculty would put up a strike if they were forced by the university management to integrate entrepreneurship education, as there is reputedly a low willingness to change.

Resources

The Instituto Superior Técnico, Technical University of Lisbon and the IN+, Centre for Innovation, Technology and Policy Research is primarily funded by government and through public research grants such as the European Science Foundation and the FCT – Fundação para a Ciência e a Tecnologia.

There is very little tradition in Portugal for private companies to support research outside one or two very large companies. The extracurricular activities mentioned above have enjoyed private funding from venture capitalists which have sponsored prized and sponsored participation.

7. ECOLE SUPÉRIEURE DE PHYSIQUE ET DE CHIMIE INDUSTRIELLES DE LA VILLE DE PARIS - FOUNDING MEMBER OF PARISTECH

Interviewees: Alain Jardy, Vice-Provost, and Sylvain Gilat, Head of Communications and Global Advancement
Keywords: Alumni involvement, close to praxis, collaboration with local business, entrepreneurship professor, external funding, lecturing

Keywords: Alumni involvement, close to praxis, collaboration with local business, entrepreneurship professor, external funding, lecturing

Context

The “École de Physique et de Chimie Industrielles de la Ville de Paris” was founded in 1882, and was named ESPCI in 1948. It has a glorious history. It is the place where in the 1880s the Curie Brothers Pierre and Jacques Curie started their studies about the electric properties of crystals that lead to the discovery of piezoelectricity, and where at the end of 1897, Marie Curie started the study of uranium radiation discovered by Becquerel a year before, which later secured her a Nobel Prize in Chemistry in 1911, one of seven Nobel Prizes associated with ESPCI ParisTech.

In 1991, ESPCI became one of the founding members of ParisTech, the “Paris Institute for Science and Technology”, an umbrella organisation of ten of the most prestigious “Grandes Ecoles” in France. Through the 1990s, cooperation between members of this group of public higher-education institutions developed gradually and in 1999 the name was changed to ParisTech. The history of the individual institutes dates back to the early times of the Industrial Revolution. Four of the ParisTech institutes were founded in the 18th century, the others at the turn of the 19th and 20th centuries.

In 2007, ESPCI changed its name to ESPCI ParisTech to stress the connection to this association.

ESPCI ParisTech is a public school funded by the City of Paris. This influences the running of the school in a slightly different way than state-funded schools.

Professor Alain Jardy is the vice-provost and the developer of the entrepreneurship course at ESPCI ParisTech. Dr. Sylvain Gilat is an alumnus of the school, and an ad-

junct professor at ESPCI ParisTech, as well as an entrepreneur – being the founder and CEO of Chemylx, www.chemylx.com.

ESPCI Paris Tech is a founding member of ParisTech, which is itself a member of IDEALeague, a network of five leading universities of science and technology in Europe (www.idealeague.org)

Strategy

At ESPCI ParisTech entrepreneurship education is not written down in the strategy of the school. This, however, does not mean that entrepreneurship is not happening, far from that. The interviewees kept repeating that it might not be the law – but it is definitely the practice, which a long list of research spin-offs bears witness to. Part of these ventures have been started by scientists from ESPCI ParisTech together with outsiders or even with students, and this has been considered a natural path for scientists since a law introduced in 1999 made it possible to remain an employee of the institution and run a company alongside.

Innovation itself is, however, in the written mission statement, together with Engineering education and Research. Innovation takes place in the laboratories and in close cooperation with partner companies. An important element of this strategy of innovation at a professional level is to expose students to diverse career paths, including that of entrepreneurship. This is, among other things, done by using examples of companies successfully started up by professors and alumni of the school.

ESPCI ParisTech is a founding member of Paris Tech, and that involvement is an important part of the school's strategy. It did prompt a change of name in February 2007, from "ESPCI" to "ESPCI ParisTech".

The management of ESPCI ParisTech, i.e. Jacques Prost, President, Françoise Lafuma, Executive Vice-President for Academic Affairs, and Alain Jardy, Vice-President, has been working to further promote entrepreneurship within the institution. The first step has been to introduce an elective course on Entrepreneurship and Innovation Management in the third year of the four-year curriculum, starting in the academic year 2007-2008. Additionally, the leadership is working to ensure that entrepreneurship and the starting of new ventures by scientists are valued and treated in a more structured and coordinated way in the upcoming years.

Teaching and learning

The curriculum at ESPCI ParisTech spans four years. The two first years are devoted to giving the students a strong knowledge of, and a hands-on know-how in physics, chemistry and biology. Students also get exposure to issues such as IP rights, project management etc. At the end of their second year, students are asked to think about and write a career plan in the short, medium and long term. At that point they are also exposed to entrepreneurs as role models, or inspiration. The third year is devoted to internships and research projects in the laboratories as well as different elective courses. The fourth year is totally open. The students can either start doctoral studies or do a Master's abroad. They can also complete their education in various application schools, including the option "HEC – Entrepreneurs". The compulsory internship in industry lasts six months and has a huge importance. More than half of the intern-

ships are spent abroad: Europe, the United States, Japan, China, Australia and the Middle East. Almost 50% of the graduates go on to do a PhD and eventually all of them go into R&D.

Entrepreneurship is present in multiple ways, but most directly in the elective course started in 2007 – Entrepreneurship and Innovation Management. This course was designed as a 30-hour course (6 ECTS points) to be elected in the students' third year, alongside the experimental work in the laboratories. In the 30-hour course the students were first asked to work in teams on an innovation assignment developed in close cooperation with Schlumberger: to create a plant/ system to desalinate water using solar energy and, in the second half of the course, to develop a business plan for an idea of their own. The course was taught by two external lecturers, one from Schlumberger (the innovation process) and one from a large French commercial bank (business plan). Additionally, a number of other professional guest lecturers have given input to the students on the process of developing projects and starting ventures. The students have been asked to present their idea, and reflect and give feedback on the projects of their co-students.

The main idea of the course was that it should be grounded in practical reality, to research laboratories, and it should result in viable, realistic solutions. Furthermore, the students should be exposed to actual people during the course – bankers, business angels, administrative people, etc. This is an overarching idea not only of the Entrepreneurship and Innovation Management course but of ESPCI ParisTech as an institution.

The first year of its existence, the Entrepreneurship and Innovation Management course was a great success. Out of a cohort of 70 students, 16 selected it, more than any of the other elective courses, which illustrate the interest of the students from ESPCI ParisTech in entrepreneurship.

Professor Jardy feels that the fact that the course is only optional is important to its success. This means that the students are truly dedicated and do a fine job, which, as experience shows, would not necessarily be the case if the course was compulsive.

Other entrepreneurship activities are mainly centred on the companies developed by scientists at ESPCI ParisTech. One such example is Professor Mathias Fink, who has co-founded four companies with 140 job creations, and who is often tapped to talk about research-based entrepreneurship.

The overall focus of ESPCI ParisTech falls naturally on innovation, the pre-start up, and the start-up phases of entrepreneurship. The growth phase is more the focus of the alumni network, where a growing number of members now have a practical experience with starting up ventures. In the network, members meet and discuss challenges, exchange good practises – or talk about their experience. This side of entrepreneurship, however, is not driven by the school.

Resources

ESPCI Paris Tech has been funded by the City of Paris. Furthermore, the institution has a deep cooperation network with a number of large companies: Total, Michelin, Schlumberger, Saint-Gobain, Arkema, Rhodia, etc. In some cases, companies have spontaneously turned towards ESPCI ParisTech to develop a research programme together with them. A number of research chairs have been funded by companies. For instance, Michelin is funding research positions in materials science, including visiting professors and post-doctoral fellows. Other companies are also involved in research projects, providing grants for master-level or PhD students, etc.

ParisTech started as a loose organisation, but its statutes were changed last year so that it is allowed to raise money. The idea of ParisTech is supported by high-level executives in France, people representing top-40 French companies. Raising funds is very important and this strategy is being pursued through partnerships with companies and through developing projects that can be used to raise money from the EU or the French state. Although this may cause conflicts of interest between the individual members and ParisTech, this has not arisen yet, mainly due to the fact that the individual institutions and ParisTech target different donors. ESPCI ParisTech believes that the school has a truly distinct education-and-research profile, and a deep, long-standing connection to those companies that have a strong need for chemistry, physics and biology expertise.

Institutional infrastructure

ESPCI ParisTech does not run its own incubator, but companies that arise from research being carried out at ESPCI ParisTech may have the opportunity to join Agoranov, an incubator founded by four higher-education institutions including ParisTech, run by the City of Paris, and financed by the City of Paris, the Ile de France Region, the French State and the EU.

For high-tech companies coming out of research, it is crucial to have access to laboratory space, as many of them need specialised and expensive tools and instrumentation. The diversity of research fields makes it impossible (or at least very expensive) to maintain a dedicated incubator with lab space. Informally, ESPCI ParisTech may host some companies in-house as some kind of incubation, but again it follows the more organic approach that :

“Entrepreneurship - it is not the law – it is the practice”.

At ESPCI ParisTech, scientists are given the opportunity to file and fund patents under their name (especially when the school declines to earmark the full funds for the whole life of the patent). As a consequence, the need to set up a tech transfer office has not been as acute as in other schools. The same holds for intellectual property issues: nothing has been formalised or set in stone, but the school does not hamper the filing of patents, and actually supports the development of companies, etc.

Outreach

As mentioned above, ESPCI ParisTech has very strong ties with a good number of large companies in the oil, energy, pharmaceutical, materials and other fields. This is a long-standing strength that the institution is very proud of. The cooperation goes both ways; companies approach ESPCI ParisTech, and vice-versa.

The Alumni organisation is also widely tapped, to find external lecturers, speakers at conferences, etc. This work is going to be strengthened, as Sylvain Gilat has been recruited to, among other things, work more closely with the alumni. One of the ideas is to use the alumni to set up a foundation that could supply seed capital to potential companies spun off from ESPCI ParisTech research. This initiative is rendered possible due to new tax laws, allowing people to cut their “wealth tax” by investing in innovative businesses.

In a way, networking with other institutions within ParisTech also strengthens ESPCI ParisTech’s outreach. Within ParisTech, member institutions exchange best practices and pool their development activities. One of these is called PIMREP (ParisTech Innovation Management, Research and Education Programme). It is a study of entrepreneurship education in the participating institutions. It has just started out, has been given a significant budget to get started and is applying for additional funding to develop entrepreneurship teaching and related knowledge within ParisTech.

Barriers

The interviewees do not anticipate any overwhelming barriers to entrepreneurship education in regards to their institution. It is grounded in the practice of research and has been so for many years. The next step is to make it better structured and more accessible. To do so, one necessary condition is that sufficient funding is available. Financing the new ventures is one of the most important issues when you want to foster entrepreneurship. Funding does not have to be public, however: Large companies such as Schlumberger, may support new ventures because they need and/or value innovative ideas for their business. On the other hand, funding from private individuals may often face a significant barrier:

“Other types of funding available for entrepreneurs and entrepreneurship may be more challenging: business angels rarely have the background to understand and feel comfortable with the technology content of the projects we develop – for instance in advanced chemistry”

Within the school, there is little cultural barrier towards entrepreneurship; in society, however, the environment is still challenging. There has been a change for the better in the later years, but the idea that entrepreneurs are doing it for the money is still around.

There is also a perceived cultural gap as far as alumni are concerned, because many of them do not think that entrepreneurship can be taught, and this affects their likelihood to help finance entrepreneurship teaching activities.

One of the main barriers lies with the students’ career expectations. Most of them are very dedicated to their field of interest – and are passionate about performing re-

search in that field. They see their career in some of the very strong companies in the field of oil drilling and supply, energy, materials, pharmaceuticals, etc; they do not immediately consider the opportunity of self-employment or entrepreneurship. It is a challenge to show them that there are other career paths.

Recommendations

Seen from ESPCI ParisTech's perspective it seems essential that entrepreneurship be introduced and that the different career options be outlined to the students early on. Courses in entrepreneurship, however, should only be taken by the students who are genuinely interested; hence as an elective and not a compulsory part of the curriculum. The basic knowledge about IP, patents, etc. should be conveyed to all, but actual entrepreneurship education demands a genuine investment from the students. This will not come about if they do not see the point.

Furthermore, the teaching methods used to teach entrepreneurship should go farther than lecturing. Students have to be really involved because entrepreneurship is not anything but a theoretical exercise.

Finally, entrepreneurship should be taught in context, not in a vacuum, and there should be room to showcase examples of failure and success, that may eventually become role models for the students.

"Few institutes of higher education train professionals who not only excel at the drawing board but are also able to go to the lab and execute on their latest great idea (always a humbling experience). Yet, both skills are absolutely critical to build an innovative but sustainable business...(...) I could not have come up with the idea of that scheme without the cross-disciplinary knowledge I had acquired at ESPCI Paris-Tech.

8. EUROPEAN UNIVERSITY OF CYPRUS

Interviewees: Associate Professor A. Hadjimanolis, Assistant Professor Elmos Konis, Lecturer Cathrin Lazarou

Keywords: incubator, business studies, cross-institutional collaboration, collaboration with local business

Context

The European University Cyprus is operating with limited funds, which makes the development of an entrepreneurship infrastructure difficult. Historically, many young people in Cyprus have viewed public employment as a secure and desirable employment, which means that demand for entrepreneurship education is limited. The European Cyprus University is privately funded and has to be very responsive to the demands from students. The limited demand is enforced by the fact that entrepreneurship and self-employment at Cyprus is largely need-driven and not opportunity-driven. Entrepreneurs are often students who have dropped out of school or who cannot get employment within government. The business structure in Cyprus is largely consisting of micro business. This means that there are limited funds for the development of entrepreneurship education at the university.

Strategy

Entrepreneurship is not mentioned in the university's mission statement, but creativity and innovation are. There are no policies for developing entrepreneurship at other departments outside the business department, which is viewed as a problem:

"One trouble that I see is that small business management courses are only offered to students from the business school. Other students, for instance in computer science, can't get it. [...] There is not a lot of attention to getting it. This should be corrected in the future. [...] They should be aware of these opportunities and be encouraged to take them."

Infrastructure

The University has an associated high-tech business incubator.² The incubator was established in 2003. The incubator was established by Cyprus College AS Ltd, the

² Please see <http://www.ermis.org/main/default.aspx> for more details on the incubator.

mother company for both the European University Cyprus (EUC) and Cyprus College. Actually EUC was established in October 2007, with the approval of the Ministry of Education, from the institution known as Cyprus College till then. Cyprus College continues now to operate as a college offering only diploma programmes, which were not allowed to be included in the EUC, which offers only degree (B.Sc., MBA, etc.) programmes.

The incubator facilities include 15 company offices, reception, conference room, and a library.

Entrepreneurship education

Curriculum

There is no specific course in entrepreneurship at the European University of Cyprus. There is, however, a course called Small Business Management that has a number of entrepreneurship elements incorporated. For instance, students are learning about managing a small business, including making a business plan, getting finance etc. In the course, students present case studies, often related to start-ups in Cyprus to make the teaching more concrete. Business plans are seen as an essential part of the Small Business Management course, and students are required to present a business plan at the end of the course in a group. The majority of students do not start a business at the end of the course.

The course is part of a four-year bachelor of Business Administration and is required for all students taking this particular bachelor programme as well as it is optional for other students in the business department. In principle, the course is also open to students outside the business department but as there are a number of requirements of previous business courses, in reality only business students attend the course.

Furthermore, to a limited degree entrepreneurship is integrated to other business courses mainly through entrepreneurship business cases:

"It is true that entrepreneurship is taught in other courses, for instance strategic management. We do include entrepreneurship to some extent and case studies that are essentially entrepreneurship-based."

Extracurricula activities

There are no specific extracurricular activities at the European University Cyprus although there are some national competitions that students can participate in.

Teaching methods

Entrepreneurial methods are included in business courses through teamwork, role-playing, case studies, entrepreneurial teaching methods, etc. For instance, in a course on management and sale the students actually have to make an appointment with the professor and persuade him to buy a product within five minutes. In the small business course people from industry are also often invited to do a presentation at the course:

"Normally we invite people from industry who are either small business managers or entrepreneurs who have started their own business to discuss particular aspects of

their business and to answer questions from students. Sometimes we ask students to play a particular role as marketing manager or production manager or as the entrepreneur.”

Obstacles

The interviewed professors would like the Government to give more funds to develop new courses, for instance in entrepreneurship. In general, Government is not seen as driving entrepreneurship forth in Cyprus, which is also seen in regard to entrepreneurship education where the Small Business Programme at first was not approved:

“Three years ago there was a proposal for a programme about small business. [...] All programmes have to be approved by the Ministry of Education. And that was a long and difficult procedure.”

9. FINPIN – THE FINNISH POLYTECHNICS ENTREPRENEURSHIP NETWORK³

Interviewee: Director Sakari Kuvaja

Keywords: advisory service, funding, goals and objectives, incubator, mission statement and policy

Context

Sakari Kuvaja is the director of the FINPIN network and is working out of the University of Applied Science in Lahti which acts as the host of the FINPIN activities. He has been involved in the network from its beginning and has before that been involved in setting up and running the business incubator at the Lahti University of Applied Science (UAS).

FINPIN was founded in 2002 at the initiative of the Rectors Association. It is a community of people who are enthusiastic about entrepreneurship and its promotion in universities of applied sciences. Originally it was set up as a project with EU funding from the European Social Fund among other sources. From the outset it comprised 30 institutions, and 24 of these were in Objective 3 areas, and could therefore secure the EU funding. The Lahti University of Applied Science was the administrative unit for the southern part of Finland and Tampere University of Applied Sciences was the administrative unit in the western part. Northern and north-east parts of Finland participated in FINPIN's activities at their own costs.

The project of establishing FINPIN was initiated on 1 January 2002 and ended March 2005. After this, FINPIN has continued its life as an independent network. The main aim of the network's activities is to work in conjunction with the Universities of Applied Sciences and develop activities in a way that supports entrepreneurship and entrepreneurship teaching.

The key sectors of operation of the network are:

1. Pre- and business incubation

³ Since 2005 Polytechnics in Finland are called Universities of Applied Science

2. Business succession
3. Entrepreneurship through R&D
4. Entrepreneurial research
5. Entrepreneurial qualification paths for staff members
6. Entrepreneurial pedagogy
7. Internationalisation

The network does this work by providing training and consultancy services, arranging seminars and conferences as well as carrying out development projects.

Strategy

The strategy behind FINPIN has developed over time. In the beginning the main aim was to establish some cooperation between the universities of applied science with focus on entrepreneurship and on the establishment and development of incubators. To this end they developed a business advisor educationist programme. This programme ran four times over 20 days, with 15 participants in each course, key people from the UAS: deans, senior consultants, incubator managers and lecturers. The programme was developed with the assistance of an external consultancy, which has worked very closely with FINPIN over the years.

An important factor for the success of FINPIN has been that there is political attention on the initiative from for instance the Ministry of Trade and Industry and the Ministry of Education, due to some extent to the good connections of FINPIN's key persons, who in several cases have been asked to give input to the political level, concerning entrepreneurship education in Finland.

Another important factor is that Finland has a development plan for entrepreneurship teaching as a part of the Entrepreneurship Policy Programme put forward in 2004. FINPIN's board and its members had a key role in making a strategy for the UAS which has been accepted in March 2006 by all the rectors of the Finnish UAS, who have thereby committed themselves to imposing the goals of this overall strategy in their strategies on institutional level.

The goals in the overall national strategy are very ambitious:

- One out of every seven graduates should have started a company ten years after graduation from a UAS
- The UAS will produce business successors
- Companies established by UAS graduates are strongly based on innovation and knowledge

- In 2015 40 percent of all new businesses will be started by graduates from UAS

Goals

The goals of FINPIN are to develop interesting teaching opportunities horizontally among the UAS, and develop the awareness of the importance of entrepreneurship teaching for the Finnish economy. This is done through a series of projects and initiatives: the Business Advisors Educationers Programme, the business Succession School and other initiatives.

Funding

The initiative was first funded by EU money but after 2005 the Ministry of Education gave year 2005 EUR 50,000, year 2006 EUR 100,000 and year 2007-2009 EUR 110,000 a year; and FINPIN charges a fee for the training seminars, conferences etc. Furthermore, Lahti UAS is paying a part of the expenses indirectly by hosting the secretariat for FINPIN.

The network has been rather successful in gaining development money from various sources: They have developed a dissemination project based on the Succession School, a project that is coordinated by the Lahti University of Applied Science and funded by the Ministry of Trade and Industry, ESF. They are now developing an Inter-reg 4C project with transnational partners.

Teaching methodology

One of the main activities developed by FINPIN is the Business Succession School. The Background for this activity was that in 2003 it came to the fore that Finland would have a problem because 60,000-90,000 SME owners/entrepreneurs were forecasted to retire within the next eight years. This activity was piloted in Lahti and has now been run at Jyväskylä, Turku and Hämeenlinna as well.

The main idea is to link potential entrepreneurs with companies where the owner is retiring, to enable the succession. In Lahti where the project was started first the drafting of students happened in all faculties at the UEA via e-mail, posters and ads in the school paper. 600 students expressed their interest in the course, 130 of these were tested, 60 were subsequently interviewed, 32 selected and 28-32 started the course. Most of the participants were undergraduates, only 6-7 graduate students, and the age span was from 21-50. The evaluation of the first course was that this was too heterogeneous a group. The course was planned with the help of an external consultancy and the consultants also taught the first course, with the university staff sitting in, enabling them to teach the course with the next group. In Lahti they will now start their third course, in Jyväskylä they have run one course and will start another in the autumn, and in Hämeenlinna they started the first course in September 2007 and in Turku in the autumn of 2007, and in Laurea they will start in the beginning of 2009. In Lahti after the third course the project will cease being a project and be integrated into the mainstream provision.

The course gives 15 ECTS points, and the students are awarded a diploma from the Succession School. The first part of the course is classroom teaching to give everyone a common set of tools. However, from this starting point each student has his or her own individual programme developed on the basis of the testing that happened be-

fore their acceptance into the programme. The tests aim at clarifying both the students' skills and competencies and their needs in respect of taking over an existing company, or developing one.

In the Succession School the use of outside experts and practitioners is central. To illustrate the process the team especially uses companies where a successful succession has already taken place. The teachers function more like mentors, and they are selected on the basis of their experience and their capacity to be flexible in the meeting with the students.

The programme aims at developing the students' skills and mindsets – approximately two thirds skills and one third mindsets, but it depends on the individual curriculum.

After the first years, Sakari Kujava and the other people involved are now starting to shift focus from basic skills needed for the succession to more focus on growth and development of the company in question. They have also started seeing the need for more teacher training and are experimenting with the use of video, streamed on the internet to enable teachers from other UAS to be inspired and learn from the others.

Another interesting activity initiated by FINPIN is a teaching programme for the staff, enabling them to do PhDs in entrepreneurship. It has 40 participants – teachers from the FINPIN members who follow a course organised by Haaga-Helia UAS and Jyväskylä University, and it allows the teachers to focus on the teaching of entrepreneurship in a very competent way.

Stakeholders

FINPIN has a strong connection to the stakeholders closely related to the network. The Board of FINPIN is made up of rectors and vice rectors of some of the bigger UAS: Jyväskylä, Lahti, Haaga-Helia, Turku, Satakunta and Vaasa University, and they are starting the work on getting closer links to their alumni.

In the programmes and course, i.e. the Succession School, the cooperation with the businesses is also apparent, and as a director of FINPIN Sakari Kuvaja has good connections to centrally placed people in the ministries.

Obstacles

For the Succession School the biggest obstacle has been to find the companies interested in engaging in a structured succession process. This is seen mainly as being due to cultural barriers – that entrepreneurship is not considered very positive in general – and this is difficult to do something about:

The system is designed to make workers – and the cultural change will take time.

For FINPIN there have not been any serious barriers. The cooperation has had a good backing with the UAS in Finland and a good level of both institutional and political support. However, the main problem is within the institution – getting the acceptance of the faculties in general.

“Some people in the system, in the institutions, seem to think that if they do not bother with entrepreneurship, it will pass.”

Factors of success

It is a factor of success to have the dedication of top management, and political backing as well. When this is in place, things can evolve especially if there is a real need as for instance with the Succession School which meets a need in the Finnish business economy.

Furthermore, it is necessary that the teachers have the right skills and the experience to make entrepreneurship teaching relevant for the students.

Recommendations

First of all entrepreneurship should be introduced in the curriculum for teacher training. But this is not enough because the practical experience should also be in place, especially for the UAS teachers. Therefore, Sakari Kuvaja recommended that UAS teachers should have at least three years of practical experience with running a business; and that should be a rule for all subjects.

A further focus on creativity and innovation should also be integrated to a larger extent in all curricula, as learning how to engage in creative processes and idea generation is a necessity for all future students.

Secondly, it should be possible to get credit from being an entrepreneur during your time in university. This is something that Lahti, Satakunta and some other UAS are experimenting with, and it should be more widespread to encourage the students to think entrepreneurial.

Finally, funding is seen as extremely important to ensure that this process continues, so, in Sakari Kuvaja’s words, *“Give us the money.”*

10. GEA COLLEGE OF ENTREPRENEURSHIP, SLOVENIA

Interviewees: PhD and Director of GEA College Research & Development Institute Jaka Vadnjal, GEA College of Entrepreneurship

Keywords: vision, mission and strategy, incubator, additional income, professional practical training, encourage business thinking, international connections

Facts and history

GEA College – Business Education Centre was founded in 1990.

Today GEA College is a stock company. The group cooperates with more than 300 domestic and foreign part-time and guest lecturers, trainers and consultants. The College has established domestic and international partnerships with more than 20 universities around the world. The group has developed more than 160 educational and training programmes. The average yearly number of students varies between 1,200 and 1,600; the average yearly number of trainees is around 1,000. The number of employees is 35 in 2008.

GEA College Group consists of three institutions: *GEA College of Entrepreneurship*, GEA College – Schools for Further Education, and GEA College – Business and Executive Training Centre

GEA College of Entrepreneurship is a specialised private school with a public concession that offers quality practical education at both undergraduate and postgraduate level. The school seeks to ensure study groups which encourage individuality and interactivity. Learning is based on exercises. Students visit companies and write practical seminar studies. Professional practical training in Slovene or foreign companies is obligatory.

Secondary school students of different profiles enrol at GEA College of Entrepreneurship. The undergraduate study programme at GEA College of Entrepreneurship attracts especially young people who wish to acquire practical skills and operational experience.

The difference between the college and for instance the economic faculty at the university is that the college cannot do PhDs. That is a barrier for further development of the college activities for instance in a more research-oriented direction.

Strategy

GEA College of Entrepreneurship has a vision, mission and strategy for teaching and research in entrepreneurship.

The vision statement says:

“GEA College wishes to become the leading school for the training and education of dynamic entrepreneurs in Central and Eastern Europe. The College will evolve into the centre for the creation of excellent projects in entrepreneurial education and interrelationships based on innovative entrepreneurship programmes. Innovations and entrepreneurial pragmatism are the key values of the system.”

The mission statement says:

“Our mission is to encourage entrepreneurs to acquire new knowledge and skills in the field of entrepreneurship, so that they can beat their competition and thus be successful in the modern market economy. We strive to search and to develop new knowledge, to transmit the present knowledge, and to educate and train enterprising young people.”

The strategic development goals are:

- To become the leading entrepreneurship school in Central and South-East Europe
- To develop and implement recognisable and elite education programme of entrepreneurship
- To establish a system for research and development activities
- To form strategic ties with representatives of leading industrial and service areas in the region
- To join with international experts which will help in the development of our core activities
- To establish an international organisation system of GEA College
- To establish a regional network of strategically linked educational institutions

It is relatively new that vision and mission are articulated in this manner. However, it is expected that it will have a certain positive impact on the institution.

Resources

GEA College of Entrepreneurship is 75 percent privately funded and 25 percent publicly funded.

The fee per year for study course in year 2008/2009 is:

- EUR 255 for the application fee per year

- EUR 3,890 for the tuition fee per year
- EUR 550 for the bachelor thesis

GEA College staff and network of outside team members generate some additional income by providing consulting to SMEs, providing expertise to government bodies and agencies in Slovenia and Western Balkans, mostly in the field of SME support policy, labour market activities etc.

Some income is also generated to support the development of new programmes by participation in several EU-funded projects.

Institutional infrastructure

There is a small business incubator at GEA College of Entrepreneurship – the AES Society of Enterprising Students – which helps students develop their ideas and start a business.

It is mostly a virtual incubator in which some part-time infrastructure is provided so that students can use computers, desks etc. On average, 20 students per year participate in the incubator activities. There is a staff member, a teacher, who is permanently in charge of providing mentorship to members. However, also other GEA College staff participate in some activities.

Teaching and learning

GEA College of Entrepreneurship offer the following study programmes:

- Full-time and part-time undergraduate study of Entrepreneurship in the Slovene language
- Full-time undergraduate study of Entrepreneurship in the English language
- Postgraduate study of Entrepreneurship in the Slovene language

The main aim of the programme is to encourage business thinking and activity among young people and to encourage young people to develop their own business opportunities in an enterprise. The programme includes general skills in the field of entrepreneurship, economics and management as well as specific topics for entrepreneurship: international cooperation, management, innovation, creativity, business growth, project management, marketing, finance etc.

Through the whole study process theoretical knowledge combines with practical experience (research and projects in companies, studying commercial examples, working on international projects, developing one's own ideas together with the ideas of other students, producing prototype products and intensely interacting with dynamic companies).

The most common methods of teaching study subjects are: teamwork in discussing problems (work in smaller groups); lectures are varied with presentations by successful entrepreneurs; student lectures – presentation of own products and services; the

study of commercial examples; commercial games and decision-making simulation, simulation of business negotiations, composition of different kinds of commercial detailed reports; preparation of personal business strategy, business clinic, business workshop; collective composition of innovative prototypes, the use of methods for developing creative skills; study visits to dynamic enterprises; student exchanges with foreign universities.

The final qualification is the Bachelor Degree in Economics.

Outreach

All the graduates of GEA College of Entrepreneurship are invited to join the Alumni Club GEA College. The purpose of the club is to maintain and to further develop the connections, networks and communication among graduates and postgraduates, to keep and to care for the affiliation to the College and to extend and strengthen the reputation of GEA College of Entrepreneurship in Slovenia and abroad. The Alumni Club strives for development and promotion of entrepreneurship and takes an active part in developing GEA College of Entrepreneurship, its programmes and students.

GEA College of Entrepreneurship has numerous international connections with partners and institutions for education worldwide, which has made it possible for more than 150 of the students to undertake part of their studies or practical training abroad.

GEA College engages in the local community mostly through students' activities which assist locals in organising events such as cultural activities, charities etc.

Development

The strong international dimension is reflected in the development of new programmes as well as in the present business courses and methods of study.

GEA College relies on two pillars of evaluation for the development purposes. It actively participates in the national scheme for higher-education quality which is based on the four components: quality of teaching, quality of infrastructure, quality of research and quality of international relations and networking. The quality of teaching is assessed yearly for every particular teacher and subject. When developing and updating programmes, end users – mostly potential employers – are invited to participate in working groups and add their own contribution to the final outcome.

11. HEC-ULG ENTREPRENEURS PROGRAMME, LIÈGE UNIVERSITY SCHOOL OF MANAGEMENT (HEC-ULG), BELGIUM

Interviewee: Sophie Vossaert

Keywords: collaboration with local business, cross-discipline collaboration, lecturing, motivational structures, simulation and workshop

Context

Liège University School of Management (HEC-ULg) is the result of a merger between a public university (the University of Liège (ULg)) and a private college of higher education (HEC Liège) whose history covers more than a century. HEC-ULg has about 2,500 students and is very active in national and international collaboration.

The work with entrepreneurship came about because the institution felt that their stakeholders in the region had some expectation as to their fulfilling their role in the economic development of Belgium in general and in Liège in particular. They had the chance to meet Professor Papin, who had worked with entrepreneurship in HEC Paris, using a specific approach for 25 years in which the students were active in their own education, and which build on strong, real partnerships with companies and entrepreneurs. This approach seemed very appealing to the main forces behind the programme in Belgium: the interviewee Sophie Vossaert and her colleague: Bernard Surlemont. Professor Papin helped start it and was there for the first six months to help set up the HEC-ULg Entrepreneurs Programme.

Strategy

HEC-ULg's missions are both to improve the managing and economic skills present within companies and organisations and to provide them with managers and entrepreneurs having a first-rate command of modern management concepts, practices and tools. HEC-ULg thus develops undergraduate and postgraduate training as well as research activities, while promoting those human values, behaviours and attitudes that are essential in managers: a global view of the international environment and a sense of responsibility, team spirit, ethics, value creation, solidarity, initiative and creativity. This has been central to the mission statement since the merger between HEC Liège and the Economic and Management Departments at the University of Liège in 2005.

HEC-ULg particularly emphasises entrepreneurship and innovation management. Using active teaching methods involving the students as actors of their own education largely contributes to it.

HEC-ULg's international vision is expressed through its numerous research activities in the fields of management and economics, the many fruitful contacts and partnerships it has with companies and universities worldwide as well as the ever-increasing internationalisation of its course programmes and teaching staff.

HEC-ULg's ambition is to back up its status as an international school by developing its strong points and by further increasing its quality requirements.

"The aim is to create the economic actors of tomorrow."

They are only in the beginning of the process but their aim is to reinforce entrepreneurship education from the first bachelor and through the entire curriculum ending with the Master in Entrepreneurship.

No specific action plans are developed for how the entrepreneurship education should be carried out. However, it is specified in the mission statement that the HEC-ULg has to promote, "a training contributing to the development of the behaviour and attitudes to be expected from future company managers (initiative, creativity, sense of responsibility, team spirit)" and "develop strong links with the business world (internships, visiting professors) and an international outlook", and "offering novel training courses, notably in the fields of entrepreneurship, logistics, new information and communication technologies and management of biotechnologies".

The entrepreneurship component is mostly apparent in the HEC-ULg and not integrated across the whole institution, i.e. the University of Liège, and there is a feeling that although the management agrees to the principles and the strategies of entrepreneurship education, it does not translate into a strong support.

Teaching methodology

In general the objective of HEC-ULg is to involve students as active participants in their own education. In the first years of a student's study "classic methods" are used, such as lectures, but gradually more and more contacts with the real economic world is introduced through case studies, company visits, project team work and business simulation. The students also have the opportunity to go abroad on an ERASMUS grant, and have an internship in a company. It is the experience that these elements are very popular with the students and one of the reasons why they choose HEC-ULg. A lot of courses are taught entirely by guest speakers, managers and entrepreneurs, and the institution also arranges conferences with guest speakers as electives.

The aim is to enforce the entrepreneurship education through the entire curriculum by encouraging all lecturers to use entrepreneurs as guest speakers as an illustration, to increase the use of entrepreneurial teaching methods: team projects, internships in companies, and to encourage students to participate in for instance the Entrepreneurs Student Club or in competitions such as 1,2,3 GO, L'Oreal Awards etc.

The masters programme (HEC-ULg Entrepreneurs) is run by a small number of people, and it is only a limited number of the staff at the HEC-ULg that is involved in entrepreneurship. Most of them are professionals, external teachers and mentors, and there is one pr. team. The programme is unique because the pedagogy is different. The students get eight real missions in companies, and they are sent out in companies from the beginning of the programme.

The programme is open to all faculties: Management, Engineers, Law and Architecture, etc. The only requirement is a Master's degree. This year the programme have had 18 participants, ten men and eight women, seven of these with an MA in Management, two Lawyers, one sociologist, one MA in Communication and seven Engineers. They are selected on the basis of an interview and tests, not on the basis of their academic grades, to ensure that they have entrepreneurial abilities, in particular motivation, desire to achieve, capability in teams and generosity but also availability to engage in this programme. The motivation has to be strong because it is a very intense programme.

"The success of HEC-ULg Entrepreneurs depends on the quality of the students accepted into it. Student profiles are a key factor."

They use a professional recruiting company to help choose the right people. They had 50 applicants last year and picked 18.

"The originality of this programme is that it links students, teaching staff and business people in a particularly efficient way and allows both teaching staff and business people to teach and mentor the students. That way of doing it is unique in Belgium!"

The ambition of this programme is to give students not only a solid background in Entrepreneurship but also a human training which will allow them to succeed in whatever will be their activities, such as starting out with operational responsibilities within a company, restructuring a department, innovation, creating their own enterprise, taking over a company or exploiting the technical innovations of their research. So the focus is not only starting ventures but entrepreneurship in all its senses.

The programme is based on a "learning-by-doing" pedagogy. There are not many traditional courses where the students sit in a classroom. Instead they go through eight different real missions in companies as if they were consultants hired by companies. They will work in teams of three students from different backgrounds. These teams will change at the beginning of each mission, and they cannot choose their colleagues. All the students work on the same mission (but not on the same project) at the same time and must accomplish all of them. The missions are taking place in real-life settings, in companies that have volunteered. Each mission, which lasts from two to seven weeks, is dealing with a specific management facet

Before and during each mission, specialists of the specific field, (Strategy, Marketing, Human Resource...) present some of the core theoretical developments of their own speciality and the pragmatic experience they get from their job (about four days per mission)

At the end of each mission, the students present their results in front of a jury composed of professionals. They must answer their questions exactly as if they are engaged by a company to do that.

The eight missions are:

1. Company creation. In the course of four weeks, students work on a project of creation. They have to write a complete business plan: test the idea, compose a management team, define the strategy and present a financial plan.

2. Rescue a company near bankruptcy. The students, supervised by consular judges or lawyers, try to help companies that are near bankruptcy in a step called in Belgium "enquête commerciale". Under difficult economic and social circumstances they conduct an audit of the company and propose a solution for the continuation or cessation of the business, if there is no another solution

3. Sales & negotiating skills. With a duration of two weeks, this is the shortest mission: one week of seminars on negotiating skills and one week of sales where each student spends a week in one of the shops of a distribution network, EUROCENTER, working as a salesperson. He or she is not only judged only on the sales level they achieve but also on their personal qualities and ability to integrate into the retail environment.

4. Takeover and transfer. Supervised by specialists in mergers and acquisitions, the students define the conditions of the takeover. In the first part of the mission, they analyse and value the firm. In the second part they take the buyer's place and analyse how to buy this company, and they establish the business plan of the future company.

5. Personal assistant to a senior manager/entrepreneur. This mission gives the students the opportunity to put into practice what they have learned during the first part of the year. It is carried out individually. As personal assistant to an entrepreneur or a senior manager, the student stays with the manager during about two months. The student has the opportunity to see daily exactly what the job of a manager is. He or she becomes the "shadow" of the manager/entrepreneur during all work hours. In his position as a right-hand man, the student can realise one or several projects for the entrepreneur.

6. Consulting in strategy and development. The aim of the mission of consulting in strategy and development is to confront students with concrete strategic issues and to develop their capacity to establish quickly a good diagnosis and to develop relevant recommendations, and their aptitude to interact real "customers" whom they have to assist and convince. Working as part of a consulting firm, each group of students is coached by a consultant.

7. International communication. Directed by communication and marketing specialists, students are in charge of creating an international communication plan for their client company. The assignment, which can involve the analysis of different market entry options, enables students to improve their skills in the use of media tools.

8. Entrepreneurship. This is a collective mission to organise the final event and a prize event for the programme. This mission runs in parallel with the other missions over the year, and it gives the students the experience of organisation and management of an event, finding funding etc.

After each mission there is an examination. The examination is in the form of a jury made up by company owners. The HEC-ULg has a database with about 1,300 names, and for each jury there are 120-165 participants each time. The student teams present their results, and the jury grades them and gives feedback.

The teachers also arrange for team feedback meetings after each mission, where the students discuss the way they worked with the mission, their communication and problems etc.

In the future they will work more with personal development, mindset etc. So far the teaching has focused on the tools for entrepreneurship.

Stakeholders

The team involved in the Masters programme work very closely with companies, and the partners and stakeholders are well aware of the focus on entrepreneurship. They support it and push to reinforce it. This is not something uniquely characteristic for the Masters programme. It seeps through the way the whole institution works.

There are also entrepreneurs in the Governance Council of the institution and they help to formulate the strategy.

For the HEC-ULg Entrepreneurs Programme they work mainly with small and medium-sized enterprises for the missions etc., but for funding they approach large companies such as PWC or La Poste, and have a good relation with them too. The institution in general also works with a number of companies that are “partners”, and the team behind the HEC-ULg Entrepreneurs Programme is considering extending the collaboration to create a foundation to support it.

Obstacles

The main obstacles are capital – financial and human capital. To do all the things that they want to, and to coordinate the Masters programme they need human resources. It is the same for the institution (HEC-ULg); it needs human resources to coordinate the activities, and it is very difficult to find people who have free time to devote to entrepreneurship education.

The HEC-ULg Entrepreneurs Programme is driven by a few people, including Sophie Vossaert, and that makes it vulnerable. That is also an obstacle.

Furthermore, the HEC-ULg is also a young institution, and there is a culture gap between the two organisations that are now merged. In HEC the way of working was close to the companies, and that was not the case for the university. This is still detectable among the people, although it is getting less apparent. The organisation is more flexible and independent – but is still a part of the University of Liege and that is not so easy to influence and make changes in.

“At a university level entrepreneurship education is peanuts.”

Factors of success

The most important factor of success is the support in the environment: companies, the organisation, well-known people in the area. That gives credibility to the initiatives that the institution takes.

Another factor is the success of the graduated students. This adds again to the popularity of the programme and to the institution and will eventually also rub off on the other departments. For the HEC-ULg Entrepreneurs programme the good connection with the entrepreneurs is also paramount for the success. The entrepreneurs are providers of missions; they sit in the jury for the examination, and their testimonials help recruit new students.

Recommendations

It is important to have teachers who are dedicated, but it is also important to have money. This continuous support is very important for the development of entrepreneurship education. It is important to have financial backing in order to be able to promote the activities aimed at spreading information about it.

“If you want to change the way people work and the way that the companies and ideas are developed you have to do entrepreneurship education”.

It should be clearer on the diploma that the students have followed entrepreneurship education.

12. HELSINKI SCHOOL OF ECONOMICS, FINLAND

Interviewees: Professor in Entrepreneurship Education Paula Kyrö and Professor in Entrepreneurship Markku Virtanen

Keywords: cross-institutional collaboration, external funding, goals and objectives, cross-discipline collaboration, pedagogical tool

Facts about the Helsinki School of Economics:

- www.hse.fi
- Established in 1911
- Main campus in Töölö, Helsinki and a satellite campus in Mikkeli
- Around 4,000 B.Sc.- and M.Sc.-degree students and around 300 Doctoral students
- Two three-year Bachelors' programmes offered in English, 13 Master of Science in Economics and Business Administration programmes and two MBA programmes
- Employs around 500 people, an estimated 52 percent of which are in teaching and research.
- Departments at the HSE:
 - Department of Accounting and Finance
 - Department of Business Technology
 - Department of Economics
 - Department of Languages and Communication
 - Department of Marketing and Management

Context

In Finland, entrepreneurship education has been on the agenda for a long time. The Finnish government included entrepreneurship in the national curriculum already in 1994 with a revision in 2004. Here, the Ministry of Education put forward the Action Plan for Entrepreneurship Education. In this action plan it is defined what is expected

from the educational institutions from primary level to tertiary level with regard to entrepreneurship education. Hence, Helsinki School of Economics (HSE) as a Finnish higher-education institution has dealt with the issue of entrepreneurship education for a substantial amount of time in order to adhere to the expectations put forward in the Action Plan. Actually, the HSE was the first school to have a professorship and a degree education in entrepreneurship and small-business management in Finland.

At the HSE, entrepreneurship is a separate discipline within the department of Marketing and Management. At the present time, the HSE has three entrepreneurship chairs with one of them dedicated to entrepreneurship education. A Master's degree programme in Entrepreneurship is offered at the business school as well as a Doctor of Science in Business Administration and Management with a major in Entrepreneurship and Small Business Management.

In addition to the degree programme, the Small Business Center at the HSE⁴ offers a minor in Entrepreneurship for all the students of the HSE. Moreover, the Small Business Center produces a 24-credit Academic Entrepreneurship Diploma which is offered to all the university students in the capital area of Finland. Students of the HSE may use the Academic Entrepreneurship Diploma as part of a minor in their bachelor studies by adding the module Creation of Innovative SMEs.

The Master's Programme in Entrepreneurship offers the students an outstanding opportunity to learn the tools and applications needed in solving the problems of value and innovation creation processes that managers, leaders and entrepreneurs faced in their everyday activities. The studies combine theory and practice and encourage students to develop their practical skills and creativity together with academic knowledge. Practicality is included by using cases and empirical examples among the main teaching methods.

Entrepreneurship-embedded strategy at the HSE

A new overall strategy for HSE was completed in the spring of 2006. In this strategy, the HSE has as a general operating principle to promote entrepreneurship together with partner institutions. Led by the national action plan of Entrepreneurship Education initiated by the Ministry of Education in 2004, the HSE wants to mainstream the entrepreneurship education which means that its strategy is to integrate entrepreneurship into all activities at the institution.

Entrepreneurship goals

One of the objectives of the entrepreneurship education at the HSE is a straightforward one – to create more graduate start-ups. However, the main objective is to build up the students' entrepreneurial attitudes – to foster entrepreneurial mindsets of which the students can then take advantage in their future careers – not only as entrepreneurs, but also in salaried jobs both in the private and public sector.

⁴ The Small Business Center at HSE specialises in training in entrepreneurship and business skills. Every year, about 3,000 entrepreneurs and key company personnel take part in its training programmes. SBC administers the New Business Center which is the incubator at HSE and offers business development, facility and equipment services to new or recently started companies.

Institutional infrastructures at the Helsinki School of Economics

The entrepreneurship education at the HSE is supported by a number of institutional infrastructures. At the HSE, special focus has been put on cross-disciplinary structures – in particular with regard to collaboration with other higher-education institutions in Helsinki. One of such inter-disciplinary structures is the new Aalto University.

The new Aalto University

As part of an ongoing university reform in Finland, three institutions (Helsinki School of Economics, Helsinki University of Technology and the University of Art and Design) will by 1 August 2009 join in a full merger to establish *the Aalto University* (the name refers to the famous Finnish architect and designer Alvar Aalto).

This new cross-disciplinary university will have approx. 18,000 students and 4,250 academic staff. It will be an autonomous entity separate from the government established as a private foundation. The new university will have an External Executive Board with seven people – five appointed by the government and two by industry. The board decides on the foundation's strategy, matters relating to the activities and economy of Aalto University. The board appoints a President to direct the foundation and the art and science community of the University. The board will be assisted by an academic committee, which works alongside it. This committee consists of representatives from the management, professors, other staff and students of the constituent institutions.

The Aalto University is a major national flagship project in Finland. The guiding principle behind the new university is that Finland's competitiveness in the future should be built on the ability to combine expertise in various fields in a superior manner in order to create innovations and successful corporate activity. Therefore, the purpose of this new university is to combine technology, design and business expertise in unique ways to support the success of Finland in the international economy. In the foundation charter, the foundation's initiators entrust the university with two demanding tasks: 1) to support the success of Finland and 2) to promote the welfare of the people and the environment.

In order to support this mission the Finnish cabinet has decided to prepare to allocate EUR 500 million in total funding towards the Aalto University foundation by the year 2010 on condition that other funding bodies commit themselves to a contribution of at least EUR 200 million. Other funding will include endowments from business and industry and other private financiers such as Nokia, which also has research collaborations with the university.

Entrepreneurship at the Aalto University

In preparing for the new Aalto University a number of tripartite theme groups have been appointed. These tripartite theme groups represent the three universities, and their task is to plan and implement sub-projects (guidelines for education, research, the third task and governance of the new university). One of the theme groups appointed is focusing on entrepreneurship, which signals that the new university will have a strong focus on incorporating entrepreneurship.

The Aalto University and the entrepreneurship theme are still works in progress, and at present the entrepreneurship group has only presented a number of overall headlines with which they work:

- Business incubator services
- Enhancement of business know-how
- New business models and areas
- Procedures for commercialising ideas into business

However, the new university will of course build on the existing institutions and their experience with entrepreneurship activities and entrepreneurship education. This, for example, means that some of the institutional structures already in place in the partner institutions will be incorporated in the new university.

This is the case for the Small Business Centre and New Business Centre at HSE. The New Business Centre will reshape its activities as the *Start-up Centre* at the Aalto University to be established in September 2008. All new venture and incubator activities at the Aalto University will take place in the Start-up Centre. The Start-up Centre will be located in Technopolis in Helsinki – a private technology centre operator that works to discover new companies and help them grow and succeed by combining office facilities with business and development services. Thus there will be a close collaboration with private businesses in the running of the incubator activities, too.

Entrepreneurship pedagogy at the HSE and the new Aalto University

Another key element in the new Aalto University will also be the teaching of entrepreneurship teachers and what pedagogy should be applied in the entrepreneurship education:

“Nowadays, the problem is that most of the programmes focus on increasing knowledge about entrepreneurship – the pedagogy itself has been deprived. In the future, what will be another dimension is to integrate the process – not the outcome as such, but the process – how to provide the abilities, awareness and readiness. That is the challenge of the new Innovation University.” Professor Paula Kyrö

Having a chair in entrepreneurship education means that attention is given to investigating what pedagogical principles will be relevant and efficient to use in entrepreneurship education. The research in entrepreneurship education at the HSE has resulted in a change of focus from teaching methods to pedagogy in entrepreneurship education. At the HSE the key is not whether you use lectures or case studies in the entrepreneurship education. It is rather a question of whether the chosen teaching method adheres to essential pedagogical principles.

“Should I use cases instead of lectures – that is not the point. The point is that students are setting the goals, they are making decisions, they commit them to the processes, and they also find means to do their work. So whatever method it is – if it allows this, then it can be used.” Professor Paula Kyrö

Hence, based on research on entrepreneurship pedagogy conducted at the HSE and partner institutions the goal is that the guiding pedagogical principle at the Aalto University will be that students must be critically searching for knowledge instead of receiving knowledge. Also, the education must be arranged in such a manner that students learn to apply and adapt knowledge in a real-life situation. So when planning, conducting and evaluating learning at the new Aalto University, the aim is to take into consideration these pedagogical principles.

The Aalto University is still in the planning phase where the visions and ideas of both the staff and students from the three institutions along with representatives from a number of ministries are taken into consideration. Other important stakeholders, from researchers to business representatives, have also been invited to participate in the ongoing planning process. It is possible to follow the establishment of the Aalto University at <http://www.innovaatioyliopisto.info/en/>.

Obstacles

One of the important and internationally shared obstacles that also the HSE deals with is the skills required to teach entrepreneurial. The pedagogical principle guiding the teaching of entrepreneurship at the HSE where the students are urged to take charge of their own learning is different from how teaching is traditionally done in academic institutions. Therefore, teachers need both new skills and confidence in entrepreneurial teaching:

"International research findings indicate that the problem is that the teachers don't believe that they are capable of teaching how to create and see opportunities and how to exploit them [the opportunities]. So basically what is needed is to strengthen teacher education." Professor Paula Kyrö

Recommendations

The two professors from the HSE would especially recommend enabling an easier exchange of faculty teaching entrepreneurship across countries and institutions. This type of exchange is taking place at the moment – e.g. the exchange programme initiated by EFER⁵, but such programmes are not widespread. The interviewees recommend that the EU initiates a flexible exchange programme of entrepreneurship faculty from higher-education institutions across the countries – European as well as others.

⁵ See http://ec.europa.eu/education/policies/educ/business/doc/efer_en.pdf for more information.

13. INTERNATIONAL MASTER OF ENTREPRENEURSHIP EDUCATION AND TRAINING (IMEET), AARHUS SCHOOL OF BUSINESS, UNIVERSITY OF AARHUS WITH PARTNERS, DENMARK

Interviewees: Professor, Director of Study Poul Rind Christensen, University of Aarhus

Keywords: action learning, ECTS, involving processes, problem-based learning, process-oriented learning, professional development,

Context

IMEET, the International Master of Entrepreneurship Education and Training (IMEET) was initiated by the International Danish Entrepreneurship Academy (IDEA), which is a Danish knowledge centre promoting and developing new entrepreneurship education initiatives among partner institutions comprising all Danish universities and almost all higher-educational institutions in Denmark. IDEA operates with a national centre and five regional centres embedded as autonomous units into multidisciplinary universities (www.idea-denmark.dk).

The regional centre at the Aarhus Business School, University of Aarhus has been the prime mover in terms of establishing the international master programme in entrepreneurship education IMEET. IMEET holds the following partners: the Danish University of Education, Rostock University, Helsinki School of Economics, Kingston Business School, Kingston University London and IDEA partners Copenhagen Business School and University of Southern Denmark.

IMEET was launched in 2007 with its first cohort of students from March 2008 and the next application deadline in December 2009. The first cohort consists of 18 students from Denmark, the Netherlands and United Kingdom. All of them are educators at higher-educational institutions, advisors or consultants.

The rationale behind IMEET is that the Danish government has developed a number of initiatives to promote entrepreneurship in Denmark. The educational sector – primarily higher education – has been attributed a major role in the process of creating more and better entrepreneurs to support growth and prosperity. Students' competencies must be strengthened and their inclination and courage to start their own business or participate in innovative development of existing ventures and organisa-

tions promoted. These ambitions put enormous demands upon the academic staff of higher-education institutions and upon those employed in the support and advisory systems. IMEET was developed in order to cater for these needs.

IMEET is thus not a traditional degree in entrepreneurship; however, it aims towards providing educators and advisors a solid knowledge on the frontiers in entrepreneurship and combining it with pedagogical competencies to teach entrepreneurship.

IMEET is an international master programme targeting a pan-European audience with planned sessions in Denmark, United Kingdom, Finland and Holland.

Goals and objectives

IMEET is targeted towards educators, consultants and advisors and it aims to develop participants' capabilities for entrepreneurship teaching and learning facilitation. The master integrates knowledge on entrepreneurship theories with action-learning methods and learner-centred approaches.

The ultimate goal is – over the years – to create a pan-European network of master candidates in entrepreneurship serving European higher educations. A network of people who can develop and present entrepreneurship programmes as well as teaching and advisory processes in new and innovative ways. The founders of IMEET plan to physically bring the future alumni of IMEET together regularly if they can find the financial resources to do so. The first session will be to bring both members of the advisory board, faculty and present students together in a working seminar to discuss under the heading "Frontiers in Entrepreneurship Education". The network will, among other things, be dedicated to the development of best practices and advancing competence in and mastering of entrepreneurship learning methods. The objective is, through this network, to give birth to a new generation of change agents who will promote the agenda of entrepreneurship in teaching and consulting. In order to do so the programme will facilitate new action-based learning experience and bring theory-based and experience-based learning modes in interaction.

The vision of IMEET

The vision of IMEET is to facilitate a learning forum in which you can educate an elite of teachers, trainers and consultants in entrepreneurship education.

In order to do so IMEET will

- Promote innovative pedagogical methods and participant-centred learning
- Advance and facilitate action-oriented learning methods
- Promote situated learning experience and models through reality-based learning processes
- Develop participants' knowledge of entrepreneurship and their competence base for developing entrepreneurship learning processes and programmes

Demand for IMEET

Prior to the launch of IMEET, the International Danish Entrepreneurship Academy initiated a survey to estimate the future demand for a master programme like IMEET. Results were that 75 percent of potential participants found the master programme interesting and were interested in participating. Two thirds of the identified potential participants were advisors and consultants, whereas the last third were teachers. The study showed that the general need was a formal and practical upgrading of theoretical knowledge and usable entrepreneurial and pedagogical tools that enable the participants to develop new course and consulting practices that would keep them in front in the interaction with entrepreneurs. This became the framework that IMEET was subsequently built around.

Programme content

To our knowledge IMEET is the only entrepreneurship master programme in Europe that is aimed at trainers and advisors. Other master programmes in entrepreneurship are aimed at international managers, people with technical experience, venture capitalists or investment bankers.

Module 1 – Fields for Learning Entrepreneurship (7½ ECTS)

Module 2 – Creativity and Enterprising Behaviour (7½ ECTS)

Module 3 – Experimental situated learning (7½ ECTS)

Module 4 – Field Project – Certificate Project (7½ ECTS)

Module 5 – Field work (7½ ECTS)

Module 6 – From Experience to Development of Models (7½ ECTS)

Master Project (15 ECTS)

Teaching and learning

IMEET aims to confront, combine and integrate academic and experience-based knowledge on entrepreneurship with action-driven learning principles and participant-centred teaching methods. IMEET thus promotes innovative pedagogical methods and combines participation-centred learning with action learning. The aim is to strengthen participants' knowledge of entrepreneurship and their competences (mastering) when developing entrepreneurship learning processes and programmes.

The study uses a number of different methods such as group projects, practical exercises, experiments, field work, e-learning, summer school, individual and group-based coaching and tutoring.

IMEET distinguishes between learning about entrepreneurship, learning for entrepreneurship and learning through entrepreneurship. Some of the methods used are labelled push-methods where participants are pushed through learning cycles where they are exposed to a mix of action, reflection, knowledge sharing and experimental learning.

International embeddedness

IMEET was established and developed using an advisory board of internationally highly-renowned experts in entrepreneurship education. Members of the international advisory board are Howard E. Aldrich from the University of North Carolina, Alain Fayolle from EM Lyon Business School, William B. Gartner from Clemson University, Bengt Johannisson from Växjö University, Heinz Klandt from the European Business School, Düsseldorf, Saras D. Sarasvathy from Darden School of Business, University of Virginia, David Smallbone from Kingston University, London and Chairman for the European Council for Small Business and Entrepreneurship (ECSB).

Challenges

One very discouraging challenge for IMEET is that many universities – including the host university of IMEET, University of Aarhus, Denmark – have very few resources for professional development for faculty. Thus the University of Aarhus has not been able to send any of its own faculty members as participants to the IMEET master programme – not from lack of interest on the part of faculty members but from lack of financial resources. The same is true for faculty members from other European universities. Originally almost 30 people signed up for the programme, but when it came to actually beginning the programme, only 18 managed to participate.

www.imeet.asb.dk

14. INSEAD, MAAG INTERNATIONAL CENTRE FOR ENTREPRENEURSHIP, FRANCE

Interviewee: Anya Navidski, Director, INSEAD Maag International Centre for Entrepreneurship

Keywords: entrepreneurship centre, action plan, action learning, alumni involvement, process-oriented learning, close to practice, mission statement, simulation

Facts

- Founded in 1957
- One of the world's largest graduate business schools with campuses in Europe (France) and Asia (Singapore) and two centres in the Middle East (Israel and Abu Dhabi)
- Overall standing and affiliate faculty totals 138 from 32 countries, and staff members across both INSEAD campuses total 512
- INSEAD MBA students total 887 of 76 nationalities, and executives programme participants total over 9,500 from 100 countries and 2,000 companies
- INSEAD has 54 PhD students of 51 nationalities

Context

Over the last 6-7 years important work has been done at INSEAD making entrepreneurship at INSEAD internationally recognised for its academic excellence alongside other top academic departments and disciplines. The strong research foundation in combination with relevant real-world, teaching is a key to success.

Today INSEAD has a large entrepreneurship department with a coherent and extensive entrepreneurial team comprising full-time tenure track professors, affiliate professors – star teachers – and adjunct professors from industry imparting their own experiences in entrepreneurship. Entrepreneurship is fully integrated in the curricula. The three key entrepreneurship pillars are: 1) entrepreneurship research, 2) relevance to real world skills and 3) high quality of teaching.

Each year about 80 percent of MBA graduates express an interest in starting their own business, and anecdotal data suggests that about half of these start their own businesses within five years of graduating.

Strategy

Entrepreneurship has a strong strategic embeddedness in the institution. After all the very foundation of INSEAD – the first ever international business school and the first ever one-year programme – and the subsequent opening of a second campus on another continent was an entrepreneurial act.

The mission statement mentions that:

“Through teaching we develop responsible thoughtful leaders and entrepreneurs who create value for their organisations and their communities.”

Besides, entrepreneurial spirit is one of the business school’s five core values and it says that:

“We are willing to experiment and innovate; we are ready to take risks and manage the results of our actions.”

Today there is ongoing work hiring a new Director for the INSEAD Maag International Centre for Entrepreneurship and writing of a business plan. The aim of this business plan is to further strengthen the sustainability of entrepreneurship education at INSEAD, to improve the interaction and exchange of experience between faculty, students, and alumni and to create a solid platform for funding. In this respect a business plan is seen as an important instrument to enlighten where the money goes and what the outcome will be.

Media coverage is also an important part of the strategy. Focus is on a higher profiling of successful entrepreneurs and their experiences and on communication about what INSEAD has to offer in this field to the general public, prospective students and other stakeholders operating in the entrepreneurship area. Concrete action is to engage a team of writers and communication experts specifically for entrepreneurship and to develop a concrete media plan.

Resources

INSEAD is totally privately funded.

The Maag International Centre for Entrepreneurship is currently funded on a five-year basis with some additional financial input from alumni and corporate sponsors for specific entrepreneurship initiatives.

However, in Europe there is no culture of giving back to the school you come from, unlike in the USA. To overcome this, the centre’s approach to raising the next round of funding is based on a transparent and accountable approach. It will be done on the basis of a business plan, which is currently being developed, and regular reports on outcomes of that spending.

Fees for the classes of the July and December 2008 MBA programme amount to EUR 50,000.

Institutional infrastructure

The Centre for Entrepreneurship plays a key role in ensuring, for instance, support for new entrepreneurship initiatives from the school's management. The centre liaises with other areas of the school and alumni organisations to ensure that the entrepreneurship strategy is well understood and well co-ordinated with other initiatives and priorities. Further the centre's management develops and proposes the strategy for entrepreneurship at INSEAD to the faculty and the school's management and works on building strong relationships with relevant external stakeholders. Admittedly, at the moment the work in this area is strongly driven by specific passionate and committed individuals but a framework is being set up to ensure sustainability in the longer term. In addition, the solid strategic embeddedness of entrepreneurship within INSEAD and the academic excellence of the entrepreneurship faculty ensure a sustainable development of this area.

Within the department there are three independent entrepreneurship centres; each with independent goals and funding.

A formalised structure involving the business community is also being put in place. That includes advisory councils to entrepreneurship clubs and an international advisory board for entrepreneurship which will bring expertise and insight into the business community's needs and wishes regarding students' entrepreneurial skills, input into INSEAD's strategy in this area as well as access to additional contacts and funding.

Furthermore, INSEAD has a 3i Venturelab, which was established in 1997. Its mission is to support the development of new insights, understanding and awareness of entrepreneurship and related areas. The Venturelab investigates ways in which the skills, attitudes and behaviour to support entrepreneurial skills may be understood and cultivated.

Teaching and learning

INSEAD offers a one-year MBA with both core MBA courses in periods one and two – which all students must take – and 19 entrepreneurship elective courses that students can choose in periods 3, 4 and 5. Students get the opportunity to develop their ideas into concrete full business plans, as well as to obtain real-world skills such as buying a company for oneself and running it for the first one hundred days. Around 80 percent of the students take an entrepreneurship elective course at some point. Typically there are no exams linked to an elective course. Instead students complete projects such as writing a full business plan or investment proposal and presenting it to real investors.

Teaching methods at INSEAD use a mix of more traditional teaching methods, such as lectures in the core courses, and simulations and more practical applications of skills such as actually going through the process of searching for a company to buy for oneself or going through a scripted reality TV-style class on running a company one recently bought. Real-life cases and interactive learning methods, such as bringing

protagonists of cases into the classroom, are at the centre of entrepreneurial learning at INSEAD. Some examples of courses and learning methods are:

Business Plan Workshop is an example of an elective course teaching students how to turn a venture idea into a full business plan and then how to effectively present it to real investors.

Entrepreneurship in Action is a course which uses a business-simulation programme that creates a typical start-up environment where the participants in teams take a start-up company through the B level of financing. The course lasts only four days but is intensive, with 18-hour days, anchored around a single weekend.

Realising Entrepreneurial Potential is another elective course for students who, rather than launching their own new venture, become entrepreneurs by acquiring an existing business and either turning it around or building up a number of companies. Students actually go through the process of searching for a company to buy, assess possible ways to add value to that business, and then develop and present an investment report to real investors.

Your First Hundred Days is another example of an elective course where the participants get a taste of what it is like to have managerial control of a company that the team has just bought. Before signing up for the course the participants have to form a management team of four, each person taking on a specific role in the company, which they will stay in throughout the duration of the course.

The course is not a “simulation exercise” but more a scripted “reality TV show”, where the participants are actually living through the first 100 days being confronted with the real business challenges and problems of running a recently purchased business. They are forced to make hard decisions and take responsibility for concrete actions.

The INSEAD Business Venture Competition is an extracurricular activity which is open to all MBA participants. Six teams go to the final and make presentations for a panel of judges composed of highly-distinguished early-stage investors and entrepreneurs.

Outreach

One of INSEAD’s strengths is a lifelong approach to entrepreneurship. Services and initiatives are designed not just for current students but also for alumni. The Maag Centre for Entrepreneurship builds strong relations with the school’s alumni. There is a strong international outreach and networking with alumni and key stakeholders led by two major, student-led, annual conferences, one on Private Equity – the IPEC conference – and one on entrepreneurship – the Global Entrepreneurship Forum. The Entrepreneurs in Residence programme provides mentoring for budding entrepreneurs amongst the students and alumni. The ability to connect with people who can advise or help is essential.

Content and research material is provided to the faculty allowing them to gain insights from the wide range of experience amongst the alumni. This accumulated knowledge and insights are then disseminated back to the alumni community. The faculty also takes a keen interest in topics or issues faced by the entrepreneurial

alumni and takes this into account in their research priorities. It keeps the school in touch with and in understanding of what is going on in the market.

Close relationships with alumni and stakeholders are also an important gateway to potential jobs for students. Some examples of INSEAD's outreach are:

INSEAD Entrepreneurship Newsletter was launched for alumni in 2003. It is a bi-monthly newsletter designed to keep entrepreneurs, investors and other alumni interested in entrepreneurship in touch and up-to-date.

The INSEAD VentureNet: an on-line networking tool for the INSEAD entrepreneurial community and selected guests currently being redeveloped and upgraded. It will provide a meeting place for ideas and a marketplace for projects, jobs, funding, services and knowledge embedded within this community.

INSEAD Entrepreneurship Club is designed as a forum for MBA students to share entrepreneurial ideas and experiences, develop networking opportunities with current and future entrepreneurs and provide access to entrepreneurial resources. The Club offers a wide range of activities such as speaker series and runs the Global Entrepreneurship Forum – INSEAD's international annual entrepreneurship conference.

INSEAD Private Equity Club (IPEC) for MBA students serves as a world-class forum for those interested in all aspects of the private equity industry. IPEC's goal is to provide opportunity for its members to learn about private equity, interact with key industry players and meet fellow students and alumni with similar interests. The club runs the IPEC conference – INSEAD's international annual private equity event.

Development

INSEAD has established a formalised feedback mechanism that promotes user-driven improvements. For instance students must fill out an evaluation form after each course and all MBA students fill out an exit questionnaire just before graduation.

This mechanism is supported by research and discussions with representatives from various industries to uncover current business needs and to ensure that appropriate skills are taught in the classroom.

Thereby the development of entrepreneurship education and resources is highly marked and user driven, with alumni as a core source of information.

Challenges and recommendations

The development of entrepreneurship education has not been easy. It takes time to create consensus within any organisation whereas alumni and other stakeholders, and entrepreneurs in particular, are used to the world where they can get things done quickly.

As a starting point you need a strong academic backbone and support from the management group. An important lever is to communicate the fact that entrepreneurship is closely related to other areas and that the whole institution can benefit from its development. Also, people more easily accept that entrepreneurs do things differ-

ently. There is therefore an opportunity for entrepreneurship areas to deviate from ‘the way things were always done’ and for successful measures and initiatives to be subsequently adopted more easily elsewhere.

15. ISM UNIVERSITY OF MANAGEMENT AND ECONOMICS, LITHUANIA

Interviewees: Virginijus Kundrotas, Headmaster of ISM University of Management and Economics, Lithuania.

Keywords: art, humanities, innovation, social sciences, student camp model

Context

ISM University of Management and Economics was established in September 1999 as the first private University in Lithuania. BI – the Norwegian School of Management and Innovation Norway and the Norwegian Industrial and Regional Development Fund were important contributors to the foundation of the ISM University of Management and Economics.

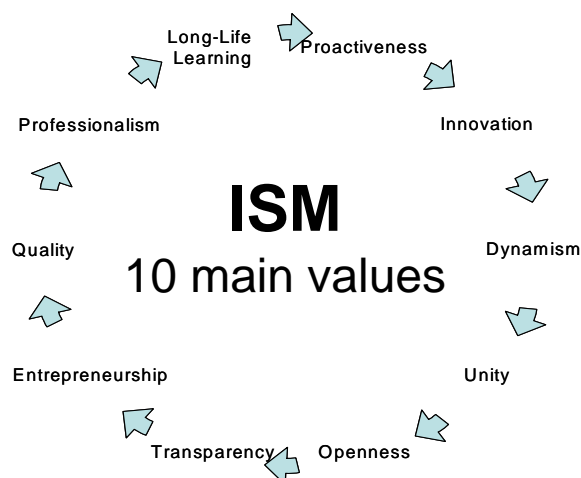
The university is primarily funded by the fees of the students. A small part of the funding comes from strategic partnerships with private companies.

The University has experienced a massive rise in the number of students with about 200 students in the year 2000 to a total of about 2,000 undergraduate, executive, graduate and doctoral students in year 2008. It has 36 full-time academic staff and 110-150 working part time.

Entrepreneurship embedded strategy at the ISM

In the "Strategic aim of ISM till 2010" the ISM has a general operating principle to promote entrepreneurship. The university has listed ten main values (see below) that are regarded as core values, and entrepreneurship is one of them. It is important to integrate these values in all activities at the University and have teachers with entrepreneurial mindsets to also stimulate the entrepreneurial mindsets of the students. The ISM wants to mainstream the entrepreneurship education which means that its strategy is to integrate entrepreneurship into all activities at the institution. However, it is possible to have specific entrepreneurship courses that primarily focus on basic competences in order to start up a company.

The value system of ISM University of Management and Economics



The ISM has a broad definition of entrepreneurship activities. It goes beyond the traditional understanding of the concept which primarily focuses on concrete competences in order to start up a business. These basic entrepreneurial competences in order to start up a company are of course regarded as important at the University and the students are offered optimal subjects where they can build up these basic entrepreneurial competences.

However, ISM defines entrepreneurship broader than this and one of the main objectives at ISM is to build up the students' entrepreneurial and innovative attitudes and to foster entrepreneurial and innovative mindsets which the students can take advantage of in their future careers – not only in their own company but also in salaried jobs in the private as well as in the public sector.

Entrepreneurship goals

The different institutions at ISM are not met with specific goals concerning the number of start-ups or other entrepreneurial and innovative activities among their graduate students. The institutes are met with the overall goal to stimulate the students' entrepreneurial and innovative mindsets and are told to organise the courses in a way that are in keeping with the ten main values of the ISM introduced on the previous page. The philosophy behind the concept of not defining any specific goals is that to formulate concrete goals about a specific number of start-ups among the graduate students will narrow the individual institute's way of manoeuvring and move away the focus on the overall ten main values of the university. Whether this approach is suitable or not are to be discussed but the ISM has some convincing figures to prove their way of thinking. One example is that 60 percent of a total number of about 69 graduates have started their own company among the first year of graduates at ISM in 2002.

The ISM has a number of very interesting activities going on in most areas within the six dimensions of entrepreneurship education defined in this project; strategy, resources, institutional infrastructure, teaching and learning, outreach and development. Within the area of "strategy" some interesting ways of thinking at the ISM are

described above which could be of interest for other universities which would like to promote entrepreneurship. The university has in particular also a couple of convincing examples of good practice within the area of teaching and learning which are presented in the following.

Teaching and learning

As mentioned above one interesting and rather untraditional element is the implementation of entrepreneurship as one of the ten main values of the university in all courses and not only having traditional entrepreneurship courses as an optional subject. In other words, the ISM intends to stimulate the entrepreneurial mindsets of the students in every lesson of their education. Most lecturers are Lithuanian and internationally renowned lecturers who are not only engaged in academic activities but also consult enterprises, and in this way they understand the needs of modern businesses well.

The pedagogical approach is primarily focusing on teaching in entrepreneurship and to a lesser extent about entrepreneurship. One example is that most lecture rooms and lecture halls are designed as so called "Harvard rooms". This means that the lines of students that are seated behind the front lines are physically raised so that the teacher is having eye contact with all students in the lecture room or lecture hall, and thereby no student can avoid the teachers' attention. The meaning of this is to create a dynamic and interactive environment during the lessons which in the end is one element of stimulating the entrepreneurial and innovative mindsets of the students.

Another example is the multi-disciplinary approach that is widely applied at the ISM. This is in a lesser extent the case within the individual courses but to a greater extent the case when you look at the different subjects that the students can choose during their semesters. Every semester each student has to choose a course within humanities or art studies. The art studies are very popular, and most students choose the visual art course. This course is very practical in its approach so the students learn actually to do their own paintings. The teachers and other staff at the ISM also have to do paintings and all over the university the walls are covered with paintings done by students or staff members. The pedagogical point of this is to break down the students' limits of what they believe they can do and not do which is another important aspect of stimulating an entrepreneurial and innovative way of thinking.

Outreach

The ISM put strong emphasis on their international relations, and the university is a member and a partner of international research organisations, international projects and exchange programmes dealing with academic, administrative and students' mobility, development of higher-education policies and research activities in Europe and beyond.

ISM is actively involved in many international activities, including close collaboration and participation in a number of international associations such as:

- Baltic Management Development Association (BMDA)
- Baltic Sea Region University Network (BSRUN)

- Central and East European Management Development Association (CEEMAN)
- European Foundation for Management Development (EFMD)
- European Institute of Advanced Studies in Management (EIASM)

The ISM believes that active international collaboration enhances university awareness and attracts more international students and researchers to ISM.

Internationality is one of the key aims of ISM. Exchange programmes are one of the most efficient ways to enhance students' intercultural competences, form a broad attitude, and train specialists to be able to respond to the challenges of international business.

Besides the good arguments for internationalisation the ISM also believes that a strong international environment is another important element of stimulating the entrepreneurial and innovative mindset of the students. Therefore the university wishes to have a high number of international students. In 2008 the number of international exchange students is about 5-6 percent of the total number of students and by 2010 the university wants to raise that number to 10 percent.

Obstacles

The ISM is a rather untraditional and innovative university particularly compared with other universities in Lithuania. This gives the university a huge challenge in recruiting qualified staff members that understand and accept the ISM way of thinking which is not traditionally academic but much more dynamic, interactive, innovative and entrepreneurial.

The new and untraditional way of thinking is also a barrier to obtaining additional funding from company fees. The companies themselves have to be untraditional and innovative in their mindsets to fully understand and accept the ISM way of thinking and thereby feeling the need to support the university.

16. IT UNIVERSITY OF COPENHAGEN, DENMARK

Interviewees: Jørgen Staunstrup, Provost

Keywords: close to praxis, collaboration with local businesses, student incubator, business studies, curricular embeddedness

Context

Entrepreneurship has been part of the curriculum for all students at the IT University in Copenhagen since the establishment of the university in 1999. The main driving forces in setting entrepreneurial education on the agenda at the IT University come from an internal wish to stimulate the entrepreneurial mindset of the students. There are no external forces or outside pressure at the political level demanding the university to integrate entrepreneurship.

Creating value for the Copenhagen area is a core value for the university and due to this the university has built close cooperation with private companies. In this context it seems natural for the university to integrate entrepreneurship in the curriculum.

Strategy

The strategy for the ICT University has as a general operating principle to promote entrepreneurship. Several formulations about entrepreneurship are included in the strategy; among them a general wish to inspire more students or candidates to start up their own company. The ICT University also wishes to improve the entrepreneurial competences among the students so that more sustainable companies will be established.

Entrepreneurship is embedded across the whole IT University and integrated in the top management. The provost of the IT University has the strategic responsibility for the entrepreneurship activities.

Entrepreneurship policies

The IT University has implemented entrepreneurship-friendly structures to support staff members as well as students in establishing their own company. One example is that they can be on leave to spend time to develop their own company. Another example is the incubator at the IT University called "5te" where staff members/students and external start-up companies can have offices at cheap prices, be part of a network of entrepreneurs, and have access to different types of private counselling and

counselling among staff members at the IT University. The incubator cooperates with the “Væksthus Hovedstaden” which is a large incubator environment for the whole Copenhagen region which also has access to capital resources to support start-up companies.

Entrepreneurship goals

One of the objectives of the entrepreneurship education at the IT University of Copenhagen is a straightforward one – to promote the creation and sustainability of more graduate start-ups. However, there are no concrete goals defined in the strategy concerning the outcome of the entrepreneurial activities.

Teaching and learning

The IT University has many interesting activities in the area of teaching and learning. In the following some of them are presented.

Courses

One interesting and untraditional element is the implementation of entrepreneurial activities in **most** courses and not just having entrepreneurship as optional subjects. Having realised that many of the graduates start their own business it is considered important to teach basic elements of starting up a company to all students at the IT University. Another and broader point of integrating entrepreneurial activities in courses is the ambition to build up the students’ entrepreneurial attitudes to foster entrepreneurial mindsets which the students can take advantage of in their future careers – not only as entrepreneurs, but also in salaried jobs both in the private and the public sector.

Teaching methods

Another interesting aspect of the entrepreneurial activities at the IT University of Copenhagen is the high level of cooperation with companies or other private and public organisations. One example is the high share of external teachers, and more than half of the teaching staff are external people.

Another important aspect is that 60-70 percent of all student projects are carried out in cooperation with companies or other private or public organisations as an integrated part of the education programmes. This builds strong links between the companies and the students who are often hired in the same companies after their graduation.

One last example is the high degree of multidisciplinary approaches within the IT University. The university is elected as the most multidisciplinary university in Denmark. This is partly due to the fact that to be accepted as a student at the university you must have a bachelor degree from another university. This results in classes where the students have many different academic backgrounds, and there is a challenge in making these people reach the same level of understanding and work together. Overcoming this challenge can be an important tool for the graduates to bring with them to their work life.

These teaching methods are very positively evaluated. The IT University was elected as the most entrepreneurial university in Denmark in 2003 and again in 2006. One of the

reasons for achieving the prize was that 33 percent of all students had started or were thinking about starting their own company.

Obstacles

The main barrier that the IT University has met when engaging in entrepreneurship education is the cultural one. In general, there is a lack of entrepreneurial thinking in Denmark.

17. JOHANNES KEPLER UNIVERSITY LINZ, INSTITUTE FOR ENTREPRENEURSHIP AND ORGANISATION DEVELOPMENT, AUSTRIA

Interviewees: Univ.-Prof. Dr. Norbert Kailer, Dr. Tina Gruber-Mücke and Mag. Alexander Stockinger

Keywords: action learning, close to practice, extracurricular activity, innovation, media coverage

Context

The Johannes Kepler University, situated in Linz, the capital of Upper Austria, has three faculties. At present, some 13,500 students are enrolled. The Faculty of Social Sciences, Economics and Business is by far the largest, followed by the Faculty of Law and the Faculty of Technical and Natural Sciences.

Since the mid-nineties, the idea of promoting entrepreneurship gained momentum in Austria. Statistics showed that only 2 percent of the academics wanted to start a business, so there was an increasing political interest in promoting the number of start-ups.

Entrepreneurship started as a so-called project study (i.e. with two or three courses). In 2000 a first endowed chair for entrepreneurship was temporarily installed for three years. It was subsidised by the town of Linz, by a local bank and by the government of Upper Austria and situated in the Faculty of Social Sciences, Economics and Business. The field was new, very practice-oriented and entrepreneurs and consultants were introduced as lecturers. It met a high demand from students and showed soon to be very successful.

This led to a strong consensus for setting Entrepreneurship on the agenda and resulted in the decision to put Entrepreneurship into a regular institute, and the Institute of Entrepreneurship and Organizational Development was founded in 2003. A cooperation agreement with a local academic high-tech incubator (within the framework of the state-subsidised Academia + Business Programme) was launched, and the institute started working together with the incubator as a professional training partner for its entrepreneurs-to-be. Today the institute still cooperates with the incubator.

Strategy

The first step was to establish entrepreneurship in research and teaching at the university, to establish and run a curriculum and to foster networks with the local support institutions.

The second step was to add a further education initiative in entrepreneurship education especially for non-business students in cooperation with the incubator.

The third step is a broader roll-out, focusing for instance also on the Faculty for Technical and Natural Sciences and the University of Fine Arts in Linz, making this area a strategic issue for the whole university.

Entrepreneurship is not yet mentioned in the University's overall mission statement or as a core value. In the mission statement you will find, that:

"JKU contributes to a high degree to the strong technology and export-oriented economy of one of the most dynamic states not only in Austria but also in Europe through its quality in research, teaching, technology and know-how transfer, through its graduates and the international orientation."

However the University is in a redefining process and much point to the fact that entrepreneurship education will soon be embedded in the overall strategy of the University. A new development plan up to 2020 is currently under way which will include entrepreneurship in research and teaching. The strategic target is to improve the student's entrepreneurial attitude and to position the university as an entrepreneurial university.

Resources

Originally funded by private and public stakeholders, the Institute for Entrepreneurship is now it permanently funded by the university and the ministry of science, respectively. There is a student fee of EUR 360 for each semester enrolled at the Johannes Kepler University.

Resources are a restriction for growth. Making entrepreneurship education a strategic issue will demand more resources.

Institutional infrastructure

The Institute for Entrepreneurship is part of the Faculty of Social Sciences, Economics and Business. The institute coordinates all activities regarding entrepreneurship education, including strategic planning, research, teaching, curriculum development, media etc.

The staff includes one full professor, three assistant professors and one person for administrative affairs as well as external lecturers (for instance entrepreneurs, consultants, representatives from banks, chamber of commerce).

There is a *local incubator for high-tech companies*. Approximately 12 start-ups can be located in the incubator. During their two-year stay in the incubator they can work

out a business plan, develop their strategy and find their first clients. The entrepreneurs can get cheap loans, training and mentoring.

Teaching and learning

The institute offers around 20 courses, each one or two hours a week (i.e. approx. 1,500 course examinations per year).

Students must pass eight or 16 hours, depending on their extent of specialisation in entrepreneurship. Students choosing the specialisation of "entrepreneurship and organisational development" have obligatory courses as well as elective courses (specialised seminars).

From 2009 onwards the bachelor-master-study system will be introduced. While until now the programme concentrates on the master level, in the future the institute will offer additionally elective courses for bachelor students

Business administration students are the core target group with approx. 220 graduates per year. Out of this group, there will be final examinations in entrepreneurship with 110 students – i.e. an average of 50 percent of the students take a specialisation in entrepreneurship. About 50 graduates from the institute have started a business since 2003 and about the same number is working in institutions supporting entrepreneurship (for instance chambers of commerce, technology centres, and start-up consultants).

The courses in Entrepreneurship are mainly focused on students from business administration. However, students from other faculties can participate in interfaculty seminars with business students, and a growing number of courses are especially offered for students of engineering and natural sciences. The institute is very aware of the (political) focus on high-tech start-ups. While as a starting point it has been very important to get the courses deeply rooted within business administration, the next step is to broaden entrepreneurship education out to the whole university.

The institute has an *Innovation Lab(oratory)*, which consists of three modules (one-semester courses). It is a very practice-oriented interdisciplinary seminar for around 30 business and engineering students. There are three steps: 1) development of product ideas; 2) feasibility studies made by teams; and 3) optional: product development. The participants work independently and intensely in groups of four and five persons. They work on their own idea, make presentations and get coaching. Both technical students and entrepreneurship students can get credits here. Entrepreneurs from outside the university can also participate.

Bizkick is another example of the practice-oriented approach of the institute. First of all, the students have to develop their own start-up ideas. Then, they have six weeks and a start-up capital of EUR 10 to implement these ideas, to find partners and customers and to make some revenues. Finally, a jury of experts from business and science chooses the best teams among all the mini-start-ups.

The roll-out strategy is that entrepreneurship education will be continually expanded during the next years. Entrepreneurship will be included in master curricula in the

fields of business administration, technical and natural sciences. Hence, it is expected that the average number of 1,500 course examinations will rise considerably within the next years.

The institute is engaged in a lot of extracurricular activities, for instance the *"pond race"* which was organised in cooperation with the student organisations and was a large success. Many people, including the rector, participated in this charity race around the pond on campus, where each round equalled one Euro for charity. More than 3,000 Euro were raised in this event. The idea for this event originated from Bizkick, the innovative course mentioned earlier. Another example is the nationwide business plan competition *ideas2business i2b*, which is subsidised by the Chamber of Commerce and a bank. There are also continual discussions with entrepreneurs (*"founders' dialogue"*) which are open to all students as well as to the public.

The teaching is in general very practice-oriented, and practitioners from the business community are present almost every hour in a course. In the main courses in entrepreneurship, which are conducted for 200-300 people, there is almost always one (renowned) entrepreneur or business consultant present. This is a strength and very important for the students – and it makes the courses especially attractive as the students will meet with a lot of persons from the business community and other relevant stakeholders. This allows them to build up networks which can be of great importance in case of a later start-up.

The institute gets very positive feedback from the students, and there are several examples which prove that participating in entrepreneurship courses, discussions, writing a business plan, meeting entrepreneurs in the classroom or during field studies has opened a new career option for students.

Outreach

The institute tracks alumni and identifies how many students have started their own business or have become a business successor. A brochure has been elaborated, presenting testimonials of successful entrepreneurial alumni.

The institute has very close ties with the local industry and strong cooperation with the regional infrastructure, with the financial sector and with the Chamber of Commerce. Not only has the institute itself benefited from this network, but also the students. Besides that, the institute cooperates on the academic level with universities, both national and international, for instance in international longitudinal studies in the field of entrepreneurship or business succession. One example for a practice-oriented research cooperation was a project focusing on competency development for start-ups and SMEs which was conducted together with the Young Entrepreneurs Academy of the Chamber of Commerce and included studies as well as the development of HRM tools and training for SME leaders (with more than 1,400 participants).

Development

The university has a formalised evaluation system where the students have to evaluate the courses or modules they have participated in. There is also a more informal evaluation where the lecturers speak with the students in groups or meet with them

after examinations. Additionally, the institute conducts surveys among alumni on a regular basis.

Challenges and recommendations

At institutional level more money and capacity are necessary in order to promote entrepreneurship education. As a starting point, an overall strategic entrepreneurship concept which includes alumni tracking and networking should be developed. It should also be considered to anchor the resources in a centre for entrepreneurship and with a good balance between research and practice-oriented competences. It could be relevant to have both a research centre and a more practice-oriented centre for entrepreneurship – but closely interrelated.

18. KEMMY BUSINESS SCHOOL, IRELAND

Interviewees: Lecturer Briga Hynes, Lecturer Dr. Michèle O’Dwyer and, Junior Lecturer Yvonne Costin

Interviewed on Thursday, May 29, 2008

Keywords: Action learning, collaboration with local business, entrepreneurship centre, process oriented learning, involving process, close to practise, community engagement

Some facts and history

The Kemmy Business School is a part of the University of Limerick and is home to over 2,500 students, 100 faculty and staff spread across four departments: the Department of Management and Marketing; the Accounting and Finance Department; the Economics Department and the Personnel and Employment Relations Department. The entrepreneurship faculty resides within the Department of Management and Marketing, within the Kemmy Business School.

Entrepreneurship Education has a long history which goes back to the beginning of the 1980s, when Ireland’s industrial sector faced some serious challenges. Students needed to be more entrepreneurial and innovative in order to meet the business community’s needs and demands. The University acted quickly and in 1983 Entrepreneurship Education was introduced at the University of Limerick.

Strategy

Entrepreneurship is very much a part of the strategic agenda both at the University of Limerick and at the Kemmy Business School. The University’s management group is supportive of Entrepreneurship Education, and views it as a priority area in its strategic agenda.

Institutional infrastructure

The Department of Management and Marketing consists of five main groups: marketing, management, entrepreneurship, information management and project management. The Department is involved in a wide range of research, teaching and outreach activities. The Department has three dedicated research centres, namely, the UL/IMI Centre for Marketing Studies, the Centre for Information and Knowledge Management and the Centre for Entrepreneurial Studies.

The Centre for Entrepreneurial Studies was established in 1992 and has a clear goal to undertake long-term, leading-edge research on entrepreneurship and the SME sector. The Centre formalizes all entrepreneurship activities including funding, teaching, research and outreach activities and is led by a professor of Entrepreneurship and Innovation. The Centre seeks to enhance the development of entrepreneurship both in the Shannon region and the Irish economy in general. It is a recognized Centre which highlights the strategic importance of entrepreneurial activities at the University.

The Centre's research agenda focuses on a range of issues including understanding the entrepreneurial process, the significance of SMEs, the impact of the intervention agencies, entrepreneurship theory and graduate entrepreneurship. More specific research areas are: innovation in SMEs, female entrepreneurship, entrepreneurship education, family business issues; entrepreneurship growth and development; entrepreneurial marketing and strategy development in small firms.

The Centre has established close links with the National Technological Park (in which the University is based) which is managed by Shannon Development, a regional enterprise support agency. Though there is no formal agreement between the Technological Park and the University of Limerick, the entrepreneurship faculty at the Kemmy Business School have contacts within the Park that they can call upon should a graduate require support for a nascent and/or established enterprise.

Teaching and learning

The Entrepreneurship programmes operate at both undergraduate and postgraduate levels. They range from structured courses consisting of lectures, assignments, case studies and readings to innovative, integrated programmes where students actively participate in the small business sector through the business consulting module offered at undergraduate and postgraduate level, develop business plans and are exposed to prominent entrepreneurs, both national and international.

All students on the full-time Bachelor of Business Studies programme take "Entrepreneurship and Innovation" as a module in year 2 of the four-year programme. Approximately 500 students take the "Entrepreneurship and Innovation" module. This module - Entrepreneurship and Innovation - is designed to encourage students' entrepreneurial behaviour through the introduction of the principles of entrepreneurship, the process of creativity and innovation, and the impact of this process on the success of new enterprise creation.

In addition, students are offered an 'Entrepreneurship' stream as a Minor option. It covers semesters during year 3 and 4. An increasing number of students are choosing entrepreneurship as a minor option. The minor option in entrepreneurship has three focal points: Enterprise Formation, Enterprise Development and Business Consulting.

The module '*Enterprise Formation*' contains models of entrepreneurship, enterprise culture, the entrepreneurial process and an analysis of the birth, growth and development phases of a new business. It has three key objectives: first, to develop students' understanding of the entrepreneurial process and the role of small firms in economic development; second, to identify and evaluate external and internal factors

that have an impact on business start-up and third, to facilitate students in developing a range of diagnostic, analytical and decision-making skills necessary for the formulation, development and evaluation of a business start-up.

The module *'Enterprise Development'* is a far a more experimental module starting with a short lecture course focusing on the business plan. Then students identify a business opportunity they want to investigate further. They develop a business plan, work in groups and with a supervisor. There is no final exam. Students are assessed on the different components of the business plan. They need to be able to have a document that they can present to a development agency or a funding institution that will allow them to get support and/or funding.

The module *Small Business Consulting* involves teams of four to five students from different disciplines and they offer consulting services to a small company in the region. The students are given a client who has a business problem and they are supervised by lecturers from the Kemmy Business School both in order to ensure that the students are on the right track in their work and to ensure that the work is in accordance with the Kemmy Business Schools quality standards. At the end of the module the students present a formal report to the client. For the students it is a very challenging project where they use all the tools that they have learned. The module is important to have on the students' CVs. Over 500 companies have been involved in this module over the years.

In general, experiential learning is encouraged through the continuous exposure to real life entrepreneurs. Entrepreneurs visit to give seminars on being an entrepreneur and provide applicable case study material. Entrepreneurship faculty often write case studies that are adopted in tutorials. Enterprising learning modes are used to teach entrepreneurship. The faculty has adopted this method through attending training programmes like the Entrepreneurship Colloquium on Participant-Centered Learning at Harvard Business School and the International Teachers Programme.

Entrepreneurship education is spread out not only to business students but also non-business students, which is very important because non-business students often have ideas but do not know how to realize them.

The Master of Business Studies in International Entrepreneurship Management is a 12 month programme. It is a mixed class of entrepreneurs, recent graduates and graduates with 4-5 years experience. The students are motivated by several factors such as a wish for growth or for expanding to international markets. Students will have to do a thesis which is their own piece of independent work.

Entrepreneurship is also part of *the Corporate MBA programme*. Students are senior management in organisations, which is a much more focused group - and in some cases looking for self employment as a future career option. One programme is delivered at the University while another programme is delivered in Clonmel. In general, the Cooperate MBA programme has delivered some good success stories where students have moved to international markets and obtained venture capital funding.

The lecturers in Entrepreneurship are also engaged in extra-curricular activities such as seminars, workshops, talks, advisory services, mentoring activities etc.

Outreach

Kemmy Business School has strong links with the local and national business community and is involved with state bodies such as Enterprise Boards, the Innovation Centre and organisations such as the Limerick City Development Board.

Over the years a strong network of SMEs and entrepreneurs has been built up. As a result, students find employment in some of the SMEs, e.g. on a part-time basis.

There is contact with alumni on an individual basis and they are invited to come back and give guest lectures and function as role models. In addition, alumni are a part of the course board for the MBS in International Entrepreneurship Management programme. The concept of the alumni is slightly different from the US concept where alumni play an important role in funding for instance.

Entrepreneurship faculty at the Kemmy Business School are also engaged in different levels of the Community for instance in socially, disadvantaged areas. In Limerick there are areas - with high unemployment and with social and economic disadvantages - where the Kemmy Business School is involved in community groups and advisory boards and with the development and support of enterprises. Also, the students are involved in social and commercial projects through the business consulting programme at undergraduate and postgraduate level.

Development

Each one of the modules are evaluated by students who participate on the programmes – these evaluations are private and only shown to the relevant faculty member. The modules score very high on satisfaction on a regular basis. However, what can be done better in the modules and whether there is a need for change is always being considered by the entrepreneurship faculty. Concerning the MBS in International Entrepreneurship Management, student and faculty focus group are carried out on an annual basis. In addition, throughout the semester lecturers are in continuous contact with students and get feed back which is taken into consideration.

Challenges and recommendations

Resources are a key challenge. Teaching entrepreneurship is quite resource driven and it requires the goodwill of faculty to go beyond the typical kind of lecture-driven education. Another challenge is that the efforts within this field must be recognized at a higher level.

Therefore it is necessary to highlight the benefits of entrepreneurship education and that it also has something to do with the image and the perception of the school. For instance, entrepreneurship education addresses the needs of the business community and gives a high student satisfaction.

The government can also be more supportive by giving entrepreneurship education more focus at the local schools for instance. Then it would be more natural to follow

an entrepreneurship path after leaving school. From that point of view “teaching the teachers” and having supportive tools for teachers at the local schools are also important factors.

19. KREMS BUSINESS SCHOOL, AUSTRIA

Interviewees: Dr. Anton Zeiner, Department of Management and Economics
Interviewed on Tuesday, June 10 2008

Keywords: Close to practice, action learning, intrapreneurship, self-realisation, incubator, alumni involvement, collaboration with local business, process-oriented learning, problem-based learning, curricular embeddedness

Facts and history

The Danube University Krems has specialised in postgraduate academic studies. More than 3,500 students (500 in the MBA area) from 50 countries are enrolled in over 150 academic courses. The average age of students are 40 and 35 percent are females. 11 percent of the students take economics and management courses.

The history of Entrepreneurship education goes back to 1991 where it was launched as a reflection on the Austrian company structure. SMEs play an important role and with a growing globalisation entrepreneurial and innovative skills became more and more important. An entrepreneurship MBA programme was developed primarily with the aim to educate members of family companies and SMEs.

The MBA programme in Entrepreneurship was very successful and it can be seen as a frontrunner for the establishment of the university in 1995. The university's MBA programmes are mainly market driven – meaning that they are based on what skills the market need. In that sense it is very important that the university itself acts entrepreneurial and innovative.

From year 2000 the university offers a specialised two-year MBA programme in Entrepreneurship. The first year is focused on general management topics, while the second year is specialised in entrepreneurship. The programme – Danube Professional MBA Entrepreneurship – is offered within the Department for Management and Economics (Krems Business School).

Strategy

Entrepreneurship education is very essential to the university. However, it is not mentioned in the mission statement and there are no specific strategy and policies in this field. Education in Entrepreneurship and Innovation are recognised by the Rectorate and have full support which gives a certain autonomy to act in this field.

The university has no research activities within the field of Entrepreneurship.

In general the university operates in a very competitive and market-oriented environment and must therefore behave entrepreneurially. It is important to find innovative ways to position our programmes and to find students. That part concerns the whole university.

Resources

The university is a private institution. A minor part of the funding comes from local and central authorities, and around 80 percent of the costs are covered by own earnings, i.e. fees coming from the students participating in the programmes. That gives a strong incentive to act entrepreneurial and innovative.

There are no internal lecturers from the Danube University Krems linked to the Entrepreneurship programme. Right from the beginning the model was that only external lecturers, including the ones from the USA and Germany, are used to give lessons in Entrepreneurship. This model has appeared to be very flexible and ensures both high-quality education and highly-satisfied students. People from the business community, from leading consultancy companies and renowned entrepreneurs are also brought in as lecturers. Besides graduates from the university are invited to come back and give lectures. In general there are a lot of stabilities in the staff of external professors and around 70-80 percent have been associated with the department from the very beginning. This gives continuity in the education.

The admission fee for the course – the Danube Professional MBA Entrepreneurship – is EUR 23,900.

Infrastructure

There is no Entrepreneurship Department but a coordinator of entrepreneurship education. Nevertheless it is the plan to hire a fulltime professor in Entrepreneurship.

The Entrepreneurship programme is open to students from other faculties and departments and they can easily enrol in a module without any costs (to some degree they have to pay) – but one cannot say that Entrepreneurship education is integrated across the university as such. However, there is an entrepreneurial spirit in most of the MBA programmes.

The university has a Business Incubator on Campus which is a federal initiative that started 3-4 years ago. There is a team that can assist the entrepreneurs and it is also possible to get a loan to finance start-up costs. Focus is on high-tech entrepreneurs. Students at the MBA programme can use the incubator. It is seldom, however, because most of the students already are in firms. The incubator is also open for staff members of the university. Around 15 projects are located in the incubator, and they can remain there for two years.

Teaching and learning

In general the university's aim is to develop a more entrepreneurial spirit among people already employed in existing organisations and SMEs.

Professor Bouchaib Bahli, the head of the Danube Business School at the university, stated that *"our students are the future business leaders. Hence, we need to equip*

them with a mindset that gives them the capabilities, skills and knowledge in this area so they can lead their organisation and achieve better performance.”

Each year around 15 students specialise in Entrepreneurship. 85 percent of the students are part-time students. Typically two third of the students are already employed in existing companies, and one third are already entrepreneurs. The rationale for students to begin an entrepreneurship education is that they have realised that their former education did not provide them with enough skills in entrepreneurial behaviour and innovation. There are also several students who want to set up business in central and Eastern Europe, which is not so easy, and they demand new skills and new contacts. Access to a new network is an important factor for students who start an entrepreneurship education.

Danube Professional MBA Entrepreneurship is created for academics or equivalently qualified managers as well as new businessmen and women who have multiple years of professional experience and who want to start up a business and/or want to take on leadership responsibilities in a demanding management position.

The programme teaches management know-how und current methods and techniques to start up and manage businesses. The course is organised into six general-management modules and four concentration modules. The six general-management modules are Strategic Management, Managerial Economics and Applied Business Statistics, Applied Management & Corporate Financial Management, Human Resource Management, International Business & Trading Environment and Social Competences & Research Methods. The concentration modules include specific content which is particularly important for founding a business: creativity and mind management, entrepreneurship vs. intrapreneurship, opportunity-analysis, project management, business plan development, new venture growth, innovation and knowledge management and introductory sessions. At the end of the programme, the students take an educational trip to Eastern Europe.

One example of a specialised module is *Creativity and Mind Management*. The module sets focus on for instance: the roles of entrepreneurs as well as intrapreneurs; creative problem-solving techniques (how to give birth to new ideas); the roles of entrepreneurs / of businesses / of the business people during the development of the initial organisation in the pioneer phase (creating structures and processes, developing and building an organisational culture) etc.

The teaching methods depend on the specific course. The business school has developed a special “Krems Teaching Method” with four pillars: 25 percent practical knowledge – going in-depth using the experience gained by successful practitioners; 25 percent theory – communicating and expanding knowledge; 25 percent application – implementing the material learned and project work in one’s own company; and 25 percent case studies – learning and training by means of current business cases.

Teamwork and project work are very important and learning teams are set up at the beginning of the programme. The student learns to set up different kinds of teams

regarding different topics. However, it is also important to create a balance between teamwork and individual work.

The students are also door openers for visiting different companies.

Regarding teachers, it is very important for the students that we use practitioners who are also based in the academic world – it can be a challenge to find these skills.

There is a business plan award in Austria I-to-B driven by the authorities, the Chamber of Commerce and a large Austrian Bank. First prize is a place in the university's Professional MBA Entrepreneurship Programme which shows that the university is very well known in the entrepreneurship area.

Outreach

The Business School Krems has an alumni club. It is easy for graduates to keep in touch, and it is important for the university to keep in touch with them. Some of them go to foreign countries and have important experience to share. The school has also prepared a comprehensive alumni programme with the contents: specialised service, career service with job exchanges, culture service and information service with an Alumni database.

The university also tracks students for instance in order to uncover the number of graduates who start their own enterprise. The figures show that two or three out of ten graduates start their own business.

The department is in close contact with a lot of stakeholders such as the business community, entrepreneurs, other universities worldwide etc. Besides, the internationally renowned external lecturers also ensure a consistent exchange with the scientific community and international enterprises.

Development

Curriculum development is important and the school has – in earlier stages – been active in a couple of EU programmes with focus on conducting research aimed at curriculum development.

Today, there are plans to develop more compact and not so expensive courses. It can be a challenge for students especially in entrepreneurship to get funding and to participate in programmes that last two years.

Challenges and recommendations

One challenge is that the people – who plan to start their own business – often do not have enough money to start on an education. Normally their money is earmarked to start the new business. Official funding that can reduce the cost of education could help a lot. This would quickly improve the quality of start up managers.

20. LEON KOZMINSKI ACADEMY OF ENTREPRENEURSHIP AND MANAGEMENT/WARSAW POLYTECHNICS, POLAND

Interviewees: Prof. Stefan Kwiatkowski, Prof. Jerzy Cieslik, Dr. Svetlana Gudkova (LKAEM) and Dr. Agnieszka Skala-Pozniak

Keywords: business studies, compulsory course, cross-discipline collaboration, entrepreneurship professor, EU funding, mission statement, professional development

Context

The Leon Kozminski Academy is a private business school in Warsaw which was created in 1993. It offers BBA, MA, MBA and PhD programmes in business management and finance. Included in all these programmes are compulsory modules of entrepreneurship. The background for implementing these modules in the programmes was both the shift from an old to a new economic system for Poland, and influence from entrepreneurship scholars in the United States. As the post-Cold War era began, Poland had to adapt to a market economy and encourage Polish people to set up enterprises. At the same time, Professor Kwiatkowski was introduced to American researchers who convinced him that entrepreneurship teaching was the right way to proceed in order to achieve this goal – and in order to be attractive to students.

The goal of the entrepreneurship education at the Leon Kozminski Academy has ever since the beginning been to fertilise the ground and to establish an entrepreneurial culture among the students.

In addition to the entrepreneurship courses offered at Leon Kozminski, the academy by Professor Jerzy Cieslik is now responsible for a nationwide programme *Dynamic Entrepreneurship* to enhance entrepreneurship education in higher education in Poland, especially within non-business studies. Poland still has little experience in this field. To improve on this, the programme established a nationwide network platform and provided tools and mechanisms for a fast-track introduction of entrepreneurship courses at polytechnics, different universities, agricultural schools etc. The programme was initiated in 2004 and has received funding from the Polish government and the European Union. The first step was to test teaching methods, tools and cases at the Leon Kozminski Academy. This resulted in a textbook addressed to the academic community and a portal serving a variety of functions such as supplementary material and tools for the courses, a database for relevant cases, a toolbox with tips

for lecturers etc. Through the portal, lecturers and students across Poland can exchange experience and materials and other resources. First, the programme focused on students from the Mazovia region. 120 students from 32 different HEIs – mostly from non-business institutions – received entrepreneurship education. Later, the aim of the programme was to train trainers in entrepreneurship education. In the first round of the course, in 2006, 20 participants from different HEIs learnt teaching methods, tools and cases in entrepreneurship. A second round is planned.

Strategy

The word entrepreneurship is included in the name of the business school and thus proves the importance of the subject within the academy. It has been embedded in the overall strategy since the very beginning.

Also the very fact that the professor responsible for entrepreneurship teaching at the academy, Professor Kwiatkowski, is part of the leader group shows that the issue is given high priority.

Pedagogical tools/teaching methods

At the Leon Kozminski Academy several teaching methods are being used. Traditional lecturing is combined with case studies, student projects, guest lecturers, scenarios and workshops. At Leon Kozminski, none of the methods are seen as better than the others. It is the combination of methods that has proved to be the best way to teach entrepreneurship.

In the various programmes, some entrepreneurial courses are the same. However, most of them are adjusted so that all students are provided with appropriate knowledge. This also goes for the cases employed and the guest lecturers who are being invited to the different courses.

When the academy started teaching case studies they soon discovered the need for new and relevant cases. Until then, nearly all cases were based on experience from the United States. As neither the historical background nor the current situation could be compared to those of Poland, the academy started to produce its own package of case studies. They still develop the package and constantly include new cases.

In order to exchange ideas on pedagogical tools, staffs from the Leon Kozminski regularly participate in entrepreneurship methodology conferences. Also, researchers there have written and presented papers on this theme. They do not do pure research on entrepreneurship education, but they share experiences from what they see at their HEI with other HEIs.

The entrepreneurship staff engage in other sorts of research, however. Among others, Professor Kwiatkowski is responsible for a series of publications called “Knowledge Café”. Every issue focuses on one particular entrepreneurship theme and has a co-editor, often from a foreign university.

As a result of the *Dynamic Entrepreneurship* programme, over 1,000 students have been trained in entrepreneurship with the use of the methodology, tools, textbook and electronic platform developed within the programme. About 30 HEIs (mostly

non-business) across Poland have launched pilot entrepreneurship courses. None of these HEIs had prior experience of teaching entrepreneurship. One of these institutions is the transport department at the Warsaw Polytechnics. Here, Dr. Skala-Pozniak has introduced an elective course available to all students in the department. It has been carried out once, with great success. The course attracted a large number of students, and the students were satisfied with the course. A couple of them even started creating their own small businesses in the aftermaths of the course.

The course focused on high-potential, dynamic, innovative entrepreneurship as a distinct segment of the small-business sector. Traditional classroom lecturing was combined with web-based tools and the textbook generated by the programme. The local business environment was given particular importance and a guest lecturer with whom the students could identify was brought in.

Obstacles

Financial resources do not represent a problem for the Kozminski Academy. They receive the financing they need for both research and teaching.

One problem is the lack of time – the people engaged in entrepreneurship would like to teach even more entrepreneurship. However, this is not just a question of staff. It is also a question of the top management's will to put more focus on entrepreneurship in the different programmes.

Since entrepreneurship is not a formation, but part of the other formations at the Leon Kozminski Academy, one challenge is the practical aspect of how to fit the courses into already settled schedules. For example, students from two disciplines could be taught the same subject at the same time in order to gain some time. But the departments are not flexible enough to adjust to each other.

Another obstacle is that the academy is not yet flexible enough to provide courses for the most gifted students in entrepreneurship. According to the entrepreneurship teachers, there should be some courses at an advanced level to give special attention to skilled students.

When it comes to the *Dynamic Entrepreneurship* programme, Dr. Skala-Pozniak is the only lecturer in entrepreneurship education at the Warsaw Polytechnics. She is arranging the entrepreneurship course in addition to her duties as a researcher/lecturer in transport economics at the department. This is clearly an obstacle for developing the project further. However, another person who can assist in the course for the next semester will be trained.

Factors of success

The most important factor of success is support from the top management and the fact that entrepreneurship is written down in the overall strategy. Further, the fact that the academy has received both national and international recognition means that it attracts a great number of students and that it has advantages when it comes to cooperation with other HEIs who are recognised in the field of entrepreneurship.

Recommendations

There should be more meeting places for people teaching entrepreneurship in higher education. It is a challenge to change the attitude of students and all experience from other good practice institutions would be valuable for other HEIs.

One idea is to establish a programme for exchange (short term or long term) of lecturers. Another is to put in place a European network for entrepreneurship educators.

21. MAINOR BUSINESS SCHOOL, ESTONIA

Interviewees: Andres Arrak, Head of Business Management Institute

Keywords: collaboration with local business, incubator, community engagement, action learning

Context

Mainor Business School (MBS) started its activities as Mainor School of Economics (a private school) in the autumn of 1992. The school in Rakvere was opened with 18 students in the speciality of Business Management.

In 1993 Mainor Business School (MBS) was recognised as the second private school in Estonia. Today MBS is the biggest private business school in Estonia. MBS has study centres in 11 different cities of Estonia. There are about 3,600 students studying at MBS and more than 100 full-time employees. It is possible to choose from four different fields of study with 20 areas of specialisation among professional higher education and from three different fields of study among master studies.

The Business Management Institute (BMI) is the largest institute of Mainor Business School with around 2,200 students and it involves eight fields: Accounting and Financial Management, Economic Law, Real Estate Development, Production Management, Marketing, Logistics, Enterprise Management, Tourism Entrepreneurship. After covering the curriculum, the students have acquired all necessary knowledge about business. BMI is also counted the largest management or economics faculty/institute in Estonia.

Entrepreneurship is a compulsory course at the BMI and was in the curriculum from the beginning. The founders are businessmen, and one of the main owners is lecturing. His subject is entrepreneurship. So it has support from the management of the school. Nowadays the main building of Mainor Business School is located amongst other companies who own and develop high technologies in the innovative district of Ülemiste City in Tallinn.

In general Estonia lacks a culture of entrepreneurship education but it is changing slowly.

Strategy

The slogan of Mainor Business School is "Capital for Life". MBS merits

"...are close connection between theory and practical work, individual approach and innovation. High employment of our alumni and their success assure the value of these principles. Therefore, we rely on them both in Estonian and international competition."

This is supported by a mix of teaching staff where 50 percent are business people. MBS academic staff can be divided into two categories. First of all, full-time academic staff, who teaches mainly basic and initial subjects for courses I and II, establish a theoretical base for speciality subjects. The second category of academic staff is formed by experts who teach at the MBS mainly speciality subjects on a contract basis. This guarantees that the students get a very close relation with real economics and employers' requirements towards prospective employees. It underlines that the MBS aims to teach students real business and that the MBS is able to do it.

Entrepreneurship as such is not mentioned in the mission statement and there is no specific strategy and policy related to this area. However entrepreneurship education can very well be an important future area in order to get better positioned in the market.

Resources

The MBS is a private business school. The student fee is around EEK 28,000 (EUR 1,800) for one year and very few students are paid by the government.

All expenses are covered from tuition fees.

The MBS is more expensive than Tartu University – but has more students. Tartu University is the main competitor regarding students. Tartu University is an academic institution providing broad knowledge on economics and business administration. The MBS is providing professional skills on ten specialisations.

Institutional infrastructure

In general, study planning and supervising at the MBS is coordinated by the study department and four institutes: Business Management Institute, Information Technology Institute, Applied Psychology Institute and Design Institute.

Entrepreneurship education does not have its own department, but the responsibility for the course is placed at the Business Management Institute.

The institutional structures are weak. However, an incubator is located at the business school but the connection to the MBS is still relatively weak. Over the past few years the Tallinn City Enterprise Board has built up in the form of business incubators a significant support measure for small businesses in Tallinn with the aim of increasing the competitiveness of start-ups, enrich the business environment of Tallinn and support the creation of new high-value-added jobs.

The business incubator offers modern office facilities where the entrepreneur can meet with both prospective clients and partners. There are also conference rooms and the incubator has over several years developed its own network of both local and international contacts. Besides Tallinn, business incubators provide human capital development support funding of up to EUR 200 every three months to allow start-ups to continually educate and train their employees or use the funding on consultations of problems and issues with professionals in specific fields outside the competence of incubator personnel. Currently there are eleven companies in the business incubator.

Teaching and learning

Within Business Management it is possible to specialise in Company Management. This includes training of successful managers for SMEs, meeting the requirements of quickly changing times. The training covers the development of several skills required for a manager – negotiation, management, leading of projects and management of innovations both inside and outside the company.

The entrepreneurship course belongs to basic business management subjects and is compulsory to all MBS first-year students (incl. information technology, applied psychology and design), all together 1,200 students. The course runs over one semester (28 hours) and is combined with making a business plan (14 hours). Students do practice in a company, prepare a course paper and write a final thesis. Cases are brought into class but it is far from the concepts that are used for instance in USA.

The purpose of the course is to provide students with the basic knowledge about entrepreneurship, how to become an entrepreneur, basic skills for starting up the small company and conducting the business plan.

Outline of the course syllabus:

- Essence of entrepreneurship, how to become an entrepreneur (3+1 hours)
- Evolution of entrepreneurship (2+2 h)
- Different possibilities to start a company (4+2 h)
- Business planning (7+8 h)
- Home work – business law (8 h)
- Written work – business law (1 h)
- Strategic planning and competition strategy (7+1 h)
- Home work (16 h)
- Support systems (1+1 h)
- Written work (1 h)

- Marketing and market research (1+1 h)
- Financial planning (1+1 h)
- Home work (4 h)
- Three written assignments
- Company life cycle (1 h)

The course is finalised with a written exam.

Outreach

Surveys among alumni are conducted, but not very systematically. A more systematic tracking of alumni is being build up. It is important to follow graduates' careers. Alumni will send their staff to our School – they are selling our school.

The MBS cooperates with different local governments on teaching in secondary schools. The MBS gives lectures in basic economics and preliminary business planning and tries to repeat the concept in other local areas. The background for launching these initiatives is that it is too late if the students first meet economics and entrepreneurship when they come to university or to a business school.

Development

New curricula must be developed in cooperation with the private business community. There is a curriculum board with half of the representatives being businessmen. The Board looks at the existing curriculum and discusses what can be improved as well as proposals for changes.

At present it is a concern for the institution how they can ensure high quality in all regional classes? Digitalising the courses can ensure that all the local business school centres get the same high quality. This can for instance be done by teaching in front of a camera. In that way it will be possible to select successful businessmen to give a lecture and broadcast it to all the centres.

Challenges and recommendations

One challenge is that the economic situation has worsened in Estonia, and that the government has put a brake on public expenditure. On that background it is important that the European level can support the development of entrepreneurship education at higher-education institutions in Estonia.

In general students are very interested in entrepreneurship especially when teachers are good and when teaching is based on good real-life cases. However, there has been no tradition for entrepreneurship in Estonia and there is a serious lack of competences and knowledge in this field. For instance it is very difficult to find teachers that are strong both in methodology and in practice-oriented education.

It could be very relevant to bring inspiration from US entrepreneurship education into Mainor Business School and, more generally, into the higher-education institutions in Estonia. That could bring entrepreneurship education a great step forward. Today there is a lack of qualified staff that can write good cases. Therefore there is a need for training the staff. EU programmes can be important support for such training programmes and for networking programmes that can strengthen the links to other universities and business schools.

22. NTNU ENTREPRENEURSHIP CENTER, NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY, NORWAY

Interviewees: Professor, Dr. of Engineering Sigmund J. Waagø and Dr. of Economy Øystein Widding

Keywords: action learning; close to praxis, engineering, incubator, knowledge-intensive

Context and background

The Norwegian University of Science and Technology (NTNU) in Trondheim represents academic eminence in technology and the natural sciences as well as in other academic disciplines. In the field of technology, the NTNU offers the nation's most comprehensive higher education in engineering and have the highest esteem in Norway. The NTNU was formed in 1996 by the merger of the former Norwegian Institute of Technology (NTH, founded 1910) and the College of Arts and Sciences, the Museum of Natural History and Archaeology, the Faculty of Medicine, and the Trondheim Conservatory of Music.

The NTNU consists of seven faculties and 53 departments. The university has 20,000 students, of whom half are studying technology or the natural sciences. The university organises about 2,000 R&D projects at a time and has more than 100 laboratories.

The Department of Industrial Economics and Technology Management at the NTNU is a pioneer in entrepreneurship in higher education. The entrepreneurship research and teaching at NTNU started in 1978 as a result of a large project for the former Ministry of Industry, regarding the effect of regulation on firm start-ups. The project got a lot of positive interest from industrial policymakers and was led by Professor and Dr. in Eng. Sigmund J. Waagø. Entrepreneurship research and teaching started on a more regular basis in 1982 as an activity within the Department of Industrial Economics and Technology Management.

As part of his work, in the period 1985-1990 professor Waagø also helped establish a similar education at the Bodø Graduate School of Business, which since then has been active in this field. There has also been close cooperation with several other research and educational institutions, such as the MIT Sloan School of Management, Boston

University and Babson College. In addition the entrepreneurship activity at the department cooperates closely with Start NTNU, which is a student organisation at NTNU dedicated to the motivation and support of students interested in business development.

From the start professor Waagø and his staff organised both research and education in entrepreneurship. The research results are many and have quickly been integrated into the curriculum. In addition, the research has been a basis for governmental initiatives related to stimulation of entrepreneurship and innovation in Norway.

Courses are offered in: Management, Business Development, Market-Oriented Product Development and Entrepreneurship, Innovation Management, Industrial Marketing, Strategy and Industry Development. In addition to research and education a new venture programme has been developed. These programmes have been accelerators for commercialisation of new business ideas, and they represent an important action learning arena for practical and integrated academic cooperation for students and outside entrepreneurs.

Four professors and four adjunct professors are involved in programmes and courses in entrepreneurship and innovation offered to engineering students. Totally some 120 students yearly are involved in one or more entrepreneurship courses and other entrepreneurship activities. In addition there are a total of five PhD candidates working in this academic field.

Strategy and goals

Top management at the university has had a positive attitude to the education in entrepreneurship since the early start. However, not before 1998, as part of a strategic process, the university included research and teaching entrepreneurship as one of the strategic activities at the university. This has been important for the department's ability to offer a master education in entrepreneurship. The NTNU has technology and natural sciences as its main activity, and education in entrepreneurship is regarded as important.

Teaching methods

In 2003 professor Waagø had a two-year Master's in entrepreneurship for engineering students established. The study programme is named **NTNU School of Entrepreneurship**, which has been further developed by associate professor Roger Sørheim and Lars Øystein Widding. It admits up to 18 students a year. The students are recruited from the third year of the Engineering study. 50 percent of the courses in the Master's study is still directed at Engineering, but the other 50 percent focuses on entrepreneurship-related subjects and project work.

In the entrepreneurship part of the master study, students take appropriate courses, but a substantial part of the time they are working with a business development project. This starts in the first semester. To begin with the students are searching for interesting technology-based business ideas which currently lack an entrepreneurial team. They look for business ideas among the faculty staff at the NTNU and other HEIs, or in research institutions or businesses all over the country. Recently an agree-

ment has further been made with the Technology Transfer Center at CERN related to the search for interesting business ideas. The students will be at CERN for a week.

When the students have collected 20-30 ideas, they do the first screening in terms of technology, market and favourable relations to the inventors/owners of the idea. Together with a panel of experienced business people they end up with 3-5 selected ideas. Two to four students are teamed up around each idea. In the second semester the students develop their first business plan.

In the summer semester all the students go to Boston University (BU), where they attend courses in entrepreneurship and, under the guidance of faculty staff at BU, do further work on developing their business ideas in a USA business environment. Focus is on technology, market and financing, including identifying further possible cooperating partners.

The purpose of the summer semester is to give students business experience in the USA business environment. Considerable changes in student behaviour have been observed as a consequence of this summer semester. Among other things they become more self confident and have become much more professional in presenting their business plans

In the second year the students focus on special issues related to their business plan; issues which represent special challenges. As a result, some of the business projects end up with very promising businesses, but the primary goal is to educate project leaders for promising new technology-based ventures.

There is evidence that university faculty staff and persons from other institutions make inventions with interesting commercial potential, but at the same time a lack of experienced entrepreneurs and teams to commercialise the ideas have been observed. The NTNU School of Entrepreneurship seeks to meet some of that need in Norway. In addition the example illustrates that this kind of action-learning programmes seem suitable for engineering students. They are not learning about entrepreneurs in general but are supposed to acquire the necessary competence and skills to be entrepreneurs themselves.

Since 1982 Professor Sigmund Waagø has developed a new venture accelerator programme named Take-Off. He has also initiated Venture Cup as a sustainable national and regional business plan competition. The programme is further elaborated below.

Venture Cup regionally is an introductory programme for students interested in entrepreneurship. The students themselves bring business ideas to the programme, and they organise groups of 2-4 students for making a business plan. They are given lessons in case issues, and they are offered coaches and mentors from the local business community. In the end the students are competing for the first prize evaluated by experienced investors. The programme is organised as an elective course, and the students get grades for the professionalism of the plan, not for the potential of the business idea.

Take-Off is a new business venture accelerator programme consisting of the following five steps: recruiting, an introductory 2.5-days full-time course, a preparation period, one week full-time business development seminar and a one-day follow-up seminar. The ideas and entrepreneurs might come from universities, research organisations, business firms or other sources. Each business idea is developed by a team consisting of four students and two persons who have service and support to entrepreneurs as their daily work. Each team is facilitated and led by an experienced coach. There are six parallel teams in each programme. The business development seminar is the core activity in the programme. The seminar ends with a presentation of the completed business plan to a panel of experienced personnel from venture capital firms. The panel gives each plan a very prepared feedback.

Evaluations made by outside institutions show that Take-Off is extremely effective in developing new businesses and giving students hands-on experience and skills in entrepreneurial activity. More than 200 technology-based going firms have been established and many have grown substantially on the international market.

Infrastructure

As already mentioned there cooperation has been established with excellent HEIs nationally and internationally. Also, good contacts have been established within the Norwegian venture capital firms and private investors. They contribute as evaluation panels in Venture Cup, and the new venture accelerator programme Take-Off. Outside mentors from firms are also helping the teams at the NTNU School of Entrepreneurship.

The entrepreneurship activity at the Department of Industrial Economics and Technology Management (IØT) cooperates well and closely with the technology transfer office at the NTNU and an on-campus incubator. The incubator is partly financed by the university and governmental industrial policy bodies.

Since a legislative amendment in 2004, the incentives to commercial inventions developed within the university framework have been better, which also facilitates the entrepreneurial activity research and teaching activity. The entrepreneurship activity at the Department of Industrial Economics and Technology Management is still very informally organised. This makes the activity less visible and gives too little freedom to operate in a very forceful way. Some of the outside-funded activity is organised as a unit named the NTNU Entrepreneurship Center within the research organisation named NTNU Social Research. But still a feasible organisation of the total activity within the field of entrepreneurship is lacking at the NTNU.

Obstacles

The action learning programmes are very resource-demanding. Thus, up to now they have been funded by outside sponsors. Funding is a very time-consuming activity, but in spite of documentation of all the positive effects it is still impossible to get it financed by the university or other stable long-range external funding.

Entrepreneurship in general and action learning programmes based on real life business ventures in particular are still exotic and young fields of activity, also at the NTNU. This makes funding still difficult. Thus, the activity is dependent on very dedi-

cated faculty staff willing to do more than is expected. Especially the action learning activities do not give academic credits which may be a basis for promotion. Normal and well-established academic activity in the field of business administration still makes life easier for academic staff at the Department of Industrial Economics and Technology Management.

Factors of success

Experience at the NTNU points out some important factors of success for development of education in entrepreneurship at the university level: First, does the closeness to faculty staff in engineering and natural sciences give potential for making radical inventions. Secondly, it is important that the educational activity helps build relationships to venture capital firms and private investors and teach students and outside entrepreneurs to recognise market opportunities and solve organising challenges.

Recommendations

There should be more funding available for research programmes towards commercialisation of technology, both at the EU-level and nationally. Commercialisation of technology differs substantially between information technology on the one side and biotechnology on the other. Besides, challenges differ between industries, and the conditions for establishing technology-based firms differ between countries. Cross-border research is needed in order to get the necessary knowledge to speed up commercialisation of technology in Europe. In addition, to enhance the awareness of the importance of education in entrepreneurship, it is necessary to get credit and funds for all the labour-intensive guidance that is necessary to help students develop real business plans in the action-learning programmes. In order to develop the necessary competence and capacity in scientific staff, funding of PhD programmes are imperative. Entrepreneurship is an emerging academic discipline, and a lot more scientific staff is needed.

To help expand the education in entrepreneurship, the activity should be organised as a full-fledged department. The newness and difference of activity makes it difficult to co-exist within normal business administration departments or departments of technology, also in engineering schools. As a minimum, the activity should be organised as a visible and autonomous section within a business administration department.

23. THE MIETE PROGRAMME, UNIVERSITY OF PORTO, PORTUGAL

Interviewee: João José Pinto Ferreira, course director MIETE

Keywords: cross-discipline collaboration, incubator, intrapreneurship, mission statement, motivational structures and process-oriented learning

Context

The University of Porto (U.Porto) provides an entrepreneurship master's course for PhD, master (2nd cycle) and now 1st cycle students as well as MSc in Innovation and Technological Entrepreneurship (MIETE). This course, called MIETE, started in September 2004 with support from the [HiTEC Centre Team at the North Carolina State University](#) in the setting up of the so-called TEC Sequence. The TEC Sequence was developed by the HiTEC Centre at the North Carolina State University and made available in Portugal by [COTEC Portugal](#) – Associação Empresarial para a Inovação.

The entrepreneurship education at U.Porto was started by the current rector who was vice rector at the time. He launched an entrepreneurship short course targeting MSc and PhD students of U.Porto.

MIETE evolved out of the engineering faculty as a response to a student need. João José Pinto Ferreira has been one of the leading forces in establishing the course and has been involved from the beginning. He was teaching Systems for E-business to the students and realised that they needed more skills in establishing businesses for themselves. In January 2004 the private association COTEC (www.cotec.pt) brought a methodology from an American university and this methodology has become the backbone of the MIETE, first as the so-called TEC Sequence and now as part of the Business Construction Sequence.

João José Pinto Ferreira is the course director and responsible for its coordination. He works with the MIETE Scientific Commission for advice and interacts with R&D groups across the whole university in order to promote their interaction with MIETE students in the promotion of R&D project results.

MIETE has so far given rise to three companies, created by former students: IDEAVITY, a company that has developed a social networking platform www.mingle.pt, Tomorrow Options Microelectronics S.A. and Ownersmark S.A.

Strategy

Entrepreneurship is written into the mission statement of the university. Being an entrepreneur himself originally, the rector feels very strongly for this. He is very dedicated to entrepreneurship and carries it forward in the work done.

The mission statement of the University of Porto says:

"(...) Nowadays, as stated before, our mission also includes the promotion of economic development, through the scientific research, innovation, cultural and artistic creation developed in the University. U.Porto will seriously support this mission, through the systematic intellectual property rights protection, the economic valuation of the scientific activities results, including spin-off and start-up companies creation, and the dissemination of entrepreneurship training amongst its students, researchers and teachers. This way, we intend to give a strong support to the needed renewal of the Portuguese enterprise issue. (...)"

One way that the strategy comes to the fore is the way in which U.Porto also in general promotes and supports entrepreneurship among researchers and lecturers by for instanced making it possible for them to start ventures, with support, and it even enables them to come back after a couple of years as an entrepreneur to their academic career. U.Porto also has a system for the management of the IP and to assist the university community in looking for funding.

The driving force for the work done in the MIETE project comes from a need identified among students and from the Faculty of Engineering top management that has given the project full support all the way. So it is both a bottom-up and a top-down process. And it evolved in a natural way, starting with the Engineering Faculty, the Faculty of Economics and Porto Business School (just for the first two years). From September 2007 the course has been integrated as a Bologna 2nd cycle course.

Goals

The values formulated for MIETE are to promote the integrated training of managers and entrepreneurs through a practical education ("hands-on approach") which, being based on solid theoretical concepts and professional monitoring and coaching, enables the development of skills and knowledge for the effective management of knowledge and innovation and the development of new businesses. These high-potential new businesses could be developed within existing companies or through the creation of new ventures.

The main goal of the entrepreneurship activities is to give the researchers, lecturers and students the possibility to develop and start new ventures. From September 2008, MIETE will also promote intrapreneurship for the development of new products and services within an existing company.

The MIETE programme brings together students from all faculties of the university, and the multidisciplinary approach is valued very highly. The objective is to bring in people from different backgrounds into MIETE and give them a real-life experience of value building. People attending MIETE are usually middle managers from the private sector, faculty staff and researchers or recent graduate students wishing to major in

innovation and entrepreneurship. Students applying to MIETE must have completed their 1st cycle – cf. Bologna – or the equivalent. They have to submit a CV for evaluation, and they have to go through an interview before admission.

Teaching methodology

MIETE promotes students' work in multidisciplinary teams. The students are divided into teams, and the teams follow a work plan, which includes a variety of tasks to be completed with mentoring by a teacher. The methodology is given at a pre-established pace, and teams are asked to move at a reasonably fast pace in their 1st iteration to ensure that they get a hold of the whole process. From that moment on, different teams move forward at different speeds, and this depends both on their skills and on the problem at hand. The whole process is supported by the teacher and by coaches.

The programme integrates courses from the Master's programmes and various ad hoc courses depending on the needs and wishes of the students. Central to the course is the notion of multidisciplinary. So far focus has been mainly on the start-up of new ventures, business plans etc. In 2008 that focus will change to further integrate issues relevant to the intra-enterprise innovation and development of new products and services within existing companies.

The programme attracts a mix of recently-graduated graduates and older more mature and experienced graduates; one already had a company going when joining. The main selection criterion is the student's willingness to accept challenges and to work in teams. A broad variety of graduates are represented: Management, Engineering, Biotechnology, Sciences and Design, etc. Students are allowed to select optional courses up to 18 ETCS from all 2nd cycles available at the University of Porto. Optional courses can be realised in the following areas: Health Sciences, Natural Sciences, Physical Sciences and Technological Sciences. Some of these elective courses and up to a maximum of 50 percent of the elective 18 ECTS can be realised in the following areas: Humanities and Social Sciences. These courses can be selected from any 2nd cycle at U.Porto. This approach allows students from very different backgrounds to mingle in MIETE's multidisciplinary commercialisation teams.

Team work is central in the MIETE programme, and in the groups the students are exposed to different thinking styles and people, which promotes "creative abrasion", which, if properly managed, can greatly enhance the innovation potential. This is the philosophy behind MIETE, which was conceived to promote innovation and entrepreneurship with multidisciplinary teams.

MIETE is focused on the launching of new technology ventures by handling real technology commercialisation issues. From September 2008, MIETE will also promote intrapreneurship, for the development of new products and services within an existing company. The real objective for the students is to assemble a sound and solid business plan ready to be analysed by investors by the end of the course. MIETE takes its participants through the entire venture-creation process, and combines real training in the innovation process and technology commercialisation with the interaction between students and researchers from different fields at U.Porto. In MIETE, commercialisation teams, composed of MIETE students and researchers from the U.Porto (not

enrolled in the course), work together through the whole technology-valorisation process and final commercialisation. This means that students are placed in a real innovation setting by having to interact with researchers and the market and conduct the actual iterative innovation process of bringing a technology or product idea to the market in the form of a business plan. Researchers come from a wide range of areas within U.Porto, including, among others: Medicine, Pharmaceutical, Sports, Biomechanics, Engineering, etc.

Moreover, MIETE receives students from a broad educational background and provides each of them with the flexibility to adjust the technical and non-technical training to their needs.

Curriculum development was originally done in cooperation with the North Carolina State University who owns the concept used: "The TEC Sequence". It is not based on case studies but on real-life cases. The students meet real problems, and they have to be in touch with the mentors and the researchers back at the university at all times.

The university also runs an incubator and it has gone from two to 32 companies in one year.

Stakeholders.

Internal stakeholders are very important. The Faculty of Engineering has invested highly in this programme and given its full support. The Faculty of Economics has been highly supportive. On the other hand, good links to the incubation centre and the research institutes and groups are also considered important. The rector and the former rector are both very important stakeholders, the latter now being the director for UPTeC (the Park of Science and Technology of the University of Porto).

MIETE also puts effort into working closely with external stakeholders. One year ago an international Advisory Board was set up comprising representatives from businesses in Portugal. This advisory board recommended that the links with companies be strengthened and this is what is now being established. One way that they are trying to achieve this is by connecting students to companies, to perform an actual iterative value-creation process within the scope of the actual enterprise business strategy. This is starting in September 2008. From that moment on, students can start the value-creation process from an idea, from a technology (e.g. a patent) or from an existing enterprise strategy.

Obstacles

The main obstacle is people, mainly the people in business who are not used to working with the university in this manner, but also people within the university, researchers who are not interested or do not see how this way of working can benefit them.

"It is a cultural project to promote a close cooperation between university and business."

One problem with this specific approach used in MIETE is accentuated by João José Pinto Ferreira as being the length of the programme. The programme is not addressed for those who want to build a new business within the next six months. For

that, U.Porto has now launched a new U.Porto-wide programme called “Living Innovation”.

Seen in a more general perspective of integration of entrepreneurship in higher-education institutions and not as such connected to MIETE, João José Pinto Ferreira points out that the challenge is to incorporate and embed entrepreneurship ideas in the different courses of the faculties and thereby make sure that it benefits a great number of people. And one big challenge is to bring people from companies into the university as coaches to students. This has been harder than envisaged.

Recommendations

The discipline of entrepreneurship is still very new and there are many dedicated people. However, it is important to make sure that these dedicated people do not disappear again.

It is perhaps also a recommendation to talk more about innovation instead of entrepreneurship, because if systematic innovation is in place, the entrepreneurship will come naturally. Innovation is more formal and attributed more value in society in general. Then it is easier to get it integrated.

“If you want to change the way people work and the way that the companies and ideas are developed you have to do entrepreneurship education.”

“You need a new cultural project that involves and gives a real chance to everyone: businesses, researches and students.”

24. NICENT - QUEENS UNIVERSITY BELFAST

Interviewee: NICENT teaching Fellow, David Gibson

Keywords: Entrepreneurship centre, person driven, action learning, close to practice, alumni involvement, curricular embeddedness, workshop, cross-discipline collaboration

Context

Northern Ireland Centre for Entrepreneurship (NICENT) was established in October 2000 as a partnership between Queen's University Belfast and the University of Ulster and has more recently been joined by Loughry Campus (CAFRE).

NICENT is one of 12 centres of excellence established throughout the United Kingdom as a result of the Science Enterprise Challenge (SEC) and funded in Northern Ireland by the Office of Science and Technology (OST) and Invest Northern Ireland.

NICENT has a particular emphasis on the delivery of modules and programmes for students and academic staff in entrepreneurship, idea development and business planning.

The reflections behind NICENT were the American model which has generated a lot of spin-outs. There was also a business view point at the time that academic students were not entrepreneurial and innovative. Students should learn to be more entrepreneurial and innovative in the knowledge economy.

From the government's point of view there were expectations that a more entrepreneurial and innovation drive in the business community would work as an engine for growth and development.

The result has been a cultural change in the university from basically a research-oriented institution to a much more entrepreneurial university.

Strategy

From the beginning development of entrepreneurship education has been very person-driven and the strategy has been to move on and show results. It was very important that the students liked entrepreneurship education, otherwise it would not have worked. The key was to engage the students, to customise the methods and make

them interactive and relevant so that they felt they gained new skills - and the students liked it. Once the university saw it worked we got strong strategic support.

Student engagement was a key strategic challenge and it demanded strong entrepreneurial skills to answer this challenge. Teaching awards supported the efforts and gave a sort of recognition.

David Gibson at Queens University Management School has developed an ELVIS model with four pillars for successful development of entrepreneurship education:

E: Embedded – the curriculum is at the core. To get entrepreneurship in the curriculum the educator must be entrepreneurial, be persuasive, find new ways etc.

L: Linking – is very important to link up to the system and to what else is going on

V: Verify your outcome - It's important to get evidence to prove that it works – maybe outside evidence.

I: Innovation – go for innovation in teaching and learning but also for institutional support in senior management

S: Student-centered – it's the key to success.

Teaching and learning

NICENT offers both undergraduate and postgraduate teaching in entrepreneurship. Today Entrepreneurship education is 100 % embedded in every single undergraduate degrees pathway usually in the second and third year.

Examples of courses are:

The Entrepreneurship Awareness Module: This module is a core course of four workshops (18 hours). It is designed to provide students with an introduction to entrepreneurship in its different forms and to give them a basis for new venture planning in practice. The teaching and learning approach is student-centered and designed to encourage independent learning and study. The module is primarily using WebCT, supported by a series of "mentoring" workshops (minimum three in the semester) and guest lectures.

The Entrepreneurship Theory & Practice Module: This module is an elective Master's course. Students are engaged in applying their knowledge of entrepreneurship and the entrepreneurial process in resolving some of the practical problems inherent in enterprise development and new venture creation. Students, normally working in teams, will be required to submit an action plan, (maximum 15 pages, excluding appendices), for the effective implementation of a practical entrepreneurial project in new venture creation, enterprise development, project management or community development. Secondly they will be required to prepare and present their project before a panel of specialists and to defend the decisions they have made in their plan.

The module demands engagement from the student and the student team to manage own learning experience. The module is designed to encourage independent, student-centred learning and study. The focus is on the process and will require maximum flexibility in the learning environment and in methods of delivery. As a result most of the module material will be delivered via WebCT. Supporting tutorials and seminars will be provided. The management of the module is characterised by limited structure, with students working in teams, and with the emphasis placed on problem solving, in conditions of uncertainty.

The Headstart Programme: is a five month enterprise support programme designed to develop the creative thinking and business skills of students. Working in cross-disciplinary teams, students will develop viable business ideas and business plans, the best of which will be entered into various student business planning competitions. In parallel with the generation of business ideas, participants will have the opportunity to meet with, and learn from a number of successful local entrepreneurs, as well as receiving specific training in areas associated with enterprise and business start-ups.

The Business Planning Programme has been designed to assist student in their work through business planning and ends up with a business plan which can be used in negotiations with potential funders and/or partners. The Programme comprises six all-day workshops and two "consultancy" days which are available at no cost to each participant, for assistance with financial modelling and forecasting. Individuals or teams can participate and there is no cost for participation.

Staff Entrepreneurship Training: Special courses in entrepreneurship awareness are designed for Academic Staff in the Faculties of Engineering, Science and Health Sciences. There is also a special course in the skills of entrepreneurship designed mainly for administrative, academic and research staff, but other categories of staff may find this course of interest.

There are several competitions, for example a student enterprise is awarded with a total EUR 65,000 prize funds, a seed corn business competition and a national business plan competition with first prize £ 15,000 cash are arranged as well as a the Research Council's business plan competition.

Outreach

Alumni are tracked. Today there are statistics from around 1,000 students over the last three years.

Role models: Queen's University has a role model system where successful entrepreneurs and distinguished business leaders are committed to giving lectures across the university to groups of students, to share their experience and provide valuable case studies on businesses in Northern Ireland. We also bring back alumni that have been out for a couple of years. It's easier for students to identify with them.

The institution has strong links to other universities both in UK and internationally and to the business community. And in general Queen's is committed to making contribution to the wider community both in Northern Ireland and internationally.

Development

There are evaluations of each module for example the Entrepreneurship Awareness Module. Here students will be required to complete two assessments "online" during the module, one in week six and one in week twelve.

Alumni feed back is used to develop the courses and there is also informal feed-back information from students that send mails every week about what they think. That is a very powerful impact. So student opinion plays a role in the development of module content and structure. The modules are constantly evolving based on feed-back.

Besides our funders want to know, how many have started a business - have the targets been achieved?

Challenges and recommendations

Some of the major challenges have been getting academic credibility, reluctance particularly at academic staff and uncertainty a senior management level. Pushing entrepreneurship education has been a very marketing and persuading exercise and with a need to produce evidence that it was relevant and that the institution can benefit from it.

External evidence has been important. Getting teaching awards, good publicity and recognitions from people in senior positions has all contributed to make it worth going for it.

It is important to be very clear of what you want, to move quickly and with momentum and to show results in order to get institutional support. In addition it is important to have enterprising teachers. Other challenges are sustainable funding and institutional support in senior management. The education must be student-centred in order to ensure engagement from students.

EU can uncover best practice models and provide funding for higher-education institutions that will follow a best practice path within entrepreneurship education.

25. RIGA BUSINESS SCHOOL, LATVIA

Interviewee: Juris Ulmanis and Greg Mathers

Keywords: collaboration with local business, lecturing, business studies, self-realisation, process-oriented learning

Facts and history

Riga Business School (RBS) is an independent management education institution within Riga Technical University and it was established in 1991 in cooperation with the State University of New York at Buffalo USA and the University of Ottawa Canada (became a partner in 1993).

The MBA programmes were developed by the two partner institutions, and entrepreneurship was included in the programmes from the beginning as an elective course. Today, the school has an intake of 100-110 MBA students annually.

Entrepreneurship is a totally new field in Latvia, and there is no word for entrepreneurship - there is so to speak a complete lack of culture in this field. This means that the framework conditions of entrepreneurship education in general are weak and making things happen and bringing this area forward is person-driven.

Strategy

The school is branded as a North American MBA and with all lessons in English. Students attend the school mostly for the MBA. So entrepreneurship is not mentioned in the mission statement and there is no strategy and policy within the field of entrepreneurship.

However, one of the goals of introducing entrepreneurship in the MBA programmes is to promote an entrepreneurial behaviour and inspire more students to become entrepreneurs. Another expectation is that the students take a job and work for a while and create network relations so that they will be in a better position to start businesses.

The management of the school supports entrepreneurship education which is why it is in the curriculum. However, more courses in entrepreneurship could be offered - there seems to be a demand.

Resources

The seed money for the business school came from the US partner. Funding also comes from students who pay a fee a study fee. The institution receives no state funding.

Institutional infrastructure

Riga Business School is formally associated to Riga Technical University. However, the link is relatively weak, especially in the field of entrepreneurship education.

In general the institutional structure is weak and not supported by the authorities.

Teaching and learning

RBA offers a full time MBA programme which is a four-semester programme covering all fundamental areas of business administration.

Moreover, RBA offers a professional MBA for persons already at work. The programme consists of nine core courses, six elective courses and a Master Thesis. Each year is divided into three semesters. Most students choose to take two courses per semester and the programme can then be accomplished in two and a half years.

In both programmes Entrepreneurship is an elective course (in the second year of the studies). It is a one-semester class (with a duration of 14 weeks), which is offered once a year. The teacher is one of the leading Entrepreneurs in Latvia and he invites a lot of local entrepreneurs to come in and work on special subjects with the students.

The course focuses on factors related to the initiation and development of new business ventures, in contrast to the management of large, ongoing enterprises. Topics covered include personal entrepreneurial potential, career considerations, start-up planning, and sources of venture ideas, innovations, entry wedges, and acquisition strategies, managing for survival. Primary emphasis is on the process of starting a new venture. Entrepreneurs will meet with the class to discuss their own experiences. Business planning and Harvard Business School Case Studies are part of the course. The students work in groups of 4-5 students and in the end they have to present their business plan for an audience.

Entrepreneurship is one of the most popular classes. It is always full i.e. with 35-40 students and there is a waiting list to get in. One of the strengths is that the education is practice-oriented and case-based, and that the teachers possess real life experience. Where other more research and academic faculties teach a lot of theory, students are taught how to manage.

At the beginning of a semester around 50percent of the students stated they were interested in starting a business. That gives an indication of what the "customers" demand. There are examples of entrepreneurship being somewhat introduced into the other courses. Entrepreneurship examples from Harvard are used in classes, but in one case students presented a problem related to a newly opened medical clinic. A visit to the clinic was arranged and the owner was engaged in a three-hour discussion with students on the topic: "How do we get customers here"? That was a real-life case that the students could touch and feel.

In general, classes are taught only by experienced and professional faculty teachers (both local and international), who have studied at Western universities, who are actively involved in the Latvian and international business and who bring their practical experience to the classroom.

Outreach

RBS has a good outreach in the business community and among local entrepreneurs and has good personal contacts to other universities and business schools.

RBA has an alumni club. There is no specific focus on entrepreneurship. The club runs several activities such as company visits, keynote speakers, fall ball and sports day.

The aim of for instance company visits is to provide valuable insight in running day-to-day operations and planning of strategic development of different companies, owned or managed by RBS Alumni. A company visit may involve presentations, questions and answers and networking opportunity with coffee and snacks.

Keynote Speakers is another important event. Keynote Speakers will address the latest trends in management, HR, investment, etc. and share their insider knowledge on respective industries. Events held at RBS premises with up to 80 people where networking among RBS Alumni and students is facilitated.

Development

Last year two persons went to Harvard to participate in an entrepreneurship programme "European Entrepreneurship Curriculum and Participant Centred Learning" and this summer three more faculties are going. This programme has opened the eyes for the importance of entrepreneurship education and for the country in general and pushes the students to get more and more involved in this area.

The optional course in entrepreneurship is under development. The teacher is relatively new and is going to Harvard and that will certainly bring some changes.

Challenges and recommendations

Funding and resources is a key challenge. With more funding it will be possible to start an incubator, to run more courses, to develop faculty, tracking alumni etc. In addition cooperation and network with other higher-education institutions is also very important. Bringing in faculty from other institutions gives new inspiration and can open up for curriculum development and training of teachers. Especially relations to US institutions have had a high positive personal effect and contributed with more involvement and commitment.

The educational system could also in general push more for entrepreneurship education and promote an entrepreneurial culture in Latvia.

26. SCHOOL OF ENTREPRENEURSHIP IN AALBORG UNIVERSITY, (SEA), DENMARK

Interviewees: Lisbeth Tved Linde, team manager of SEA, Kirstine Rasmussen, project manager of SEA, Niels Mobjerg Olesen, professor PhD, Head of Office, Senior Advisor to University President.

Keywords: action learning, close to praxis, entrepreneurship centre, problem-based learning, process-oriented learning, student incubator, workshop

Context

The main idea of SEA is to support students in their effort and strive to become employees, researchers or entrepreneurs. For SEA, entrepreneurship education is more about structures than about courses as such. Their aim is to promote creative thinking, not just among students but also among staff to further the development of new courses, of networks and of extracurricular events.

The basis philosophy of SEA is to support the establishment of knowledge intensive entrepreneurship and to help hatch candidates that can become active players in the global and national knowledge economy. "We want our students to grow an entrepreneurship gene", says Professor Niels Mobjerg Olesen.

SEA is a local agency of the International Danish Entrepreneurship Academy and was created to promote entrepreneurship education throughout the university.

Historically, entrepreneurship was first concretely formulated in the mission statement of Aalborg University as a result of an EU-funded network project in the mid 1990s. The project dealt with early networks and with shortening the way from university to business. This led to a rise in awareness of entrepreneurship and introduced it to a permanent position in the strategy statement of Aalborg University. The mission statement says that entrepreneurship must be addressed in the faculty of engineering, the faculty of health and the faculty of natural sciences.

Strategy

SEA sees their activities and their basic philosophy and definition of entrepreneurship as being closely connected to the "basic" teaching rule of Aalborg University – *Problem-based learning*. Problem-based learning (PBL) has always been the prime teaching and learning metaphor of Aalborg University and is probably the most distinctive

feature of Aalborg University compared to other universities inside or outside Denmark. For SEA entrepreneurship thinking and PBL are closely related and they perceive PBL as a dramatically different environment and precondition for entrepreneurship than what is the reality in most other HEIs in Europe. PBL is in nature heavily associated with “the art of finding solutions” which is also one of the corner stones of knowledge intensive entrepreneurship. Add to this Aalborg University’s tradition of working very closely with local business, both SMEs and larger enterprises, you have a ground that is pre-fertilised for entrepreneurship education. Thus SEA claims that “with PBL as the most widespread teaching method in Aalborg University and with the long-established tradition of close collaboration with businesses, we are already two steps up the entrepreneurship ladder compared to other HEIs”.

Goals and objectives

SEA aims to prepare students for their active working life after university both as researchers, as employees and as entrepreneurs. With the global knowledge economy SEA sees a growing need for innovative and flexible entrepreneurs and intrapreneurs. They see new emerging structures where businesses are established, sold, closed or continued in new contexts. The notion of a life-time business which is established by the young entrepreneur, consolidated through his mature years and eventually inherited and continued by his sons and daughters belongs in the long-gone industrial society. Now entrepreneurship is about self-realisation, about growing, changing, seizing new opportunities and continuously meeting new challenges. Young people today have seriously different expectations and SEA sees it as its most important goal to prepare the students for the challenges and opportunities of today and tomorrow.

Development

The introduction of entrepreneurship activities has been easier in the engineering department and in the faculty of natural sciences than for instance in the humanities or social science departments. SEA’s strategy for implementing entrepreneurship education across the university is to push courses, centres and activities into existing departments instead of isolating it in one single entrepreneurship centre.

Thus, small incubators are placed in existing departments in order to spread knowledge and culture of entrepreneurship into the departments in question. This also has the advantage of easy access for entrepreneurs to existing laboratories, research facilities and professors. Each incubator hosts 10-15 entrepreneurs; not necessarily students/alumni from Aalborg University, external entrepreneurs and “out-employees” from local businesses use the incubators. Records show that 25 percent of those who spend time in a SEA incubator, subsequently starts his/her own business.

SEA claims that the integration between university and businesses comes easier in Aalborg University because of its tradition with PBL and close association with local business. However, not all departments have reached the same level in terms of integrating entrepreneurship; computer sciences has an entire semester devoted to entrepreneurship where students develop a business idea, other departments merely lend out their students to participate in extracurricular entrepreneurship activities arranged by SEA or other actors.

Knowledge-intensive entrepreneurship

SEA claims that in terms of entrepreneurship many of their students face a context that is in nature very different from what can be called traditional entrepreneurship. Consequently, you need to acknowledge that the advisory services, the incubators and the support that SEA needs to offer is different from the support that a business school or a vocational school entrepreneurship centre will offer. As illustrative examples they mention mentors, patent advisory services, economic resource services and relations competency. To explain the difference Niels Mobjerg Olesen mentions the difference between starting your own hair dresser salon and starting a business on the basis of advanced, high-cost biotech research.

The students of SEA and thus of Aalborg University are typically much more academic in nature, their business idea depends upon complicated it-solutions, highly technical competencies and completely different demands for commercialisation, where the number of customers world-wide can be counted on one hand. Creating a business plan for this type of venture is a completely different job than creating a business plan for a grocery shop or a web-solution company.

Evaluation and assessment

Most SEA activities are externally funded for instance through Social Funds projects where evaluation and assessment are integral parts of the project.

When arranging conferences and seminars, SEA always conducts a post-evaluation on participants, and all concrete activities are evaluated. However, alumni involved in SEA-based or SEA-initiated activities are not tracked, and therefore the long-term impact has not been investigated yet. Aalborg University is currently launching a candidate survey which will shed some light on alumni satisfaction on entrepreneurship issues as it includes a section on entrepreneurship.

Incubators evaluate entrepreneurs' needs in a mid-term evaluation discussion and a closing evaluation interview with a small group of entrepreneurs.

All entrepreneurship activities that are implemented in traditional courses and curricula are evaluated to the Aalborg University standard.

Teaching and learning

WOFIE – Workshop for Entrepreneurship and Innovation - is an activity singled out by SEA as a particularly successful activity. WOFIE was extracurricular for some students/subjects and ECTS for others. WOFIE lasted for four days and had 450 participants. It was held in a number of different Aalborg University locations (six in Aalborg, one in Esbjerg and one in Ballerup) and was a mixture of conference, plenary sessions and debates.

One very successful part of WOFIE was the "Brain Bank", where the participants could go and deposit (describe) their special competencies and knowledge. The Brain Bank not only held academic knowledge but also other types of knowledge, for instance if a student had spent a semester in another country and considered himself/herself familiar with culture, commercial customs etc. You could then go to the Brain Bank and borrow knowledge, skills and competencies from your fellow WOFIE participants.

In cross-department groups students must develop a business idea that suited the competencies and knowledge of the participants in the group. Not until the third day were participants informed that they were part of a competition for the best business idea.

The primary objective of WOFIE was personal development and offering students an idea of what being an entrepreneur is all about. The secondary objective of WOFIE was to enhance students' ability to work in heterogeneous groups across subjects and to enhance their problem-solving skills by introducing new working methods. It is the ambition of SEA to make WOFIE an annual event.

Other extracurricular events mentioned by SEA are competitions, Venture Cup, First-Step and Elevator Pitches, 48-hour camps and business camps with the participation of large Danish business such as Danfoss and Grundfos. When SEA arranges camps they often use an in-house group of process consultants that help facilitate the event. This has been particularly successful and is seen as a very important factor of success. Incubator participants are regularly involved in camp activities as part of their stay in the incubator.

At Aalborg University faculty members are beginning to discuss a new 3rd generation of problem-based learning. As opposed to 2nd generation, PBL is cross-curricular in its nature. SEA is eager to support the development of this teaching method and uses it in its Creativity Laboratory, which is one of the primary teaching methods applied in SEA-initiated activities.

Development

SEA offers continued professional development for university faculty members. They supply project courses that combine creativity, innovation and entrepreneurship. These courses are also used by teachers in other HEIs than Aalborg University.

SEA reports that some faculty members are easily recruited and are interested in entrepreneurship education, whereas others are more difficult to reach. They feel, however, that interest among the general faculty members is growing and that it spreads like rings in water. Faculty members find the participation in entrepreneurship activities fun and report that they are interested in improving the number of different teaching methods that they can apply. SEA states that in their entrepreneurship activities for faculty members there is an even distribution according to sex and that they see no striking similarities among participants. Niels Mobjerg Olesen states that many faculty members have realised that entrepreneurship represents something that people find interesting and something they would like to work with later, and that this is a motivation factor in itself for the faculty members.

One future aim of SEA is to create a new virtual network centre of those who are interested in entrepreneurship and to bring in knowledge and feedback on their activities into SEA and for SEA to use this group as ambassadors in their home departments.

Outreach

For SEA and for Aalborg University in general relations to the surrounding world and to “reality” are of utmost importance. They collaborate with regional actors in order to establish an entrepreneurship system – a sort of entrepreneurship matchmaking – where business council, incubators, business green houses, business support centres, business angels, mentors, enterprises, Connect Denmark and many more participate in order to establish network and connections between actors and entrepreneurs.

Obstacles

For SEA the most important obstacle against entrepreneurship education is how public resources are administered to universities and how universities are rewarded. As long as entrepreneurship education does not release additional resources, it is very difficult to obtain funding for the extracurricular activities within the university budget.

The result is that the existence of the centre is still based on external funding and the centre has to find resources on an ad-hoc basis from EU-projects, social funds and from business contacts. One very counterproductive effect of this is that you continuously have to think of new things to obtain new funding – you can never continue a success, as very few funds will offer funding to something that already exists. Thus established successes are continuously put on hold because of lack of funding.

One paradoxical consequence of this is that in today’s global world where students are encouraged to travel and study in other countries, and where universities are encouraged to offer courses and diplomas to foreign students, SEA is forced to shut the door to most entrepreneurship activities to foreign students. The reason is that foreign students are often in Denmark on an Erasmus scholarship; and when they are supported by the European Commission they are not allowed to participate in activities supported by other European Commission funds, which many SEA activities are because the educational institutions are forced to seek alternative funding to make ends meet. Thus, they end up turning away foreign students who may potentially develop their business idea as a result of being involved in entrepreneurship activities in Denmark and – perhaps create a business, employ a number of people and generate a lot of income.

A third obstacle that is mentioned is the – in SEA’s opinion – overweight of control within the HEI system. The control elements make it difficult to venture into new ground, and the rules and structures are a threat to innovation.

In the present Danish economy we face an interesting obstacle against entrepreneurship and business start-up which is full employment. It proves difficult to persuade candidates or candidates’ families to become entrepreneurs, both because they can get a job right away and because they will earn a substantial income from day one when accepting a job, whereas the prospects of making an income as an entrepreneur are more uncertain.

As mentioned above the traditional perception of an entrepreneur as somebody who establishes a business venture and operates it for a lifetime is a threat to entrepre-

neurship education which is so much more. The traditional perception is widespread among faculty members and to some extent among students.

Factors of success

SEA argues that the introduction and implementation of entrepreneurship education in any given department and faculty still depends too heavily on personal commitment on the part of professors. For some departments, the idea of entrepreneurship seems easier to adopt, as they have a stronger tradition for business start-up, or as it is easier for staff and students to see what entrepreneurship is.

Recommendations

SEA argues that the structure of how HEIs are funded and the motivational structures need to change to make entrepreneurship something even more important in the HEI.

SEA also suggests that candidates receive a study grant for the first semester after graduation if they want to become entrepreneurs. They also suggest reintroducing the start-up grants for entrepreneurs, which were in force when Denmark suffered from unemployment during the late 1980s and early 1990s.

27. STOCKHOLM SCHOOL OF ENTREPRENEURSHIP, SWEDEN

Interviewees: Nick Kaye, executive director of SSES, Ronald Jones, PhD, Professor of Interdisciplinary Studies, The Experience Design Group, University College of Art, Craft and Design (Kunstfack)

Keywords: medicine, art, business, cross institutional cooperation, technical, external funding

Context

In the late 1990's three professors from Stockholm - from the medical school (Karolinska Institutet), the business school (SSE) and the technical university (KTH) respectively - who knew each other, began discussing what they could do together in the field of entrepreneurship. Until then each school had limited courses in entrepreneurship but they saw an opportunity to join forces and leverage their core competencies, and in 1998 this resulted in a project jointly funded by the participating schools. In 1999, this interdisciplinary entrepreneurial platform captured the attention of the Stefan Persson Family Foundation (renown for its link to the H&M retail chain). A generous donation from the Stefan Persson Family Foundation allowed the school to firmly establish itself as an independent organisation in August 1999. This was followed by a further donation from the foundation in 2002, which made it possible for The University College of Arts, Crafts and Design (Konstfack) to become the fourth partner institution.

SSES is run as a non-profit organisation. It has an independent central office, not under the roof of any of the partner organisations. The four partners are equal partners and all contribute to the budget in addition to the funding from the Foundation. SSES is today recognised as the hub for interdisciplinary entrepreneurship activities at the partner schools.

Through the last eight years the awareness of the activities of SSES has increased. One of the major activities of SSES is to market the courses and the joint activities, but also the ones that the four partner schools launch separately. At present SSES offers approximately 20 academic courses at Masters / PhD level, and 800 – 900 students annually graduate from SSES academic courses with entrepreneurship as part of their home university degree. An additional 2000+ students annually participate in a portfolio of extracurricular activities offered by SSES.

All the initiatives taken by SSES are joint initiatives, i.e. they are designed for students at multiple partner schools and are offered at the different institutions, so the students move from their home institution to the other schools where they sit in a class room or in a workshop with students from other disciplines. But SSES also supports initiatives at the partner schools separately, for instance extracurricular activities – also with funding. SSES does not control the other schools, but supports them, and develops networks between them and between people in them, both students and faculty.

One of the main strengths of SSES is that it is truly interdisciplinary.

Strategy

SSES was created to further entrepreneurship as its core activity and this is also stated in its written mission statement, although the mission statement was evolved over a period of time. Importantly, the initiative has strong support from top-level management within its partner institutions. At the member institutions entrepreneurial activities and courses are stimulated and developed by local SSES competence centre directors, who are then the agents of entrepreneurship at the partner organisations. Through these centres the entrepreneurship activities are spread across the campuses.

The degree to which that entrepreneurship is embedded in the four organisations differ: at the University College of Arts, Crafts and Design, Dr. Jones says that it “is the spirit of the law, if not the word of the law”, meaning that it is there, but perhaps not written down exactly the way that it is seen at the moment. But they all have dedicated competence centre directors and faculty staff that work with entrepreneurship – between three and six core staff members in each institution and a larger number involved in entrepreneurship on an ad hoc basis.

Goals

The goals of SSES are to support and advance the interdisciplinary approach to entrepreneurship, teach entrepreneurship and to inspire and support those who want to become entrepreneurs. This was also the purpose for hiring Dr. Jones in 2000. He came from Yale University and Columbia working on the principles of “hands on creativity” and imported this approach to Konstfack where he is the SSES centre director, i.e. one of four directors working with Nick Kaye to advance entrepreneurship. When Dr. Jones came to Konstfack, entrepreneurship was a struggling and relatively new field, but since then it has grown in importance and generated a lot of interest. They run entrepreneurship related courses for both undergraduates and graduates, in different ways, but with a focus on idea generation and the idea development.

Teaching and learning

The SSES courses can be divided in two types: The typical “how” courses (from business creation to growth), and the “context” courses focusing on entrepreneurship-specific business logics such as trendspotting, biotechnology and social entrepreneurship. All master students can take all SSES courses as electives and they are all certified, each with 7.5 ECTS credits.

Many courses are interdisciplinary and they are organised as team work, in interdisciplinary teams. The assessment is also based on the team work. There is a widespread

use of cases in teaching and many guest speakers, external academics, representatives of industry, government and other types of organisations have taught in the SSES courses throughout the years. At SSES they have investigated the use of simulations, but have not used this method yet. However, the use of innovative games, case studies and other modern types of teaching material are being used.

An important thing about the approach to teaching and learning is that it should be a mixture of methods, but most important is that it should be based on applied team work. Moreover, the examinations should be based on applying knowledge on a case or an example rather than pure theoretical or methodological reasoning. The team work is possible as many of the students attend a series of courses and therefore get to know each other. The fact that it is not only one course, but several courses, enables them to develop a common language of entrepreneurship and innovation.

Regularly, SSES send teams to compete in international competitions and the opportunity to be sent to such an event is used both as a carrot for the students, and as an external audit function to see if the students are good enough to compete with students from other organisations and countries. SSES students have won several prestigious prizes over the years, including this year's European Business Plan of the Year Competition.

SSES also focuses on internal activity auditing by gathering and evaluating student feedback. After all activities, both curricular and extracurricular, the students are evaluated. Periodically, surveys among alumni are performed, which means that the institutions are very well informed of the status and entrepreneurial activities of both their current students and alumni students.

They work with both formal and informal ways of bringing people together and creating arenas for the entrepreneurial spirit to develop dinners, workshops, conferences etc. They also try to work with three different key areas: The entrepreneurs, the intrapreneurs and the NON-entrepreneurs - who will use SSES to try entrepreneurship and reach the conclusion that it is not for them.

At Konstfack the curriculum on entrepreneurship has been centralised over the years by Dr. Jones. He has started specialised curricula for the art students, but also initiated multidisciplinary courses for both BA and MA students, for example courses in trend spotting, future scenario building and design commercialisation amongst others. Skills like that are transferable and when they are carried out with students from different academic fields they show how these actually interact, and are dependent on each other,

Dr. Jones is not so interested in the teaching the HOW of business plans and taxes:

"It is more important that the students walk away with the full appreciation of what they do not know and then find the people who can assist them".

The physicist or chemist should know that they need a business plan for their idea, but should not necessarily be the ones writing it. They should know WHAT to do,

WHY they want to do it, and HOW to recognise an idea, but not necessarily all the details. This is now in place.

Teaching methods include seminars, laboratories, field work and at Konstfack they will be introducing a method they call “experienced prototyping”, where a group of multidisciplinary students are led through a process where they experience a stressful or unusual situation and then have to come up with ways to further develop an existing product or service.

Stakeholders

SSES works closely together with the four member institutions, and the principals of each of the institutions are sitting members of SSES as well as a representative of the Stefan Persson Family Foundation. Additionally, four senior academics are on the board, one from each school. This person, however, is not the Centre director.

SSES has had top-level support from day one, but over time the SSES has also gained support at grass root level, which is extremely important according to Nick Kaye.

Challenges

The strategic barriers to entrepreneurship education are mainly lack of support from top-management and from outside stakeholders, and it is a great challenge to motivate them and make them understand the approach. At the same time the grass roots are equally important, and the big challenge is to make sure that the different needs of these two levels are balanced. This requires a common goal, diplomacy and good communication skills.

Another challenge is to get the best teaching staff to teach, i.e. educators who can teach applied entrepreneurship. This is not so easy because academics seldom have sufficient practical experience and the entrepreneurs do not have the theoretical knowledge required to teach an academic course.

Teacher training is one way of ensuring that there are enough competent entrepreneurship teachers. At SSES the teachers undergo training, participate in workshops, and some participate in the Harvard Programme for Entrepreneurship educators.

“I am always on the look-out for excellent teachers, but it is difficult to find additional people who can teach entrepreneurship consistently, at the level that we strive for”

Funding is another challenge: the project orientation of most entrepreneurship education means that many initiatives do not reach maturity, and it is important to move away from short term project funding to a more dedicated long term funding. The challenge is that entrepreneurship teaching rarely results in immediate business success, but rather helps entrepreneurs commence a journey that takes time to come to fruition, and with short term funding that becomes a problem.

Finally cooperation is also a challenge that SSES faces. Although SSES is in place and the schools are dedicated to it, the cooperation is not without challenges; the culture is different in the participating institutions. This affects what they can and will do together.

Dr. Jones adds to this that from an Art and Design perspective there is also a cultural dimension: that “sales are dirty” ... and art should not be pushed on to a market. This culture is also to some extent present among the teachers, one of the reasons why it has been an important step to centralise the entrepreneurship curriculum at the University College of Arts, Crafts and Design. The SSES model works really well for University College of Arts, Crafts and Design as it gives support to initiatives, hence also those starting bottom-up. It is a flexible structure, and it could probably be used even more effectively at the institution.

Factors of success

“.. an honest, heartfelt commitment to entrepreneurship education shared from the top down”

Funding is necessary for successful entrepreneurship education, but more importantly: is that it has to be long-term funding. Basic funding over a minimum of five years is necessary to really get off the ground.

Good people who have both a theoretical and a practical background are perhaps not so easy to find, but on the other hand, Dr. Jones points out that at least in his system, if you look below the surface, perhaps out in the industry, there are people who have just never been asked to teach, but who would be very good in an entrepreneurial education setting.

“Not everyone needs to be involved but if the commitment is not there, entrepreneurship education becomes just ‘lip service’ – it needs committed people”

Multidisciplinarity is one of the big buzz-words, and it is also interesting, the two interviewees agree. But multidisciplinarity does not arise just by getting students from different disciplines in the same room. They have to start working together, develop a common language and get to appreciate the strengths of their own approach and that of the others.

It is also important to be able to recognise the differences and work with and around the people around.

Recommendations

On an institutional level, funding and top-management support was mentioned several times by both interviewees.

Furthermore, more structured, European level training of teachers would be a good idea. It should be European, because although we can learn from the Americans, there is still a difference and it would be good to have high-quality training especially for Europe. This might be an area for the European Union to initiate and coordinate.

One thing that needs developing is the multidisciplinary approach or interdisciplinary entrepreneurship methodologies. Perhaps there is a need for a whole new curriculum for entrepreneurship education, or at least a re-thinking of what we really mean when we talk about multidisciplinarity and interdisciplinarity.

However, it is also important, stresses Dr Jones, to accept that entrepreneurship and higher education is not for all, and the attempt of levelling the playing field that some EU initiatives, for instance the whole Bologna process, might have, should not go overboard, because the playing field is not level and it is wrong to believe so.

28. STRATHCLYDE UNIVERSITY, GLASGOW, SCOTLAND

Interviewees: Colin Mason, Professor of Entrepreneurship at the Hunter Centre for Entrepreneurship, Centre director.

Keywords: business studies, art, community engagement, cross-discipline collaboration, cross-institutional collaboration, engineering, entrepreneurship centre, external funding, extracurricular activity, pedagogical tool, person driven

Context

Strathclyde is the third largest university in Scotland with about 20,000 students. The university comprises five faculties; the Strathclyde business school and the faculties for education, engineering, science and law, arts and social science. It is best known for its science and engineering faculties.

The university started engaging in entrepreneurship activities in 1996 in a context of various concurrent elements. In the early 1990's policy shifted from the attraction of foreign investment to Scotland in favour of how to increase the business birth rate. There was a clear lack of entrepreneurship and several new policy initiatives were set up in order to remedy on this issue.

One of the elements in this new policy was to fund universities to set up entrepreneurship education. Strathclyde was not one of the universities to receive such funding. However, following the report of the Dearing Committee, of which the Principal of Strathclyde was a member, and which included as one of its recommendations that universities set up entrepreneurship education, Strathclyde decided in 1996 to engage in the field by establishing the Strathclyde Entrepreneurship Initiative. The initial approach was a top-down initiative comprising three people and led by a university administrator and located as part of the University's administration

In 2000, Tom Hunter, Scotland's most successful entrepreneur (and also a graduate of Strathclyde) made a donation of £5m to expand entrepreneurship education activities by establishing an entrepreneurship centre. This arose from his desire that Scotland would rediscover its entrepreneurial heritage. He chose to fund Strathclyde not so much because he was a graduate of the University but because of the reputation which the Strathclyde Entrepreneurship Initiative had developed for good practice in

the field. Upon receipt of the funding the Strathclyde Entrepreneurship Initiative changed its name to the Hunter Centre of Entrepreneurship.⁶

The centre today has eight academic staff (of whom two professors) and three support staff. The Hunter Centre for Entrepreneurship is a part of the Strathclyde Business School as a freestanding academic department, but serves the whole university. With a few exceptions, all students at the Strathclyde University can take electives at the Hunter Centre in their degrees.

One interesting thing about the Hunter Centre of Entrepreneurship is its cooperation with the university's music department. The Department of Applied Music recognised that it needed a stronger component on how to start one's own business in its degree. For the musicians, even those aiming at becoming music teachers, self-employment and freelance work are likely to become large parts of their career paths.

The entrepreneurship centre and the music department together developed a course to reflect this reality. The Applied Music course teaches students how to "produce" music, both as performers, composers and producers. It also teaches how to make a career in the music industry based on these skills. But for an artist, it is important to know how to sell oneself. An artist has to be able to think of himself as a product. These are also aspects taught in the Entrepreneurship in Creative Industries course.

The course is targeted at the approximately 20 students of the music department, but is open for every student at the university.

Strategy

In the beginning, the university opted for a centralised model where the people working with entrepreneurship education were located in the university administration. This was important for the visibility of the new project and gave it "protection" at the top level which is important for all new initiatives.

With the expansion of staff following the endowment, the initiative became an academic department and was moved to the Strathclyde Business School.

The university calls itself "an entrepreneurial university". The label "entrepreneurship" is important for the university. As entrepreneurship teaching is becoming more and more common also in school, students are increasingly aware of the subjects. Consequently, the label and the Hunter centre for Entrepreneurship helps the university to distinguish itself from other higher-education institutions.

⁶ The Hunter Foundation (THF) is a venture philanthropy that invests in enterprise and educational initiatives aimed largely at children. The overarching aim is to help support the development of a more enterprising and ultimately entrepreneurial society in Scotland by funding projects of national importance in this arena.

Goals

The Hunter Centre for Entrepreneurship's overall goal is to contribute to a change of culture in order to make Scotland more entrepreneurial. However, the Centre does not expect that their students should start a business immediately after graduation. The aim is to convey the message to all students that they don't have to work for someone else. At any point of their career, they can create their own business. The centre wants to contribute in breaking down the barrier, showing that entrepreneurs are just like you and me. They can be your neighbour or your classmate. So starting your own business is presented as a realistic option.

In most of the courses they teach the skills necessary to start a business, but the success is not measured in the number of students actually starting own businesses. The centre's staff believe that even if the students have no intention of starting a business, entrepreneurship classes will make them more employable. Entrepreneurship classes can be what differentiate one student with an engineering diploma from another one. Entrepreneurship courses also make the student better prepared for work life.

At the postgraduate level however, the aim is to help people start businesses.

Pedagogical tools/teaching methods

At the undergraduate level the Hunter Centre had traditionally offered a range of courses designed to meet the needs undergraduates from across the university. These are provided in the form of electives which existing Strathclyde students can take as part of their degree programme, broadening the basis and value of their degrees. In addition, from 2007-8 it is now possible for students taking the Business Studies degree to take a concentration in entrepreneurship (the 'BABE' degree – BA in Business Enterprise)

At the post graduate level the Centre offers a Masters programmes in Technology Entrepreneurship (also available at the PGCert, PGDip and MSC level) and joint degrees with Digital Communications and Civil Engineering (Masters in Environmental Entrepreneurship). The Centre also teaches electives on the Strathclyde Business School MBA

The Hunter Centre also delivers an Enterprise Fellows programme on behalf of some of the UK's most respected Research Councils and learned societies including the Royal Society of Edinburgh, the Biotechnology and Biological Sciences Research Council (BBSRC) and the recently formed Science & Technology Facilities Council. This Programme is aimed at people engaged in university research or commercial employment, who are seeking to commercialise research in science and technology.

Finally, the Hunter Centre also has its own Post Graduate Research School with researchers working towards obtaining an MPhil or PhD by research

The teaching style at the Hunter Centre is highly interactive reflecting the nature of entrepreneurship and the passions and sense of commitment which drive it. It is a mix in which formal examination play little part. Emphasis is placed upon individual

and team assignments, the analysis of case studies, reflection, active class participation and interaction with real entrepreneurs.

The courses offered include the following: Introduction to Business Start up, New Venture Creation, Starting an Internet-Based Business and Entrepreneurial Finance, Human Capital and the Entrepreneur, Personal Creativity and Entrepreneurship in the Creative Industries

Entrepreneurship in the Creative Industries

The Entrepreneurship in the Creative Industries course consists of five main themes: an introduction to the creative economy and the creative business; the skills and attitudes of an entrepreneur; how to identify opportunities; the role and nature of intellectual property; and sources of finance available for creative industries entrepreneurs. The students are required to interview entrepreneurs in the creative industries, write an essay (e.g. on the requirements in making the transition from a part-time performer to a full-time professional business or on the effects of the digital revolution on the music industry) and do a group assignment to identify a business opportunity for their assessment. The course follows the format of the centre's common entrepreneurship courses, but with a particular emphasis on the challenges facing the creative sector.

As part of the course for the Applied Music department, the students and the lecturers have established their own radio channel. Celtic Music Radio is a terrestrial and web based radio station that is dedicated to support and promotion of the Celtic tradition. The radio station is based in studios at the Hunter Centre for Entrepreneurship at Strathclyde broadcasting to a local audience surrounding Glasgow and by internet enabling it to reach out to the Scottish diaspora and Celtic communities across the world. The radio station is financed by sponsorships and advertising. All the technical equipment was given by another radio station in Glasgow which switched to more modern equipment.

The radio station provides a practical example of entrepreneurship in the creative industries and is a channel to market for Celtic musicians who want to get their music out to a wider audience. It has an educational and economic mission. In educational terms, it plays an important role in a number of undergraduate and postgraduate degree courses at Strathclyde. It provides a live example of what a creative enterprise actually looks like and the issues involved in their establishment and operation. It allows students to broaden their degree experience through the type of experiential learning which lies at the heart of the Hunter Centre's approach to teaching. The students obtain hands on experience from real broadcasting, journalism and technologies of digital communications, computing and e-commerce. Students who do not study in the Department of Applied Music are welcome to work at the radio station to get work experience and see the enterprise from the inside.

Obstacles

One obstacle that the Hunter Centre recognises is that everything that happens and makes the department develop has been done the entrepreneurial way. The initiatives have been the departments own and they have to fight battles to get the resources to be able to implement them. There have been several tensions. For example, because

student numbers are fixed by Government, attracting students to entrepreneurship is a 'zero-sum game' with gains in one Department at the expense of losses elsewhere. The Hunter Centre has argued unsuccessfully to date that it would be appropriate in an 'entrepreneurial university' that every student should have to take at least one entrepreneurship course as an elective.

A further obstacle has been in attracting sufficient students from other departments to its elective modules. There are a number of possible reasons for this: the centre's location at the top of a tower block which means it is not visible; timetable constraints; inaccurate perceptions of 'entrepreneurship' amongst students and the reluctance of departments and faculties to let their students take entrepreneurship classes.

Factors of success

High quality, motivated staff who have created a real culture and spirit of entrepreneurship in the Centre is seen as one factor of success. The Centre now has a strong brand name, helped by the connection to Sir Tom Hunter, who is well known in Scotland, and is seen as a leading player in entrepreneurship teaching and research in the United Kingdom. The Centre also recognises the importance of media publicity and tries to get coverage and attention in newspapers and other media as often as possible.

29. STU INSTITUTE OF MANAGEMENT, SLOVAK UNIVERSITY OF TECHNOLOGY, SLOVAKIA

Interviewees: Vice-rector Robert Redhammer, Professor Ing. PhD. Koloman Ivanicka, Assoc. Prof. PhD. Marian Zajko and Assoc. Prof. Ing, PhD. Pavel Herzka

Keywords: engineering, entrepreneurship centre, cross-discipline collaboration,

Context and background⁷

The Slovak University of Technology (STU) was founded in 1937. From the start the University became the largest and most prestigious university of technology in Slovakia, and it still keeps this position. Today, STU has 18,000 students annually. The university consists of seven faculties. The faculties offer studies in 329 accredited BSc, MSc and PhD study programmes compatible with the European Credit Transfer System. STU successfully joins several European Union programmes. With 33 projects it is the dominant Slovak participant in the 6th EU Framework Programme for Research and Technological Development.

The STU mission and strategy is formulated in the Statutes. The strategy is updated on an annual basis. The updates for the years 2006 -2008 state:

“The need to implement education focused on learning basic entrepreneurial knowledge and skills as a standard part of education at universities of technology”(The 2005 Action Plans of Slovak government implementing the “Lisbon Strategy for Slovakia”)

“Support of technology incubators focusing upon innovative firms in the “pre-seed” development stage and fostering an entrepreneurial spirit among the science and technology community.

These tasks seem to be taken up actively by STU. However, at present the STU still concentrates on educating professionals for engineering, managerial or R&D posts, as

⁷ This case story is based both on the accomplished interview and on the paper: Lispet, Léonie C. and Marian Zajko (2007): *Entrepreneurship Education for Science and Engineering Students*. PAPER G-Forum 2007 Aachen, Entrepreneurship Education. The paper was partly updated by Marian Zajko in July 2008 after the interview.

well as the transfer of scientific results into practice without any mentioning entrepreneurial competencies.

This year STU has made an important reorganisation that may give the education in entrepreneurship a more solid platform. This reorganisation is independent of governmental plans and was motivated by the objective of the STU top management to strengthen the education in business administration and entrepreneurship.

So far, all courses in economics and management have been taught individually by the respective Departments of Economics & Management at four out of seven faculties: the Faculty of Civil Engineering, the Faculty of Chemical and Food Technology, the Faculty of Electrical Engineering and Information Technology - all situated in Bratislava - and the Faculty of Materials Science and Technology situated in Trnava. This was a reflection of the current autonomy of the STU faculties focusing on industry specialisation. Since March 2008 three autonomous departments of Economics & Management with different scopes of courses and very limited extents of cross-teaching among faculties were integrated within the STU Institute of Management. The institute will be in charge of the following accredited study programmes: Spatial Planning and Management (BSc, MSc, PhD), Economics and Management in Civil Engineering (MSc), Management of Chemical and Foodstuffs Technologies (MSc) and Industry Economics (PhD).

Strategy and Goals

- The objectives of the STU Institute of Management (IM) are:
- Integration of teaching and research resources in management disciplines for the STU faculties thus increasing their relevance within the university and in cooperation with other universities,
- To guarantee study programmes in management, especially the interdisciplinary programmes and university-wide programmes,
- To guarantee specific courses and educational modules within STU study programmes at BSc and MSc levels, to increase the intra university mobility of teachers, researchers and students interested in management issues,
- To promote entrepreneurship education within the STU study programmes. There should be more explicit focus upon entrepreneurial management in the IM's vision and strategy which is being developed.

The new Institute was initiated and set up by the STU top management, which is a clear statement of will to strengthen the education in entrepreneurship in Slovakian higher education. However, it will not be fully operative until September 2008 and it is hence too early to evaluate the implementation of IM's objectives.

The main motive for the reorganisation and creation of IM is the University's desire to contribute to more entrepreneurial and intrapreneurship mindset in the society. There is a demand for more education in entrepreneurship among students and more em-

phasis on this may strengthen STU in the competition for students with similar universities in the neighbouring countries.

The management of the University has also a clear strategy to develop more projects, which are useful both in an educational context and for local business. By this it should be possible for the IM and STU to enhance their income/financing, which is needed.

Teaching methods

The business courses taught at STU today could be described as applying a “managerial approach” in teaching. The managerial approach is described in Zajko, Lispet and Adriaanse (2007) as focusing upon present business activities and their management, analysis of business processes and functions, and their optimisation of efficiency and resource allocation. The alternative entrepreneurial approach is described as focusing upon the identification of opportunities and their implementation, analysis of changes in the environment, as well as innovations and business opportunities, coming together in a viable business model to organise production and resource allocation.⁸

It is however an aim for the new institute to use more teaching methods related to the entrepreneurial point of view described above. Important working methods can be summarised as follows:

- Lecturing in entrepreneurship.
- Use real-life case studies showing best practices in different fields.
- Tutoring by experts and professionals from business, although lack of financing will be a constraint of IM’s ability to do this on a large scale.
- Let students in working groups develop fictitious companies and business plans, that will be revised and the students have to defend.
- Organising student seminars, where excellent student work is shared and discussed.

Obstacles

The greatest obstacle for further development of education in entrepreneurship is lack of financing. There is a need for higher salaries of professors and teachers to attract the best people with relevant experiences. Teaching entrepreneurship is also

⁸ The authors base and agree their distinguishing between managerial approaches and entrepreneurial approaches on Verhaegen Paul (2007): *Changing the Paradigm of Management Programmes from Managerial to Entrepreneurial*. EFER/EECPCL Entrepreneurship Seminar, Barcelona, May 2007.

costly when using external resources to a larger degree. IM is not able to pay guest speakers at the moment.

The University is generally concerned about an aging problem in the teaching staff, which could be an obstacle to the development of education in entrepreneurship. It is also difficult to make entrepreneurship more prestigious. Currently the technology courses are regarded more important than the economic ones, both among students and teachers at STU.

Factors of success

Top management are decisive to give education in entrepreneurship enough resources and independence. Within the limits of the STU financing, the STU top management have given the IM enough independence for further development. It is also important to have space for innovation in the curriculum and an entrepreneurial orientation among teachers, which STU is working on. International cooperation is regarded as important factor of further development.

Recommendations

There is an urgent need for more governmental funding of universities in general and education in entrepreneurship in particular. There is also a need for stronger emphasis upon SME-incubators both at university level and on national level. Moreover, Bologna process of approving educational plans should be made less bureaucratic.

30. THE TECHNICAL UNIVERSITY OF MUNICH (TUM), GERMANY

Interviewees: Prof. Dr. Dr. Achleitner, KfW chair of Entrepreneurial Finance, Dr. Jopen, co-founder of UnternehmerTUM, Dr. Schönenberger, co-founder of UnternehmerTUM and Dr. Reiner Braun, Assistant Professor under the KfW chair in Entrepreneurial Finance

Keywords: student camp model, motivational structures, pedagogical tool, design, entrepreneurship centre, goals and objectives, funding

Context

The history of TUM dates back to 1868, when a 'Polytechnic School' having the status of a university was founded. A foreign branch of the university was launched in 2002 in Singapore – “The German Institute of Science and Technology”. TUM has 12 faculties, and currently offers about 111 courses of study with a choice of academic qualifications in some subjects. TUM employs approx. 3,400 academic staff, and has approx. 20,000 students.

Since 1998, the Technical University in Munich (TUM) has undergone a gradual transformation process ultimately designed to transform itself into an entrepreneurial university. This transformation process has involved a wide range of activities within a number of different areas. During the years after 1998, TUM has established a university-driven technology transfer company (1999) engaged in professional fundraising (1999) and has raised more than 100 million Euros, launched a world-wide alumni network (1999) now counting more than 27,000 alumni. In 2002, the TUM opened The Center for Entrepreneurship (UnternehmerTUM) aiming to undertake entrepreneurship education. Also in 2002, an incubator was set up – the Garching Technology and Founder Center.

Entrepreneurship strategy

The decision to become an entrepreneurial university was a response to the increasing international competition for knowledge and innovation. Therefore, TUM has truly adopted the strategic principle of the entrepreneurial university. This means that TUM takes a scientific business approach, from which the whole agenda of tuition, research, academic school education, further education and advanced training is derived.

"This is not a marketing campaign – it is thoroughly and truly felt." Prof. Dr. Dr. Achleitner, KfW Chair in Entrepreneurial Finance

Strategic embeddedness

The importance of the commitment by the top management as well as the significant influence this commitment has on the strategic embeddedness of entrepreneurship in the institution is very clear at the TUM. As said by Prof. Dr. Dr. Achleitner: "Our university is led by a very strong leader [Wolfgang Hermann]. In a competition that we have between German universities, our slogan was "the entrepreneurial university". And this is incredibly important. He [the president of TUM] would never present the university forgetting the entrepreneurial side. He is fully committed. This is the way he thinks – he is an entrepreneur deep down There is no doubt that our top management commitment from him and some of the vice presidents who spend a lot of time supporting the UnternehmerTUM and the work of the KfW chair is absolutely essential."

Institutional infrastructure

Entrepreneurship appointments

The TUM has an endowed chair in entrepreneurial finance – the KfW chair, which is filled by Dr. Achleitner and has twelve faculties in total. The chair, which was the first of its kind in Germany, offers a range of academic courses related to entrepreneurial finance, which are available to all students at the TUM. The courses consist of lectures as well as case studies and practice oriented project work. The teaching materials used are made accessible for other professors of the university, so that they can introduce the topic of entrepreneurship in their courses without having to produce their own material.

Approaches – The UnternehmerTUM (Centre for Innovation and Business Creation)

In January 2002 UnternehmerTUM⁹, the centre for entrepreneurship at the TUM, was founded by Dr. Jopen and Dr. Schönenberger based on a idea Dr. Schönenberger put forward in his Master's thesis. The president of TUM, Dr. Wolfgang Hermann, asked Dr. Schönenberger to investigate the possibility of setting up an entrepreneurship centre by analysing good-practice examples of entrepreneurship centres around the world. Based on this work, Dr. Schönenberger together with Dr. Jopen (a serial entrepreneur), wrote a business plan for setting up an entrepreneurship centre and presented it to the president. In the course on 12 months they had raised enough money to start the UnternehmerTUM.

The company is set up as an independent, non-profit making private limited company and an associated institute of the university. The launch of UnternehmerTUM was especially made possible through funding from a private entrepreneur, Susanne Klatten. She has also ensured to long-term basic funding of the UnternehmerTUM and supports the company as a partner and a member of the supervisory board. The cen-

⁹ Unternehmer = entrepreneur

tre has about 40 employees, of these approx. 20 professionals coming from the corporate world and having entrepreneurial experience of their own. Due to the practical orientation of the UnternehmerTUM, it is important that the people working there, helping students and staff start-up businesses, have tried it themselves.

The overall objective of the centre is to develop entrepreneurial talents and entrepreneurial opportunities. The goal is therefore to help students and scientists at the TUM to develop their business skills in both theory and practice, and support university innovation and start-up teams to develop their products and business ventures. This is done through a number of activities relating to three main topics: 1) Entrepreneurial qualification, 2) Innovation, and 3) Business creation.

In relation to *entrepreneurial qualification* the UnternehmerTUM offers a range of courses and programmes:

Lecture series where the TUM invites alumni entrepreneurs to come back and tell about their experiences and act as role models.

Business plan seminars and spring/summer schools, where the students are teamed up in interdisciplinary groups to develop their own business ideas and business models.

Manage&More is a interdisciplinary entrepreneurship programme at the TUM launched in 2004. Each semester 20 students and post-graduates are selected from all faculties to participate in the 18-month programme. These students are selected on the basis of a number of criteria such as ambition and commitment to their studies. The programme focuses on four essential entrepreneurial skills: 1) the ability to recognise chances, 2) to realise innovations, 3) to exploit and utilise resources, and 4) to take risks and bear responsibility.

During the programme the students can, along with their studies, participate in seminars, workshops, and lectures. Moreover, the students get their own personal mentor provided by the corporate partners of the TUM. Also in cooperation with the corporate partners – many of these major worldwide companies e.g. Lufthansa, BASF, Microsoft and Intel, the students – in interdisciplinary groups – undertake innovation projects where they develop and market new products and services¹⁰ within a short period of time. On average, three companies are started per year due to the Manage&More programme.

Figure 1: The Manage&More pyramid



Executive Programme in Innovation & Business Creation: Just recently the TUM Business School and UnternehmerTUM together with the Leipzig Graduate School of

¹⁰ To learn more about the programme, please visit: <http://www.unternehmertum.de/mm/manage.html> (in German, but with an English summary)

Management launched a MBA programme on Innovation and Business Creation. The programme consists of 60 days of classroom teaching and training as well as a study trip to Silicon Valley and is offered to experienced innovation managers and corporate founders to allow them to further develop their business models in an entrepreneurial network.¹¹

“The reason why we started this programme [the EMBA] was that our undergraduates and Ph.D. students are quite young and therefore we do not have experienced people who can become CEOs of our spin-offs from the university – the intention was to get the right CEOs into our eco-system and matching them with the researchers.” Dr. Jopen and Dr. Schönenberger, founders of UnternehmerTUM

With regards to Innovation and Business creation, the UnternehmerTUM has different types of projects and activities. There is a focus on developing marketable products. Approx. 40 innovation teams annually are engaged in developing prototypes for marketable products and services. Also, the UnternehmerTUM has around 20 start-up teams annually. The UnternehmerTUM also runs start-up workshops that focus on the pre-start-up and start-up phases that students and staff can attend. Moreover, the centre also has consulting projects where students and staff create innovation prototypes for companies.¹²

Outreach

The TUM has very strong links to external stakeholders. The university has a CRM-system that includes all the alumni as well as all other external stakeholders and partners. This system is used very actively in dealing with the surrounding community. For example, the CRM-system is used to search for relevant partners for the start-up teams in the UnternehmerTUM. However, it is not only the TUM making contact with external stakeholders. Private companies also often reach out to the TUM:

“Often companies contact us – e.g. BASF – they have a new material, but they do not have applications. So they ask us if we have teams that can invent new applications and start new companies.” Dr. Schönenberger, co-founder of the UnternehmerTUM

The TUM helps industrial partners find solutions to customer problems and can reveal customer benefits and acceptance of new ideas for products and services at an early stage. These partnerships not only strengthen the level of entrepreneurship in the community, but also help to strengthen the sense of intrapreneurship in existing companies in the community.

Alumni

In the process of becoming an entrepreneurial university the TUM has made a great effort to keep in touch with its alumni. An alumni centre has been established and the CRM-system is also taking advantage to keep track of the alumni. Having these alumni entrepreneurs in the CRM-system, TUM is able to bring the alumni entrepre-

¹¹ To learn more about the EMBA, please visit: <http://www.innovationprogram.de/emba/index.html>

¹² To learn more, please visit: <http://www.unternehmertum.de/english/index.html>

neers back in and involve them in various ways in the entrepreneurship education activities.

Obstacles

In their entrepreneurship education efforts, the interviewees have come across a number of obstacles:

In multidisciplinary institutions with a number of faculties which have their own systems and procedures, barriers in relation to curriculum, credits etc. can emerge. At the TUM, the entrepreneurship educators had to contact all of the faculties and, in some cases, also the professors to get permission for the students to participate in entrepreneurship courses and also to get credit for the courses.

Entrepreneurship is a field that has to fight for its reputation. The lack of academic credibility of entrepreneurship can also make it difficult for entrepreneurship education to be accepted in faculties and especially non-business faculties.

Recommendations

If an institution aims at being a state-of-art entrepreneurial institution it demands a joint effort from top to bottom – it cannot depend on one person alone. The institutions need to think big in terms of resources and scope and that requires a strong commitment from top management.

“If you want to do something in the premier league, you need several people. If you just look at the size of the UnternehmerTUM and bear in mind that we have a research institute [Center for Entrepreneurial and Financial Studies] with more than 20 researchers it is obvious that this wouldn’t work with one person alone.” Prof. Dr. Dr. Achleitner, KfW Chair in Entrepreneurial Finance

Having a strong network in the external community is very important when striving to be an entrepreneurial institution. But often institutions underestimate how much time it takes to build up and maintain such networks and therefore institutions must explicitly devote time and resources to undertake this never-ending task.

Make the students aware of all the opportunities they have to engage in entrepreneurship activities. At the TUM 13 paths have been built up to reach the students with the entrepreneurship message, e.g. through posters, web pages, booklets, speak in lectures etc.

“They are not just coming by – it is totally formalised that all our students – when they start at university – they learn about UnternehmerTUM, learn what can be done here etc. It is an entirely formal thing. We will never forget – it is like you don’t forget to brush your teeth in the morning and we would have one generation of students who haven’t heard the message.” Prof. Dr. Dr. Achleitner, KfW Chair in Entrepreneurial Finance

31. UNIVERSITE DE NANTES, FRANCE

Interviewees: Director of Créactiv Nathalie Schieb-Bienfait and Associate Professor Cécile Clergeau

Keywords: advisory service, collaboration with local business, community engagement, compulsory course, cross-institutional collaboration, external funding, lecturing, workshop

Context

The University of Nantes started teaching entrepreneurship in 2002 as one of the first universities in France. The project emerged in a favourable setting: Firstly, in 1998 the Ministry of Education called on the doctorate academies to implement additional training courses with a view to preparing the doctors for their professional lives. Second, a new innovation law (1999) provided a legal setting for enhancing university research through venture creation which from that date also included researchers/professors. Secondly, different actors within the university had an initial awareness of entrepreneurship and the potential lying in the university. Several isolated initiatives were being taken, but in 2002 the university programme Créactiv was established as a common offer for all students, meaning 35,000 students in several disciplines (human sciences, law, science, economics/management, technology/engineering, medicine).

The project very fast got decisive support from external partners like the Chamber of Commerce and Industry (CCI) and the regional council. The CCI financed a part-time position for a specialist in assisting venture creators available to the newly established resource centre. This commitment also made it possible to build up a network of partners. Both of these factors are seen as key factors in the centre's development. Also, the commitment made it easier to establish and anchor the project throughout the university and the top management.

In September 2004 the Nantes House of entrepreneurship was created. It has offers for all students in the region (eight other HEIs). The Créactiv is now the university programme of the House of entrepreneurship and is open to all students at the University of Nantes.

Strategy

The Créactiv project got a favourable feedback from the university head office. The project became part of the university's development strategy and was formalised in

its master plan of 1999-2003. This provided greater clarity and helped to introduce the project in the external political sphere.

Today, one of the vice presidents of the university has a seat in the steering committee of Créactiv. This clearly shows that the project is valued by the top management.

Goals

Créactiv's goal is to nurture an entrepreneurial culture at the university. The overlying motivation is not that the education should lead to a large number of student start-ups. The idea is rather that all students graduating from the University of Nantes should know that it is possible to be entrepreneurial/start a business, regardless of which discipline they graduate in.

The courses are aimed at familiarising the students with entrepreneurship and allowing them to discover different entrepreneurial models in order to boost their will to undertake. The students should be aware of the main steps in such a process and have a basic knowledge about the financial support and other types of support available.

Pedagogical tools/teaching methods

Créactiv Nantes offers different kinds of services to the students, from lecturing to different kinds of events and workshops. In the beginning, all entrepreneurship education was elective, but available for all disciplines. Today, part of the entrepreneurship education is compulsory for all disciplines.

Round table discussions between university people (students, teachers and researchers) and entrepreneurs aiming at creating a type of osmosis between both worlds.

Workshops in 12 hour sessions or 21 hour sessions, where students and researchers assess their entrepreneurial capabilities. Contains discovery modules and operational modules (tool box).

Events like "Facultés d'entreprendre"

Personal advice by project manager. Students can present projects and ideas and benefit from different sorts of advice. The project manager is employed on a part-time basis.

The rest of the time this person works for the Chamber of Commerce and Industry. Consequently, the CCI gets to learn more about the university world and the ideas flourishing there.

Entrepreneurial marathon with multidisciplinary teams. A competition which aims at both awakening the students' entrepreneurial awareness and making students of different disciplines communicate.

During the year 2007/2008, almost 1,800 students participated one or more of the Créactiv entrepreneurship events. Since the beginning of the project, approximately 6,500 students have participated in Créactiv events.

For the year 2008/2009, the following pilot projects will be tested:

“Permis d’entreprendre” giving the students a possibility to detect and evaluate their entrepreneurial skills.

Conference cycle with entrepreneurs from the region wishing to meet young students and tell their entrepreneur stories.

Partner seminars with regional actors (entrepreneurs/investors) in order to exchange ideas and experience.

Créactiv Nantes is a service common to the whole university. This means that it had to be tailored to the multiplicity of disciplines, research activities, cultures and backgrounds. Constantly the programme is receptive to the expectations of teachers, researchers and students. The basic programme is the same for all disciplines. However, when guest lecturers are being brought in, Créactiv always strives to find the most suitable example for the students. It has to be someone with whom the students can identify, preferably a former student from that particular faculty who has started his own business.

The Créactiv centre aims at developing courses up to the level of doctorate.

Obstacles

When trying to implement entrepreneurship education, the project managers met some obstacles. Not all departments were convinced that this was a good idea, fearing that the university would be too commercial and that it would lose academic values. However, the project managers did not meet any systematic resistance, for example from one specific discipline/generation etc. On the contrary, it depended on personal ideas and backgrounds whether a department was positive or reluctant to the project.

Another obstacle is that in France every professor can freely choose his programme and curriculum within a given framework. The president of the university can not impose a professor to include certain modules into his or her subject.

Factors of success

The fact that Nantes only has one university with almost all disciplines included is clearly a success factor. Once decided upon, it is easier to develop the project throughout one single institution. Also, the fact that the external partners (CCI, regional council) supported the project quickly, both in terms of resources and in terms of opening their network for Créactiv, has been crucial in implementing the project.

32. UNIVERSITY OF CAMBRIDGE, THE UK

Interviewees: Dr. Shailendra Vyakarnam, director for the Centre for Entrepreneurial Learning, Dr. Shima Barakat, Research and Teach Fellow at the Centre for Entrepreneurial Learning and Professor Thomas Hyclak, Lehigh University (USA)

Keywords: second-generation entrepreneurship, external funding, entrepreneurship center, pedagogical tool, innovation

Facts about University of Cambridge:

- <http://www.cam.ac.uk/>
- The University of Cambridge was established in 1209 and will next year celebrate its 800 years' anniversary
- Academically, Cambridge is consistently ranked in the world's top-5 universities
- The University of Cambridge consists of 31 independent, self-governing colleges
- Cambridge has six schools: Arts and Humanities, Biological Sciences, including Veterinary Medicine, Clinical Medicine, Humanities and Social Sciences, Physical Sciences, and Technology and has over 100 departments and faculties
- Cambridge has about 11,600 undergraduate students, 6,300 postgraduate students, and 673 doctorate students
- Approx. 1,600 academic staff and 1,200 academic related staff are employed at the university

Context

Since 1999, the UK has on a national policy level been encouraging higher-education institutions to engage in entrepreneurship development. In relation hereto, universities have been increasingly encouraged to commercially exploit research activities and intellectual property to generate a third stream of funding. As a response to this encouragement, the University of Cambridge Entrepreneurship Centre (CEC) was established in 1999, with a one-time grant of GBP 2.9 million for the first five years after which the Centre needed to be self-financing.

The objective of the centre was to promote a more entrepreneurial culture at the university by 1) advancing the teaching and training in entrepreneurship and 2) providing practical support for staff/students who wanted to licence out their ideas and/or to start businesses. The centre operates as part of the Judge Business School at the university, in partnership with the science and technology faculties.

In 2003, the CEC was split up into the Centre for Entrepreneurial Learning (CfEL) which remained at the Judge Business School, and Cambridge Enterprise. The teaching and training activity was placed in CEL, whereas Cambridge Enterprise was created to work alongside the Technology Transfer office, the University Challenge Fund and other organisations within the University to enhance the interaction between university and industry, particularly with knowledge transfer.¹³

Institutional infrastructure – the Centre for Entrepreneurial Learning

The Centre for Entrepreneurial Learning (CfEL) was launched on 1 September 2003 as a not-for-profit organisation. The centre has nine full-time staff that are all focused on planning and implementing entrepreneurship courses, while the actual delivery of the entrepreneurship courses is largely by entrepreneurs and practitioners (on a pro-bono basis). It is the opinion of the centre that entrepreneurs and practitioners are best equipped to do the teaching; and by providing additional ways for students to interact with entrepreneurs it is possible to inspire them towards a more positive attitude to entrepreneurship. The centre has about 200 entrepreneurs and practitioners (VC, business angels, bankers and other professionals) to teach and to interact with students. The centre ensures that the entrepreneurs are not invited more than once or twice a year in order not to overuse their courtesy.

The structure of CfEL includes the Director who also teaches, but whose primary role (with teaching) is that of curriculum design. There are Programme Managers whose role is more strategic with course delivery and who are gradually taking over the curriculum design function. A Centre Manager ensures the smooth running of the centre, while administrative staff manages individual courses.

The mission of the centre is to "Spread the Spirit of Enterprise". By enabling students to learn entrepreneurial skills, CfEL aims to encourage students to consider careers as entrepreneurs or to take these skills to future employers. This is done by providing educational activities to inspire and build skills in the practice of entrepreneurship (primarily to students of Science, Engineering and Technology). In addition, the centre has a number of objectives:

- Scaling up the provision of entrepreneurship teaching
- Providing the best source of "entrepreneurs in the classroom" who are fully briefed on the curriculum

¹³ The director of the CfEL (Dr. Shailendra Vyakarnam) has authored an article describing the centre as well as the background of the centre. This article has supplemented the information gained from the interview. The article can be found here: <http://www.transitions.co.uk/uploads/Embedding%20entrepreneurship%20education.pdf>

- Appropriate and relevant curriculum for the practice of entrepreneurship
- Creating inspirational learning environments
- Being sustainable in the long term through financial prudence.

Teaching & learning at the CfEL

All the activities at the CfEL are guided by their wide definition of entrepreneurship.

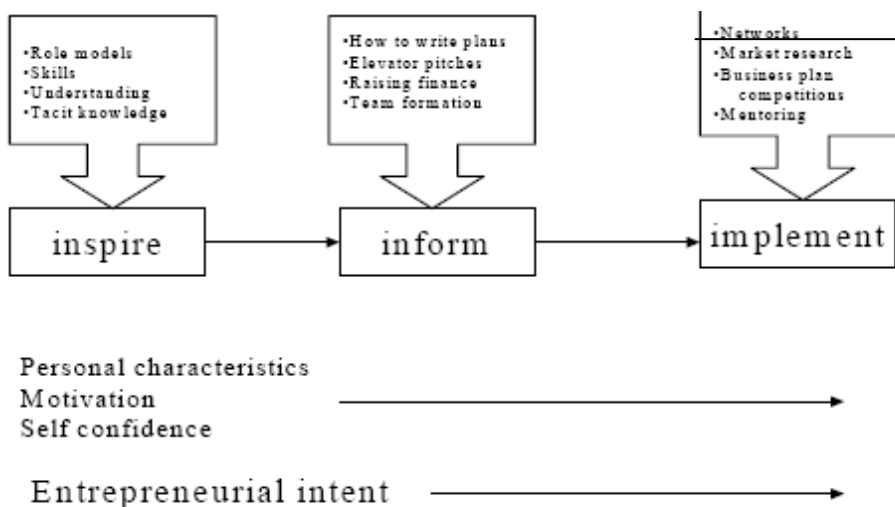
“We take such a wide view on entrepreneurship. We see it more as a set of skills, characteristics and attitudes more than just venture creation. So you can be an entrepreneur, be entrepreneurial in a corporation, you can be entrepreneurial in a social setting. You can be an entrepreneurial academic and never leave the university.” Dr. Shima Barakat, Research and Teach Fellow at the Centre for Entrepreneurial Learning

The focal point of entrepreneurship approach at the University of Cambridge has been to develop the self-confidence and self-efficacy of students by enabling them to learn entrepreneurial skills and understanding. Through this approach the CfEL has worked to establish a core curriculum focused on entrepreneurial processes and the practice of entrepreneurship.

“We don’t teach how to write business plans – we stopped doing that 4-5 years ago. Instead, we have things to do with confidence, career choices, we have things to do with opportunity recognition. So we are genuinely dealing with entrepreneurship education and not business studies made simple.” Dr. Vyakarnam, Director of the CfEL

Teaching programmes at the Centre for Entrepreneurial Learning have been framed to fit into a three-part model, initially as a practical response to the way the terms are structured at Cambridge.

Figure 1: The three-part entrepreneurship education model of CfEL



In the first part CfEL seeks to inspire students to see themselves as possessing entrepreneurial capabilities. In the second part, when they have thought about their own ambitions the students are provided with information about the how to take their ideas to reality. Finally, they are assisted with implementation of their ideas through mentoring and sign posting to resources and they are given other forms of practical support (in some cases through Business Plan competitions to provide practice at implementation).

There are two basic segments of the student-centred activity at the University of Cambridge: 1) non-credit bearing courses where students elect to take a course because they are interested in entrepreneurship (also generally open to students from other universities and the general public), and 2) credit bearing courses where, on the whole, the course is an elective but has the added bonus of being credit bearing within the main degree programme that the students are on. Over its seven years, the CfEL has increased the range and depth of courses, but the centre has three main flagship programmes:

- Enterprise Tuesday: Here the objective is to raise awareness – it is entrepreneurship for the curious (covers the first part in the model in figure 1).¹⁴
- Enterprisers: This started as a collaboration between Cambridge and MIT. The objective is for the participants to gain self-confidence – to become entrepreneurial (though not necessarily entrepreneurs) and raise the level of intent.¹⁵
- Ignite: This is an intensive one-week programme for aspiring entrepreneurs and corporate innovators. The objective is to answer the question: “I have an idea – what do I do?”¹⁶

The table in figure 2 gives an overview of the programmes at CfEL and how they fit into the three-part model in figure 1.

¹⁴ For more information, please visit www.entrepreneurs.jbs.cam.ac.uk

¹⁵ www.enterprisers.org

¹⁶ For more information, please visit <http://www.cfel.jbs.cam.ac.uk/programmes/ignite/documents/Finalignite2008int2.pdf>

Figure 2: CfEL's entrepreneurship programmes

<i>I want to learn...</i>	What entrepreneurship is all about	Some new knowledge and skills in business planning	How to get my idea started	How to survive and grow in the early stages	How to develop and grow companies	How to teach entrepreneurship
I'm a CU student and want Entrepreneurship as part of my degree	Undergraduate and Postgraduate Assessed Programmes					
I'm a student or member of staff or local entrepreneurial individual	Enterprise Tuesday (Term 1)	Enterprise Tuesday (Term 2)				
I'm a student	Enterprisers					
I'm a Solo Entrepreneur with a technology idea			'Fast Tracking Innovation to Commercial Success'			
I'm a Corporate Intrapreneur or Entrepreneurial Manager			Ignite		Senior Managers' Programme	
I'm an entrepreneur or an entrepreneurial academic						Summer Forum

Incurricular course at undergraduate and postgraduate levels: Emerging Technology Entrepreneurship

The Emerging Technology Entrepreneurship course (is part of the “undergraduate and postgraduate assessed programmes” in figure 2) is a credit-bearing elective that is available at both undergraduate and postgraduate levels. At the undergraduate level students from three departments (Department of Chemical Engineering, Department of Materials Science, and Department of Physics) can take the course. At postgraduate level, the course is available for MBA students from the Judge Business School and PhD students from science and technology departments.

The aim of the course is to find and articulate the future market opportunities of an emerging technology and to assess how they fit into industries. The course has four elements: 1) lecture/workshop series that support the projects to give the students the background knowledge they need; 2) a project based on real technologies sourced from within the departments and under a non-disclosure agreement, where students in small teams carry out market research and technology due diligence. Here, the students work directly with the inventors from the university departments; 3) supervision that is provided on set topics giving the students hands-on support to enable them to carry out their assignments; and 4) the assessment which entails a market assessment report and presentation that are made to their department "clients" and if there is a real opportunity the departments are then free to take the next steps.

Curriculum development

When developing a new curriculum, the CfEL staff both draw on their own experiences, but are also constantly seeking good-practice from other higher-education institutions and other relevant organisations.

“When developing new curriculum, we start of by asking “What do you need to be entrepreneurial?” If we for example identify ‘confidence’, the next step is to figure out how you create an environment where people can gain confidence. There are different ways you can do that – we draw on different existing programmes. If something isn’t already available out there, we create it ourselves. We are not beyond developing our own tools and techniques. We try it out, see what the effects are and then we tweak it. Within 2-3 times we got a new way of teaching something.” Dr. Shima Barakat, Research and Teach Fellow at CfEL

According to Dr. Vyakarnam, the marketing is almost the greatest task of all in entrepreneurship education. To make the students aware of the entrepreneurship opportunities takes a great amount of effort each year and therefore one of the first appointments the centre made was a marketing manager. Furthermore, the CfEL has a marketing budget in excess of GBP 100,000. The centre has a number of marketing channels to reach the students: the CfEL webpage¹⁷, brochures, posters, contact to heads of departments to get student mailing lists, contact to other entrepreneurship champions at the University of Cambridge and give presentations at the different departments.

“Marketing and communication is massively important. Of course, you need to get the content right and all the other pieces: the learning, the philosophy behind, the set of values, the vision for it. All that has to be right – as well as the academic contribution. Once we have done all that we need students!” Dr. Vyakarnam, director of the CfEL

Teaching methods

A wide variety of teaching methods are used in the different courses offered by the CfEL. Among them are lecturing, problem-based learning, projects working with real technologies, entrepreneurs in the classroom, assignments etc. One of the things the CfEL is currently undertaking is a video book approach. The centre has realised that when starting up businesses there will evidently be thousands of questions and it will not be possible to answer all these questions during a course. Therefore, the centre is little by little building up a huge library of video books answering all kinds of questions that can arise during the start-up process. That way frequently asked questions in entrepreneurship will be answered by entrepreneurs and be organised according to curriculum.

Obstacles

At present, the activities of CfEL are mainly available for science, engineering and technology students. With the current amount of resources it is not possible to include the humanities students – if the efforts are to have a proper impact, sufficient

¹⁷ <http://www.cfel.jbs.cam.ac.uk/index.html>

resources are necessary. With the current level of resources devoted to entrepreneurship education (in general) it is difficult to have an impact on all students. By attempting to cover all students, institutions will risk ending up with a few courses available for all students but with a limited impact. Instead, CfEL has chosen – given the amount of resources at their disposal – to offer high-impact courses to a subset of students.

Recommendations

The key is to make sure that the activities/courses are scalable – Dr. Vyakarnam, director of the CfEL, *“Honestly, if we are going to make a big impact, we need big numbers.”*

A recommendation for institutions that want to begin to undertake entrepreneurship education: Get the word out as fast as you can – give yourself legitimacy. And you give yourself legitimacy by only doing it. If we had been having arguments and discussion about “should it be this or that”, then we would still be here having arguments. There is nothing worse than a good debate to stop you from doing anything... We just had to do it and prove that we were needed, that there was a demand for us. And then we could go and talk to department heads and say ‘look, here seems to be an appetite, let’s collaborate’.” Dr. Vyakarnam, Director of the CfEL

“There is a big fundamental difference between the European situation and the US situation. Our curriculum needs to focus on mindsets. In the US – on the whole – the issue of mindset is in the eco-system – it is coming from politics, from society in general, it is coming from the corporate world – the message that it is okay to succeed is coming from everywhere – that it is actually quite nice to succeed. So the curriculum in the USA is about implementation of that vision. In Europe, we are still worrying about whether it is okay to be successful – so we have a long way to go. Who is interested in writing business plans when we don’t know whether we actually want to succeed? So the entrepreneurial culture must be the first step.” Dr. Vyakarnam, director of the CfEL

33. UNIVERSITY OF LJUBLJANA, SLOVENIA

Interviewees: Ph.D., Assistant Professor Mateja Drnovsek, Ph. D., Full Professor Ales Vahcic, Department of Entrepreneurship

Keywords: person-driven, involving process, entrepreneurship center, incubator, design, lecturing, close to practice, entrepreneurship professor

Facts about the University of Ljubljana

- University of Ljubljana was founded in 1919
- It has 63,000 graduate and postgraduate students.
- 4,000 higher-education teachers are employed in
- 22 faculties, 3 arts academies and one university college.
- The Faculty of Economics - where the entrepreneurship department is placed - it is the largest faculty of the University of Ljubljana with almost 10,000 full-time and part-time undergraduate and graduate students.

Context

Entrepreneurship Education has a long history which goes back to the socialist system. An important driving force for introducing entrepreneurship was that research on growth in socialist countries showed that small firms were not allowed free entry. As a consequence there was a risk that SMEs would disappear (a burning platform).

In the 1980ies links were established to US Universities through studies at the University of Cornell where entrepreneurship education was on the agenda. This was the beginning of a long and lasting relationship between colleagues in US and Yugoslavia. Today there is still a strong connection to US colleagues.

At Ljubljana University teaching in Entrepreneurship began in 1988. It started out with practical programmes for socialist entrepreneurs (including business planning etc.) and with research in the field. In 1992 the faculty of Economics started a graduate programme in entrepreneurship with financial support from TEMPUS (EU programme for modernisation of higher education). So far entrepreneurship education has basically been person driven but supported both politically and by the business

community. As a result there was a very strong legitimacy and it was quite easy to operate with this issue at the academic level.

The aim of introducing entrepreneurship education was to use resources in a more effective way and to promote Entrepreneurs as an engine of growth. Focus was not just on small business but more broadly on setting up companies or acting entrepreneurial in existing business. In the beginning there was a lot of enthusiasm from students. It was a new and interesting way of thinking. Today relatively few students see themselves as entrepreneurs and go for courses that support good job opportunities.

Today, Ljubljana University has a strong position in entrepreneurship education and research based on long experience in the field and strong international connections. Lecturers / professors from the entrepreneurship department are involved in most of the preparation of the legislation regarding entrepreneurship and also represented in relevant committees.

Strategy

Entrepreneurship is not mentioned in the University's mission statement and there is no specific strategy and policies regarding entrepreneurship education.

In the faculty of economics' (FELU) mission statement it is mentioned that:

"FELU creates and disseminates knowledge to enable students' successful entry into the business world and offers a rewarding investment opportunity to the business community."

The mission statement is supported by strategic guidelines which among other things emphasise the need for a strong link to the corporate world:

FELU needs to strengthen its connection with the corporate world to be able to offer students not only the quickest and best way to obtaining a degree, but also to provide good insight into the business world. To achieve this, FELU will set out to fulfil the following. It will involve business executives in the delivery of its study programmes. The programmes will be partly provided by FELU's corporate partners. FELU's graduates will be encouraged to stay connected with FELU. Corporate management will be given the opportunity to shape FELU's strategic guidelines, while seeing corporate interests represented in the design, delivery and development of programmes to be financially supported by corporate partners. FELU will in turn develop programmes, especially graduate ones, that will be tailored to the demands of the business community.

So even though entrepreneurship is not directly mentioned, the programmes should be highly tailored to the demands of the business community.

Resources

The institution is publicly financed, and thus, money for faculty development is available.

There is an internal research fund in the department which opens up opportunities to participate in external activities (seminars, workshops etc.) related to research in entrepreneurship.

Institutional infrastructure

The responsibility for Entrepreneurship education is placed in an Entrepreneurship department placed in the Faculty of Economics. The department offers entrepreneurship courses for all students at the university. However, only few students from other faculties participate in the courses. It is a barrier, that there is a lack of interdisciplinary cooperation. Often it is very difficult for students to take courses in other faculties than their own.

The entrepreneurship department has 5 full time faculty members (full professors, assistant professors and assistants) 6 associate members (full professors, assistant professors and assistants) and 11 visiting professors (part time lecturers).

Most importantly, the department has a great autonomy to adapt to what is going on in the market. The framework for doing so is quite informal. Autonomy is an important strength and vital in order to move in accordance with the market demands and in line with the university's overall policy. Another of the department's strengths is the tailored approach to entrepreneurship education. The department cooperates with real entrepreneurial companies for instance in the development of PhD programmes.

There is a university-based incubator for students and alumni, which is fully occupied. The push to start the Incubator came from the Ministry of Economy as it was sponsored by a government programme. The Incubator has a director and administrative staff. There are 10 projects in the Incubator and they are selected from around 100 projects. Here students can develop their ideas and build up a business plan. Anybody has the opportunity to realise his or her idea, including professors – it's an institutionalised right. The students can later continue in other Technology Parks - also promoted by the Government, the City of Ljubljana and large companies.

Moreover, student conferences are organised, where students can present their business plans, and there is a competition attended by companies in a kind of a recruitment market. However, only few students participate in the competition.

Teaching and learning

At undergraduate level the university offers a professional degree business programme. The programme lasts for three years / 6 semesters. The first semester consists of core classes while in the second semester of the first year students choose from among nine specialisations – one of them is Entrepreneurship. The main feature of this programme is its practical orientation. Within the programme the students have to complete 480 hours of workplace experience which familiarises them with the business world while they are still studying.

After finishing the three-year undergraduate programme, students can directly enrol in one of the 12 two-year master's programmes. One of the programmes is Entrepreneurship. This programme develops knowledge for recognising and developing business opportunities, for creation, development, and growth, and for the constant restructuring of businesses to attain excellence on the global market.

The aim is to create businesspersons able to follow world business trends for their own and family-run businesses and to support large and growing companies through inclusion in business processes in Slovenia and abroad.

A mix of teaching methods is applied. When many students are following a course the typical method will be lecturing. Lectures can be supported with project work for instance business plan and cases. In addition, guest speakers are invited, for instance famous entrepreneurs in Slovenia. Videos and DVDs and broadcasts are also used in the work with business plans.

When a small group of 20-30 students follow a course it opens up new opportunities and for working on a less traditional way, for instance with one-to-one relations between students and teachers. In small classes, however, more traditional lecturing is used. Typically the methods are tailored to the situation and what works in different contexts.

"Student evaluations show that we are above average. Students like the project work approach and the best of the course is where guest speakers are involved".

In the first year the number of students amounted to 800. In the second year around 400 students (on an undergraduate programme) will take a mandatory course in Entrepreneurship. On the more specific track with optional courses there are around 80 students.

In general the teachers are very practical orientated. They have business experience, are engaged in corporate boards in smaller and larger intuitions, which is very important for students, and they have a strong network in the business community. Though our network with the business community, representatives from businesses are willing to come and give lectures, mentoring, and open for students final theses etc.

Outreach

The department has a strong outreach with links to other universities both national and international (especially US), and with links to the business community and to the political system.

The Faculty of Economics has an Alumni Club, which establishes and facilitates links between the FELU's graduates, develops co-operation between the FELU and its graduates, and offers its members various activities and advantages. The club's basic database facilitates communication between members and the club is connected to the Centre for Student and Career Services facilitates recruitment services.

Development

Students evaluate the courses and Entrepreneurship programmes are revised each year. The department has a very strong autonomy and room for experiments in how to teach. A recent example is that the Stanford approach - bringing design thinking into teaching - has been adopted. The department is used to look out and learn and can quickly react and implement new methods.

Another angle is that the university has very good access to detailed information about companies in Slovenia. Through access to a database, research can be carried out and action can be taken on the basis of facts.

The American connection - which is now institutionalised - is also very important for the development of teaching. In addition, the University now has a research certificate according to American standards. Only one more university in Europe has this certificate.

Challenges and recommendations

More strategic support from Government is needed. Entrepreneurship should be more highly valued. That could promote student motivation to engage in entrepreneurship courses which is necessary for teachers to invest time in entrepreneurship education.

In addition it may be relevant to have a business community and local entrepreneurs more involved in different committees where they can cooperate on pedagogical principles and programme design.

34. UNIVERSITY OF LUND, SWEDEN

Interviewees: Hans Landström, Professor at the Institute of Economic Research, School of Economics and Management, University of Lund.

Keywords: Person driven, collaboration with local businesses, evaluation and assessment, external funding, incubator

Interviewed: at the University of Lund, 2nd of June, 2008.

Context

Entrepreneurship education is a rather new activity at the University of Lund and started in 2004. It is located at the Department of Business Administration at the School of Economics and Management, University of Lund, but students from all 11 faculties (40,000 students) at the University of Lund can join the entrepreneurship education. All entrepreneurship courses are optional subjects. Most of the students who follow entrepreneurship courses choose short courses or a one-semester programme. In 2007, 35 students had one semester and 15 students choose to continue to the second semester. There is also an International Master Programme in Entrepreneurship that has about 25 students – 10 from Sweden and 15 international students.

About 10-12 staff members are committed to entrepreneurship education and research in areas like Venture Capital/Finance, Corporate Governance, Research Based Ventures, Science Parks and Entrepreneurial process/learning.

The funding of the entrepreneurship activities comes from the university, the Swedish Research Council, and the VINNOVA (Swedish Governmental Agency for Innovation Systems) is sponsoring most of the budget.

Entrepreneurship embedded strategy

Entrepreneurship (or at least innovation in a broad sense) is an important part of the Lund University Strategic Plan. A general operating principle of the University of Lund is to promote entrepreneurship and innovation. One of the main objectives is to build up the students entrepreneurial and innovative attitudes and to foster entrepreneurial and innovative mindsets which the students can take advantage of in their future careers – not only as entrepreneurs but also in salaried jobs in the private as well as the public sector.

Approaches

There is an incubator called Venture Lab directed to all students at Lund University. The incubator offers offices at no costs and some seminars and guest lectures are held there. Venture Lab offers the small start-up companies a network consisting of other start-up companies, and this is considered very important if you ask the companies located at Venture Lab.

Teaching methods

Within the area of entrepreneurship teaching methods there are interesting activities going on at the University of Lund. The pedagogical approach is focusing on teaching **in** entrepreneurship and not only **about** entrepreneurship. For example, all students enrolled in the Master Programme in Entrepreneurship have to start their own company and at the end of the master programme year their business plans and/or prototypes for the company they have developed during the semester are evaluated.

As part of some of the entrepreneurship courses students do projects in cooperation with small companies located at the science park at the university campus called "IDEON". It is one of the largest science parks in Europe and includes around 150 companies. The students as well as the businesses located at IDEON are very positive about this cooperation.

The University strongly emphasises the aspect of evaluation in connection with the entrepreneurship courses. All students must evaluate their projects and they are obliged to write a diary evaluating the ongoing process of the projects they are involved in. The idea is to make the students very deliberate about the whole process of starting up a company and write down their considerations about the choices they have made during this process. It also gives them a chance to evaluate their choices with the teacher or other students. In this way, inputs are provided to hopefully avoid future mistakes. Going through the diary is also part of the evaluation at the end of the semester.

Community engagement

The Department of Business Administration is part of the so called the "Kraft" initiative which is an educational programme targeted towards established small and medium-sized companies. The Kraft programme is focusing on areas like business development and growth, competence and reflection. The idea is that 6-8 private companies within the same sector or value chain join forces and collectively apply to be part of the Kraft programme. The content of the programme is based on the needs of the companies.

Obstacles

The University of Lund finds it rather difficult to implement entrepreneurship activities in a successful way across an old traditional multi-faculty university like the University of Lund with about 40,000 students. It is a challenge to promote entrepreneurship activities across faculties so that other faculties than the business and engineering faculties take an interest in the entrepreneurship activities.

This problem is not exclusive to The University of Lund but a problem faced by all large, traditional multi-faculty universities in the opinion of Hans Landström. The Uni-

iversity of Lund has not discovered a good example of successfully integrating entrepreneurship activities at a traditional multi-faculty university – most success cases can be found within young one- faculty universities. If possible, The University of Lund would very much like to see good examples of this for their future inspiration.

35. UNIVERSITY OF MALTA

Interviewees: Matin Zammit, Lecturer in entrepreneurship and Dr. Saviour Gauci, Dean of the Faculty of Economics, Management and Accountancy

Keywords: collaboration with local business, business studies innovation, evaluation and assessment, curricular embeddedness

Facts about the University of Malta:

- <http://www.um.edu.mt/>
- The university dates back to 1769
- The university is situated in Msida on the Malta island with a satellite University centre on the Gozo island
- Approx. 9,600 students enrolled
- The university offers bachelor degrees, master degrees and postgraduate degrees
- The University has eleven Faculties: Architecture & Civil Engineering; Arts; Dental Surgery; Economics, Management & Accountancy; Education; Engineering; Information & Communication Technology; Laws; Medicine & Surgery; Science and Theology

Context

Entrepreneurship has been taught at the University of Malta (UoM) for more than 10 years. The entrepreneurship teaching is undertaken by the Faculty of Economics, Management and Accountancy and is primarily for the students at this faculty (approx. a fourth of the total student body). The faculty was established in 1979 in connection with a re-organisation of the system of higher education in Malta. There had been a demand from students for the government to launch a subsidy scheme for students enrolled in higher education. In response to this demand, the government – inspired by a scheme in China – launched the “Student Worker Scheme”.

The basic idea of the Student Worker Scheme is that students work in the industry for a 6 month period and then attend the university for six months. However, the industry did not employ the students as envisaged in the scheme and therefore the government ended up employing the students. As a result – as Dr. Gauci puts it - we got

the mentality that instead of preparing them for industry, we were preparing them for government jobs”.

Due to a change of government, the scheme was changed in 1988 and now the faculty had to reinvent themselves as the main purpose was again to prepare the students for a career in business. Furthermore, the faculty also needed to communicate to the students that attending the faculty would prepare them for business and not for government office. This spelled the beginning of entrepreneurship education at the UoM as the faculty introduced a course on small business management. A course which naturally evolved into entrepreneurship courses as the research on small business management also paved the way for research on entrepreneurship.

Entrepreneurship teaching and learning at the UoM

UoM has a number of entrepreneurship courses originating from the Faculty of Economics, Management and Accountancy. Two entrepreneurship courses are offered at diploma level. At bachelor level entrepreneurship is taught as a compulsory module “Enterprise and Entrepreneurship” in the final year for management students. Entrepreneurship courses are also available as electives at MBA level. The faculty is responsible for teaching at an entrepreneurship course at Master level in the engineering faculty.

Entrepreneurship education ties the knot

For the faculty, to teach entrepreneurship is to get an opportunity to bring together all the different subjects that the students have worked with during their studies. Having entrepreneurship tie the knot at the end of their studies means that students not only get a better understanding of what they have learned in the previous courses, but also of how and why the different subjects are linked together. Therefore, entrepreneurship is taught in the last year, when the students have gained knowledge and experience in topics related to entrepreneurship such as finance, management and marketing.

“We teach entrepreneurship in our final year after they [the students] have gained a lot of experience in for example marketing and HR. They have done a lot of practical elements before, so we try to bring everything together – not too much from a theory point of view. More practical because this is what the students lack in the end....Entrepreneurship is the crown at the end of the courses.” Martin Zammit, lecturer in Entrepreneurship

Entrepreneurship goals

Though the current entrepreneurship courses are not available for all students at the university, the top management is very supportive and committed to entrepreneurship education. In fact, the top management wants to make sure that all students get acquainted with entrepreneurship during their studies, irrespective of disciplines. Therefore, the UoM plans to introduce a number of extracurricula activities with the objective of doing so.

Mr. Zammit sums up the goal of the entrepreneurship education: *“The reason for the entrepreneurship module – for all the management studies [at the faculty] is to make the students more entrepreneurial – either on their on or within an organisation. That is our motivation.”*

Teaching methods at the UoM

At the Faculty of Economics, Management and Accountancy the goal is to prepare the students for a business career. In order to achieve this goal, the faculty focuses on teaching methods emphasising practical experience. This holds true not only for the entrepreneurship courses, but also for the majority of courses taught by the faculty.

The entrepreneurship module taught at bachelor level starts off with an introduction to entrepreneurship theory. The theory is followed by a practical part, which makes up most of the course. In the practical part, the students are asked to come up with a business idea. The students pretend that they have a capital of EUR 100,000 and are then asked to turn their ideas into a business plan. That includes reviewing competitors, finding partners to co-operate with, finding investors etc. as if they were actually starting a business. The students are organised in groups making a presentation of their work every two weeks and get feedback from the other students and the lecturer. In the group work the faculty takes advantage of the fact that the university has a number of exchange students. Putting different nationalities together often brings new and exciting ideas.

In addition, the faculty also invites entrepreneurs to the class room, who act as role models – showing the students that it can actually be done. Here, the university uses many kinds of entrepreneurs ranging from alumni to entrepreneurs who have never finished school.

User-driven improvement

Put the customer at the centre of activities!

The faculty teaches marketing, and here the golden rule is to put the customer at the centre of all undertaken activities. But the faculty has also learned to take its own medicine and to put its customers – the students – at the centre of activities.

“We are very business-oriented in the sense that we would like to hear what our clients are complaining about...As the head of the Marketing department I should know this – put the customer at the centre of your activity!” Martin Zammit, Entrepreneurship lecturer, Dr. Saviou Gauci, Dean of the Faculty

The faculty takes a number of initiatives to involve the students in the quality assessments of the courses and the faculty/university as a whole:

- The students prepare written evaluations of the individual courses, where they give feedback on content, interaction with the lecturer, teaching methods used etc.
- Students are represented on a number of university boards. There is a board for every study level in the university and here the students are represented. Further-

more, the students are represented at the faculty boards, on the board of studies and in the university senate.

- External examiners are also used as part of the quality assessment, where the examiners talk to a number of students about their opinion on the courses, lecturers etc. and report back to the faculty board.
- The faculty has an open-door policy, so the students know that they can get in contact with the lecturers when needed. This open-door policy goes both ways meaning that the lecturers and coordinators also often approach the students to get feedback on particular issues.

The faculty actively uses the student feedback to improve the courses – the content of the courses, teaching methods used, new subjects to be included etc.

Obstacles

The level and scope of entrepreneurship education is closely linked to the amount of resources available for entrepreneurship education. So there is a natural barrier related to the amount of resources that the university is able to direct to undertaking entrepreneurship education.

Also, a barrier lies in the institutional structures related to hiring of lecturing staff. In entrepreneurship education it is important to get lecturers with entrepreneurial or business experience, but when having to choose between an applicant with academic merits and an applicant with business experience, the academic merits outweigh the business experience. This makes it difficult to get the most appropriate skills and competences into the entrepreneurship education.

Recommendations

A recommendation for the EU from the Maltese University would be to initiate and support networks between institutions of higher education, which could help foster projects on entrepreneurship education across countries. In addition, the EU should especially make sure that major European co-operation could play a part in these networks in order to strengthen the link between the business world and the academic world.

36. UNIVERSITY OF SALFORD, GREATER MANCHESTER, THE UK

Interviewees: Claire MacLean, the University's Learning, Enterprise and Development Manager; Dr. Paul Wilson, the Associate Dean of the Faculty of Health and Social Care; Jennifer Warburton, Study Adviser; Dr. Nigel Mellors, Associate Dean of the Faculty of Science, Engineering & Environment

Keywords: collaboration with local business, goals and objectives, cross-discipline collaboration, extracurricular activity, embeddedness

Facts about the University of Salford:

- <http://www.salford.ac.uk/>
- The university was established in 1967, but dates back to 1986 as the Royal Technical Institute.
- Salford is in the top third of UK universities for research
- The research structure comprises nine cross-disciplinary research institutes.
- The University is made up of 12 Schools split into four faculties: Faculty of Arts, Media & Social Science, Faculty of Business, Law and Built Environment, Faculty of Health & Social Care and Faculty of Science, Environment and Engineering.
- Approx. 1,250 academic/academic related staff
- 19,300 students – 15,900 undergraduate and 3,400 postgraduates

Context

Enterprise in terms of enterprise education started in institutions in the UK back in the 1980s with the "Enterprise in Higher Education" initiative. This also holds true for the University of Salford. 14 years ago the University of Salford appointed the first pro-vice-chancellor with a specific responsibility for enterprise and regional affairs. Salford University was the first institution in UK to actually treat enterprise as a core activity of the institution. And it has evolved from there as a third major strand of the university's activities, becoming a third primary consideration alongside teaching and learning and research.

Entrepreneurship strategy

The university's devotion to being an enterprising university can also be seen in the university's Strategic Framework¹⁸. Here, the university explicitly states that – as a leading enterprising university – it will:

- Harness the skills, imagination and enthusiasm of our staff and students to work in close alliance with our external partners;
- Be innovative and effective in the application of new knowledge to individual, social and economic development, working across traditional disciplinary and professional boundaries;
- Seek continuous improvement in all aspects of our activities and in our responsiveness to the changing needs of our students, staff and external partners;
- Adopt a friendly, customer-focused ethos, delivering to students an excellent experience of higher education..."

Being an enterprising university is delivering entrepreneurship education, but it is also more than that:

"We know this as an enterprising university – it is not just to do our enterprise education – it is the way we do our business. Just some of the things I lead as an associate dean – which is facility hire, partnerships, it is consultancy, knowledge transfer partnerships, it is funded external projects, it is spin-off companies, it is delivering clinical services and professional development. None of those will technically include enterprise education, so it is another theme in being an enterprising university." Dr. Paul Wilson, Associate Dean of the Faculty of Health and Social Care

Institutional Infrastructure

As a result of the commitment to integrating entrepreneurship as a third strand at the university, the Pro-Vice-Chancellor James Powell established a unique institutional infrastructure to support the efforts. The infrastructure entails the pro-vice chancellor with the specific responsibility for enterprise. In addition, each faculty has an associated dean for enterprise alongside an associated dean for teaching & learning and an associate dean for research. Moreover, all schools have an associated head for enterprise, again alongside an associated head for teaching & learning and for research.

"This infrastructure provides an immediate first point of contact at every level within the institution for enterprise. So when you try to drive change, expand enterprise provision and increase awareness for new enterprise initiatives, increase the penetration of entrepreneurship learning, you have an immediate infrastructure that you can work through from right at the top down through all of the schools." Claire MacLean, the University's Learning, Enterprise and Development Manager

¹⁸ The Strategic Framework can be found here: <http://www.tal.salford.ac.uk/documents/learnteach.doc>

This infrastructure is supported by a central division “Enterprise and Development: Academic Enterprise” created in 1992. This division encourages and supports enterprise activity across the whole university including enterprise education for students, staff, business and the community, consultancy for industry, joint research and development, and the commercialisation of university intellectual property through the creation of start-up companies and licensing.

The purpose of this division is to support the four faculties in the entrepreneurship endeavours. The faculties can set their own entrepreneurship goals and strategies which are supported and fostered by the central unit “Enterprise and Development”. Another objective of the central division was to bring together everything that is both entrepreneurship in terms of venturing and entrepreneurship in terms of the entrepreneurial mindset, abilities etc. and thereby acknowledge the broader definition of entrepreneurship.

As part of its tasks “Enterprise and Development: Academic Enterprise” provides support to internal staff on:

Market Intelligence

- Funding acquisition (including partnership development)
- Project management, financial monitoring and evaluation
- Knowledge Transfer
- Intellectual Property Rights and Commercialisation
- Enterprise and Entrepreneurship Education

Furthermore, it also offers the services of staff and students to external organisations. Since 2004, Enterprise and Development: Academic Enterprise has helped more than 2,000 organisations, has created more than 1,000 learning opportunities for students and has helped entrepreneurs to create more than 1,000 jobs in the region.

Cross-disciplinary structures

“It is the cross-disciplinary structures that are really helpful and is something we try to capture through the Innovation Cells, with staff in groups in Communities of Practice, because it is where things clash that the interesting things happen.” Claire MacLean, the University's Learning, Enterprise and Development Manager

Innovation Cells

In the Innovation Cells a small group of creative people (students as well as staff) are pooled together to work on one particular innovation, product, service or idea. The Innovation Cells deliberately creates environments to further stimulate cross-fertilisation of ideas across disciplines and schools. Students and staff from all the

faculties can come to the Enterprise and Development division with an idea and if the idea has potential, the division establishes an Innovation Cell.

The cells are facilitated and supported when going through the process of idea generation, idea testing, proof-of-concept etc. by the Enterprise and Development Division. Alongside creating marketable products or services, the members of the cells will also personally gain a range of skills and practical experiences in the process, e.g. problem solving, commercial skills, creativity, budgeting, project planning, presentation skills etc. And just as importantly the members create new cross-disciplinary networks across faculties and schools at the university which paves the way for future cross-disciplinary collaboration.

Teaching and learning

With regards to the actual entrepreneurship teaching and learning, University of Salford has a number of specific entrepreneurship modules that are embedded in the undergraduate and postgraduate studies. At present, the university is working on mainstreaming its entrepreneurship modules in order to make them available to all students in all of the four faculties.

“We are pulling it all together and rolling it out at the same time – it sounds difficult and it is. One of the major challenges is how do you make a generic resource [entrepreneurship education] applicable and relevant to all disciplines. That has been our constant challenge. We have had groups of staff through community of practice and action learning sets really playing with that to come up with solutions on how to do that...How can we make it a large resource – it needs to be in every faculty if we can – and how do we manage that.”. Claire MacLean, the University's Learning, Enterprise and Development Manager

Though the incurricular entrepreneurship modules are not yet available for all students, the university makes sure to complement the incurricular provision with extracurricular activities, networks etc. This in effect means that all students at the university have access to entrepreneurship activities. The university also makes a great effort to make the students aware of the different opportunities to engage in entrepreneurship activities (incurricular and extracurricular). At the beginning of the academic year the university distributes along with the registration package a Student Enterprise Guide to all incoming students telling the students how to be enterprising during their studies.

Entrepreneurship degrees

In addition to the entrepreneurship modules, the university offers two master degrees in entrepreneurship: The Master of Enterprise Technology Degree Programme (MEnt) and the Master of Enterprise – International Entrepreneurship (MEnt:IE).

The MEnt is a multidisciplinary one-year programme open to all science, technology and design students from UK and internationally. The programme focuses on a practical project – i.e. the student's own business idea – where 50 percent of the time is devoted to developing the business idea into the formation of a new company or a marketable product. In the practical part the students write up business plans, make

presentations to “boards”, do market research as well as hands-on work on developing a prototype/the actual product.

In addition to the practical part, the students are required to complete a number of the already available Masters level science/technology modules at the university and will be the ones most appropriate to underpin the scientific part of the student project. The specific modules depend on the student’s actual needs to fill out any gaps in expertise needed to develop the business idea.

“Often the physicist is sent off on a design course, so it is looking at the skills he hasn’t got – not necessarily adding more to the ones he already got. If he needs more physics, we send him on a physics course. But quite often, it is the bit that he hasn’t got we are interested in – not more of the bits he has got.” Dr. Nigel Mellors, Associate Dean of the Faculty of Science, Engineering & Environment

In addition to the science/technology modules, the students are also required to take business enterprise modules, which are specific to the programme. These modules cover subjects such as marketing, idea development and raising venture capital and will aid the process of taking the conception of an idea through to a marketable product or service.

The MEnt:IE is similar to the MEnt programme, but has an international focus as well. In the international programme the students shall develop their idea in two of the four partner institutions participating in the programme, University of Salford, Turku School of Economics, Dublin Institute of Technology and Saxion University of Applied Sciences. The student must spend at least six months in two of the four institutions.¹⁹

Teaching and assessment methods

At the University of Salford, the curriculum-based modules are mainly focused on entrepreneurship and the principles of managing a business. But the methods of teaching entrepreneurship – the way it is taught and assessed – are what actually develop the entrepreneurial skills and the mindsets of the students. Hence, the University of Salford is very aware about which teaching methods to use in the individual courses and matches the teaching methods with the learning objectives of the courses.

An example of the various assessment methods used at the University of Salford is also a good example of how to bring in external stakeholders in the entrepreneurship education. In the course “Entrepreneurial management” the final assessment of the students is made in cooperation with the BBC. The students are interviewed by the BBC and are requested to make a presentation. In order for the students to think outside the box and be more innovation, they are not allowed to use Power Point in their presentation, but are prompted to use other aids.

“This has resulted in a lot of creative ideas – one group did it like a television program, which was really, really interesting. We had groups doing the presentation as a

¹⁹ For more information about the degree programmes, please visit: <http://www.cse.salford.ac.uk/ment/>

business meeting. So we just ask them to do something different". Jennifer Warburton, Study Adviser

The entrepreneurship students are also asked to make self-assessments – at the first level, the students take a test that maps their skill level to identify strengths and weaknesses. Then, at each study level, the students are asked to do a personal development journal to reflect on their own learning, what skills they have improved. This self-assessment is not only benefiting the students, but the university also uses them in developing the entrepreneurship curriculum.

Obstacles

"The key thing long term is going to be to get the staff onboard. We can do as much as we can with our 18,000 students, but we also have to get the 3,000 staff because they will make life so much easier. And that is still a challenge." Dr. Nigel Mellors, Associate Dean of the Faculty of Science, Engineering & Environment

In the words of Claire Maclean: *"Entrepreneurship seeks constant definition whereas physics is fairly exact"*. And as academics often likes to see the world in black and white, entrepreneurship and entrepreneurship education can therefore be a difficult concept to convey and get the academics to engage in.

Another obstacle within entrepreneurship education is the concern for sustainability. How do the institutions make sure that their efforts within entrepreneurship education is sustainable – despite short term funding, it often being dependent on a few people advocating entrepreneurship etc.

"The other area that we are getting to grips with is evaluation in terms of the impact – what actual impact the interventions have on students and graduates. Which is difficult, because they are wriggly things – getting hold of these graduates once they have left is difficult." Claire MacLean, the University's Learning, Enterprise and Development Manager

Recommendations

During the interview, a number of recommendations were mentioned:

There is a resource obstacle – it is difficult to get sufficient funding for entrepreneurship education. The University of Salford has attempted to overcome this barrier by being entrepreneurial in their fundraising. The university seeks a lot of different funding possibilities and does not just rely on the traditional public funding.

"We had like a two-front attack – one is to get staff to talk to us and engage with the idea of enterprise education. We got really great staff in each faculty that want to do that and come together and talk about it. So that is starting to filter out. But another side to it from my perspective is trying to get the academics that we currently have to recognise that some of what they are already doing is enterprising and call it that. Recognise it as enterprise education. So part of the challenge it also to recognise that there is already a huge infrastructure of very entrepreneurial approaches to teaching,

approaches to education.” Claire MacLean, the University's Learning, Enterprise and Development Manager

Entrepreneurship education is not a static concept. It needs constant reinventing, because delivering entrepreneurship education is a continuous learning experience – which teaching methods are most appropriate for certain learning objectives, which curriculum is most appropriate for the different disciplines and so on.

37. UNIVERSITY OF WUPPERTAL (BERGISCHE UNIVERSITÄT WUPPERTAL), GERMANY

Interviewees: Patrick Saßmannhausen,

Keywords: alumni involvement, collaboration with local business, cross-discipline cooperation, extracurricular activity, funding, growth entrepreneurship, innovation, media coverage, simulation

Context

The University of Wuppertal is a multidisciplinary university. It has faculties for nearly all academic disciplines, except medicine and law. It is situated in the *Ruhrgebiet* and has a strong history when it comes to entrepreneurship and innovation. Wuppertal was the place in Germany where the first industrialisation took place, even before the steam engine. The industrialisation was based on water power and comprised for example textile industry and metal production. Many large companies, like the pharmaceutical company Bayer, were founded in Wuppertal. Also, the city has a *Schwebbahn*, a suspension railway, which is more than 100 years old. The city and the university can thus be said to build on entrepreneurial spirit and culture.

Today the university offers entrepreneurship education to all students and staff. The education covers a large range of courses, an extensive network with regional industry and finance and funding possibilities for students and staff. The university has been ranked as number one in a German entrepreneurship education ranking carried out by the business newspaper Handelsblatt.²⁰

Strategy

Some years ago, the existence of the University of Wuppertal was questioned by the state government of Nordrhein-Westfalen. One of the suggestions was to merge the university with the universities of Düsseldorf or Bochum. In order to survive, the university had to offer something special and create a unique profile. They decided to focus on two things: Work on entrepreneurship and educate teachers. They also decided to combine the two and offer entrepreneurship courses for future teachers. The goal is to spread knowledge about entrepreneurship and methods to bring it into schools.

²⁰ www.handelsblatt.com/_t=dgtool.id=18,obj=1;singleclip

The entrepreneurship education is thus embedded in the negotiation process between the president of the university and the state government. In the beginning, however, the top management was not sufficiently committed to the entrepreneurship education, but this has changed over time.

In 1998/99, the federal government started funding a programme for entrepreneurship education. The Exist programme is conducted by the federal ministry for research and education. The University of Wuppertal has obtained funding in all three periods of the Exist programme. Thanks to the funding, they could start to build a network with regional business and industry and engaged two entrepreneurship professorships in 1999-2003.

Goals

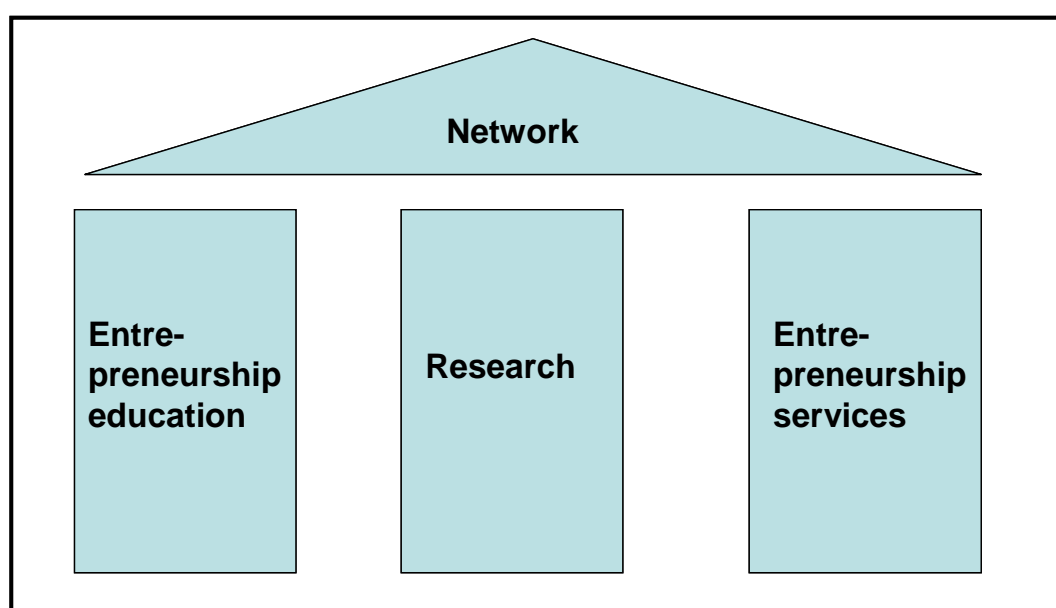
The goal of the entrepreneurship education is ensure that the students succeed. To ensure that, you often need some years of industrial experience, and the entrepreneurship lecturers prefer that students are successful later rather than try too early and give up if they fail. The goal is thus rather to foster an entrepreneurial mindset.

Also, the university underlines the need for entrepreneurial thinking within existing companies. Today's industry is often determined by next quarter's goal rather than innovation and future thinking. An entrepreneurial mindset among the employees is important in order to create growth and value inside existing companies.

The entrepreneurship education at the Wuppertal University focuses more on innovation and growth than on small businesses. In this respect, it resembles the US more than other European countries.

Pedagogical tools/teaching methods

The entrepreneurship activities at the University of Wuppertal are based on three pillars:



The **entrepreneurship education** is for all students and comprises elective courses totalling 80 ECTS. The entrepreneurship education also includes courses on methodology which is interesting not only for students who study to become teachers, but also for those who want to enter consulting or coaching businesses.

With the Bologna process, it is easier for students from various departments to choose entrepreneurship courses. They offer courses on several days, and students who wish to follow entrepreneurship education can almost always make it one semester or more. The department thus has no problems of coordination with other departments/disciplines.

The courses focus on business, economics and entrepreneurship. But in contrast to many other institutions of higher education, the courses also comprise a large range of law courses. It is a huge responsibility to be an entrepreneur and in Wuppertal they want their students to be well prepared for the legal aspects as well. They offer courses on employment law, corporation law, mergers and acquisition law, patent law and trade law.

In the beginning, traditional methods like lecturing and readings were used. Later, step by step they have moved towards participative methods. Some of the staff has also participated at a summer school at Harvard to learn more about teaching entrepreneurship.

The teaching methods now range from lecturing and projects to business simulations (with advanced IT tools where the lecturer can adjust outside parameters like for example oil prices) and company visits (incubators, banks). The idea is that teaching in the field should be modern, but always based on science. In the beginning, many guest lecturers were invited to give lectures. In the last years there are fewer guest lecturers, simply because the university's own staff is now better trained and more experienced and give lectures themselves.

The interviewee finds that teaching entrepreneurship is different because you make a difference for the student. It influences the CV and affects the students' important decisions in life.

The education is very popular among students. Every term about 90 students, evenly distributed across discipline and sex, follow entrepreneurship courses. This is partly due to the publicity on the courses made every semester. The goal is to make entrepreneurship visible all over the university and one person is particularly employed for this. Every year there is new campaign to attract students for entrepreneurship courses. However, the interviewees find that the promotion outside the university could be better. The university ranks as number 1 in entrepreneurship education in Germany, but does not attract many students from other cities.

The entrepreneurship education has always been highly regarded in the Business and Economics department, but the staff has met some cultural barriers when working with traditional left-wing departments. However, by using humour in the publicity campaigns, they have managed to break down these barriers over time.

According to the interviewee, **research** should always be based on modern research. Within entrepreneurship, the university has carried out several research projects. The themes vary according to funding opportunities. They are currently conducting projects like case studies of spin offs, studies of renewables/clean tech businesses and female entrepreneurs.

In the **entrepreneurship services** pillar we find various fast-track tools (business simulation, most important tools, 2-3 day crash program). These courses are aimed at "those who wanted to start their business yesterday." Some of them give ECTS, but most do not.

Within entrepreneurship services there are also a several funding possibilities for students who want to develop their ideas and start own businesses. The university has the possibility to offer grants to students up to 50,000 Euros. The money comes from the above-mentioned Exist programme and is supposed to cover living expenses, development of a business plan and technical equipment, if any. The Exist programme requires the project to be innovative and technology driven. This means that it is difficult to obtain financing for ideas from social science students, for example. However, the entrepreneurship staffs try to shift the focus of the Exist program, so that also projects which are not technology driven can obtain funding.

Students also have the possibility to get funding before having developed a business plan as local businesses in some cases provide such pre-financing.

There is also a mentor platform for students. Here, students can approach professors from for example the departments of engineering and technical department with their ideas. The professor and the student form a team and develop the idea together. This is a favourable constellation because when a professor applies for funding, he or she can obtain more money than a student.

PhDs and professors can apply for funding for applied research to fill the gap between basic research and business start-ups. They can obtain up to 150, 000 Euros to help professors to develop basic research.

Outreach

The University of Wuppertal has built up an extensive network with local businesses, incubators, business angels and bankers. Entrepreneurs from the area feel responsible for the development of the region and support the entrepreneurship education.

The latest years, efforts have been made to set up an alumni club. The goal is to offer entrepreneurship courses for alumni. At the entrepreneurship department they consider it more likely that people having some years of work experience, and thus more knowledge on how an enterprise works and necessary contacts, can start up new businesses. Therefore, they want to provide them with the necessary tools in order to encourage and inspire. For this program, the University of Wuppertal cooperates with the University of Potsdam.

When the entrepreneurship staff started creating an alumni club, there was one obstacle: The University was not allowed to keep the students' e-mail addresses. There-

fore, they needed the students to join voluntarily before their graduation. To recruit students to the alumni club, they therefore organised events like a university ball and a diploma ceremony for graduating students.

Various companies sponsor the alumni club (WTAlumni). At the beginning it was difficult to attract sponsors because the companies were not satisfied with the university and the students who graduated from it. This has now changed in with new blood coming into the university. The education is thus more consistent with real life. Moreover, the entrepreneurship students can profit from specially designed lecture rooms, sponsored by various enterprises. The students can connect to the internet, they are seated in a circle instead of rows and they have new technology for presentations etc. The aim is that the students should know how to use tools which are employed on a day-to-day basis in enterprises and in that way be better prepared to work life.

Another example showing that entrepreneurship is not only about ECTS and business at the University of Wuppertal, but also about involvement and student engagement, is a students' association set up by one of the entrepreneurship teachers. The association organises social events etc. for other students. About 20 students participate every year, voluntarily. Students from the entrepreneurship courses also participate in the international Students in Free Enterprise (SIFE) competition where the idea is to come up with the best entrepreneurial projects combined with social projects.

Obstacles/factors of success

One challenge that the institute in Wuppertal faces is that "entrepreneurship is nice but people need to get engaged." Entrepreneurship education demands specially engaged people and these are not found everywhere.

Another obstacle is that the funding from the government lags some years behind when it comes to trends. For the time being, for example the Exist program, from which the University of Wuppertal gets much of its funding, is very focused on new technology. This makes it difficult to promote other entrepreneurship activities in other disciplines.

Factors of success are top management commitment, interdisciplinary approaches, focus on practice/students' activities and network with regional industry, business angels, incubators etc.

Recommendations

The EC produces a lot of reports, but people hardly read them. There should therefore be a larger extent of information and knowledge exchange. For example, projects like this could be presented in a conference, where the EC could invite a few entrepreneurship professors from each country.

Another recommendation from Wuppertal is more student exchange in entrepreneurship programmes. Perhaps the Erasmus criteria should be made more flexible with regards to entrepreneurship courses. In many cases, entrepreneurship does not fit into the normal curriculum, and this prevents exchange students from following the courses. Easy exchange between faculties would also be a good idea.

When teaching entrepreneurship there should also be a much focus also on the practical part, like for example student's activities. Teaching entrepreneurship without seeing how things work in real life is almost wasted. Also, entrepreneurship education should strive to be interdisciplinary.

Last, the entrepreneurship institute calls for a European textbook where the most interesting and illustrating cases from each country could be presented.

38. UTRECHT SCHOOL OF THE ARTS, THE NETHERLANDS

Interviewees: Derk Blijleven, Dean of the Faculty of Arts and Economics and Marijn van Thiel, programme manager, COCI

Keywords: art, cross-discipline collaboration, goals and objectives, innovation, entrepreneurship professor

Context

Being one of five faculties at the Utrecht School of Economics (HKU), the faculty of Arts and Economics educates managers to work in the creative industries. The HKU is the only Art School in the Netherlands with a separate faculty of Arts and Economics.

“We educate entrepreneurial managers in collaboration with the creative students. Instead of teaching in theory what management in the creative industries is all about, we try to combine creative students [from the four other faculties] with management students to collaborate in projects etc. in order for the managers to understand the creative processes – their managerial skills will be geared towards the creative industries.” Derk Blijleven, Dean of the Faculty of Arts and Economics

The combination of four “artistic” faculties and a management faculty means that the school has a focus on the business side of the creative professions. When Derk Blijleven was hired as dean for the Faculty of Arts and Economics in 2001 he took the initiative to broaden the focus to also include entrepreneurship and business start-ups in a more formalised manner. Already, sporadic entrepreneurship educational activities were taking place at the five different faculties, but the scope and level were very uneven and there was a lot of unleashed potential within the different faculties. During the years the increased focus on entrepreneurship resulted in the design of an entrepreneurship programme with the aim to make the HKU a centre for entrepreneurship in the creative industries.

The design of this programme took place at the same time as the launch of the Dutch government’s “Entrepreneurship and Education” subsidy scheme²¹. Therefore, the Faculty of Arts and Economics took the initiative to apply for a grant from the subsidy

²¹ For more information about this subsidy scheme please read the case about the Dutch policy activities included in this report.

scheme to order to get funding for the entrepreneurship programme. The application was a success and HKU was one of the few higher-education institutions that got a grant from the subsidiary scheme.

The entrepreneurship programme would have been initiated even if the HKU did not get the grant. However, the grant has sped up the process and has also increased the scope of the programme. With the grant entrepreneurship can be embedded in all educational programmes at the school, not only in the Faculty of Arts and Economics but also for music, visual arts, theatre, media, games and interaction, and design.

Entrepreneurship strategy

At HKU there is a basic understanding that the majority of students graduating from their school will become active in the creative industries either by becoming self-employed, starting their own creative enterprise or becoming employed in a company:

“Nowadays, artists are primarily creative professionals. They need to be entrepreneurs in order to reach their public and fulfil their mission. Creating extensive networks and cooperative links plays an essential role in this. In order to get your foot on the ladder of this creative industry, it is important that you already learn during your studies how to set up networks and start relationships with other artists and organisations.

At the HKU, you will get plenty of opportunity to work with professional artists, the business community and intermediary organisations. You will therefore not only be trained in an art discipline, but you will also take your first steps on the road to becoming a professional creative entrepreneur.” Excerpt from the Utrecht School of the Arts homepage

Entrepreneurship goals

It is the goal that every student attending HKU shall be given the chance to evolve into a professional entrepreneur – and in relation to this, the HKU has three ambitions:

1. 100 percent of the students must develop an entrepreneurial attitude/mindset
2. 100 percent of the students must be confronted with professional entrepreneurship during their studies to build an entrepreneurial awareness and make a choice of whether they want to engage in professional entrepreneurship during their studies

100 percent of the students that choose to engage in professional entrepreneurship during their studies or 1½ years after their studies must be given the opportunity to do so either as part of their study programme or extracurricular. These students must be guided and helped in every way possible and must not be turned away when they ask for help while developing their own professional entrepreneurial venture.

In order to achieve these ambitions the HKU has established three clusters of activities: 1) educational development, 2) research, and 3) the COCI entrepreneurship centre which will be elaborated on in the following.

Teaching and learning – educational development

11 'educational innovations' have been developed at the HKU within the existing educational programmes in order to embed entrepreneurship in the programmes. These 'educational innovations' are developed based on existing courses/methods etc. that were identified in the process as good practices. The 'educational innovations' are used to reach the targets mentioned above. For example:

"When it comes to reaching the goal of 100 percent entrepreneurial attitude, we have taken one good practice from the Faculty of Art, Media and Technology and our own faculty which is Authentic Project-based Learning. Authentic meaning that you take the authentic setting in which the student will be working in the professional field and you drag it into your programme. We have project-based learning for that where students are working together for four months in a row – working for an external client in a multidisciplinary setting.

This is the setting where the student develops new behaviour that is entrepreneurial in the sense that they learn to work together, work disciplinary, learn to work with clients, learn to work with limited means, learn to work with project management tools, learn to work with difficult subcontractors – sometimes 1.- and 2.-year students act as subcontractors in these projects. We don't have to teach them anything – the context is driving the urgency to develop new behaviour. All the tools and different attitudes and behavioural skills they have to develop are quite similar to the ones you need as an entrepreneur." Derk Blijleven, Dean of the Faculty of Arts and Economics

Having identified the 11 good-practice educational innovations, the HKU then investigates how they can be mainstreamed at the entire school making sure that the mainstreaming takes the characteristics of the individual faculties into consideration. Everything takes place on a voluntary and demand-driven basis, where the faculties themselves decide how they want to embrace entrepreneurship education.

"At the Faculty of Fine Arts we saw that they had a class in the first year called Coupe – French for cutting – it's a class where they learn to cut their fabrics, put them on a dress form, sew them up etc. They make their creations themselves because they must learn how the process goes. We can use that setting and add something that focus more on entrepreneurial skills. For example being able to price your own work and make cost-based analysis." Derk Blijleven, Dean of the Faculty of Arts and Economics

In order to guide the process of embedding entrepreneurship in the programmes across the institution, a blueprint of skills has been developed. The blueprint gives an overview of which entrepreneurial skills the students need to acquire during their studies at the HKU. Based on this blueprint it is decided – together with the heads of the different programmes – whether the students are going to acquire the skills

through extracurricular activities, through adjusting or add on to existing programmes, or whether something completely new must be developed.

Institutional infrastructure

Entrepreneurship research

The Research Group Art and Economics is a part of the Faculty Art and Economics at the HKU. The research group conducts research on different aspects of cultural entrepreneurship. The results are used for (improvement of) entrepreneurship education and practice – for example research results are used when developing new entrepreneurship courses, investigating which teaching methods will be most appropriate to use etc. The Research Group is active on a regional, national and international level, where the research group promotes knowledge on entrepreneurship in arts education, delivers expertise and participates in innovative (education) projects.²²

The Entrepreneurship centre – COCI

COCI (Centre of Entrepreneurship in the Creative Industries) is a broad inter-HKU programme that encourages entrepreneurship among students and alumni. The centre initiates, supports and coordinates the HKU-wide development of entrepreneurship education and services. Furthermore, the centre runs a service desk for students and alumni (until 1½ years after graduation) starting their own company, where they can ask questions and get help internally (from management students and staff) as well as from external organisation. The centre aims to be the Dutch centre for entrepreneurship in the creative industries and will therefore not only serve the faculties at the HKU, but also other Art Schools in The Netherlands.

Entrepreneurship champions

Taking on entrepreneurship education and trying to embed the concept of entrepreneurship throughout the entire institution at the HKU has called for a cultural change. To support and promote this cultural change the HKU has appointed entrepreneurship champions in the different faculties and acts as internal change agents. On top of that, the HKU has appointed an entrepreneurship champion from the outside – an academic who has high standings in the different faculties and is respected for his academic merits. A number of the faculties were already in contact with this person in the attempt to increase focus on professional business skills in the arts courses. Therefore, it was decided to make him part of the COCI team to take advantage of the goodwill and respect from the faculties as well as his experience with entrepreneurship education in pushing the entrepreneurship agenda.

Outreach

Links to stakeholders

The HKU has a large number of stakeholders that they actively use in their entrepreneurship activities – both in relation to their incurricular as well as extracurricular activities. In order to make the incurricular student projects as authentic as possible, the

²² For more information, please visit www.cmkbunl

HKU collaborates with external partners (companies, government agencies, research institutes, cultural institutions etc.) that supply the students with real-life projects.

The HKU also has a strong network of external advisory-service companies to which they can refer students when they need help in the start-up process. If the staff in the COCI centre is not able to provide the students with the necessary help, they will – based on an initial diagnosis – identify relevant external partners that have the appropriate knowledge and tools to help the students.

Tracking the alumni

For a number of reasons the HKU is tracking their alumni. One reason is that the feedback from the alumni is used when developing the entrepreneurship curriculum. The feedback is also used to investigate what kind of services the students and alumni need – and this knowledge can for example be used to guide the development of the COCI service desk. However, the feedback is also used in convincing the different faculties that entrepreneurship education is important and that it should be incorporated.

“A big leverage [for the faculties] comes from factual knowledge data about how our alumni are doing as entrepreneurs. We are going to do a survey for the entire Utrecht School of the Arts – not just tracking them, but really doing in-depth interviews trying to find out in which way they were prepared for what they have encountered so far: What they should know, what they need to know, where they go to get answers to their questions – all their needs when it comes to being professional entrepreneurs after they graduate. Then we can research that.” Derk Blijleven, Dean of the Faculty of Arts and Economics

Obstacles

“The hardest part is that even though the top of the organisation has agreed to the master plan and there is a demand from the students – the whole layer of lecturers and teachers is very hard. You have attracted a certain type of teachers over the years, and even though they are entrepreneurs most of the time, they are mainly interested in working at the HKU because they can concentrate on their specialisation within the arts. They are not interested in talking about business matters – they want to focus on the art.” Marijn van Thiel, programme manager, COCI

Even within a single institution the different faculties can have different study programmes, infrastructures, study plans etc. and that makes spreading out a generic entrepreneurship programme virtually impossible. The programme has to take into consideration the individual characteristics of the faculties, departments etc.

Recommendations

A number of recommendations came up during the interview:

- It is very important that the staff delivering entrepreneurship education is equipped to do so.

- In multidisciplinary institutions the HKU recommends that embedding entrepreneurship education across the entire institution should take place on a voluntary basis. Making it mandatory for faculties to incorporate entrepreneurship courses and activities can create resistance toward the entire concept of entrepreneurship. Instead it is important to show the faculties what positive outcomes they can get through embedding entrepreneurship – for example by doing impact studies. And it is also important to make the individual faculties, departments etc. a part of the process instead of leaving it up to a single detached entrepreneurship centre.
- In the efforts to introduce and mainstream entrepreneurship education it is important to consider how these efforts can be made sustainable so that it does not depend on e.g. project funding, individual entrepreneurship champions etc. It is crucial to take steps to institutionalise the entrepreneurship education.
- Keep in mind who your target group is – entrepreneurship centres often spend so much time and resources getting the individual faculties involved in entrepreneurship education that the faculties start being the centre of attention, while losing sight of the students as the true target group. Hence the research focus on alumni for their practice is the proof of the effectiveness of the current educational programmes.
- Good practice in entrepreneurship education can be used in many ways – e.g. to improve the actual entrepreneurship courses. A role of the EU is to collect good-practice examples in entrepreneurship education (particularly within arts education) and make them available to the European institutions.

In the light of a growing global economic competition the innovation competence of the European economy should benefit from original creative minds that can work with an interdisciplinary approach. Art Schools can and should play a central role in educating artists to develop in this direction by helping them develop the necessary entrepreneurial attitude and skills in combination with arts and crafts.

39. WAGENINGEN UNIVERSITY, THE NETHERLANDS

Interviewees: Prof. Dr S.W.F. Omta (Professor, Management Studies)

Keywords: Action learning, advisory service, cross-discipline collaboration, cross-institutional cooperation, entrepreneurship centre, entrepreneurship professor, extra curricular activity

Context

The Wageningen University is a multidisciplinary university with special education within agriculture. It started entrepreneurship education in 1998. The entrepreneurship activities are located in the Business Administration/Management studies department. The first entrepreneurship professor joined the university already ten years ago. Now, there are two professors in entrepreneurship in the department and one associate professor. These are appointed on academic qualifications. Prof. Omta finds it impossible to appoint professors on entrepreneurial experience if you want credibility inside the university. The first goal of the university is to educate people up to the highest level, and all professors must be able to deliver PhD students. But the best is of course if the professor also has entrepreneurial experience.

Strategy/goal

When the entrepreneurship education was established in 1998, it was not a strategic decision. It was partly due to the Wageningen University Foundation who saw that entrepreneurship would be important and thus gave (part) financing for an endowment chair in entrepreneurship. In the beginning it was hard to get attention from the top management. Today it is well embedded in the Wageningen University, but it takes a decade to get it well embedded. And, still today, entrepreneurship is not written down in the university strategy. On the department level, entrepreneurship is embedded in the strategy.

The goal of the entrepreneurship education is first of all to fertilise the ground. Sometimes students want to start businesses and they can get help at the Wageningen University. However, the goal is to foster entrepreneurial mindsets and attract all students who have some interest in the field, not only those who want to set up own companies. It is still an ongoing process to develop entrepreneurship education. It combines theory and practice and the question the professors keep asking is "how do we get students become more entrepreneurial?"

Pedagogical tools/teaching methods

The entrepreneurship education at the Wageningen University is a mixture of lectures and extracurricular activities. The university offers lectures at both BA and MA levels where a range of different teaching methods are being employed. The idea is that the teaching should be student driven and it is focused on project work, work in groups, elevator pitch training and other practical approaches. In all disciplines at the university, these teaching methods are often used. The methods stimulate communication between students from different disciplines which is particularly important in entrepreneurship. The groups sometimes make company visits, but as it is very time demanding it is not organised very often.

Prof. Omta nevertheless considers the extracurricular activities the most important. The activities outside the curriculum are always met with more interest and enthusiasm than activities within the curriculum. Here you can really find motivated students who seek the activity because they find it fun and interesting. One good example is the STOCK, a student-led special centre where students are trained in entrepreneurship and get help in developing new ideas. As an example, the centre organises business cafés for students, teachers and entrepreneurs. This is an informal gathering which takes place on a regular basis.

At Wageningen they also have a student entrepreneurial award. In addition, the students can get help to come to national competitions or to business angels. This has proven very successful and has resulted in various new projects.

One relatively new activity in the field of entrepreneurship is the Dutch Agro-Food Network of Entrepreneurship (DAFNE). The network is created by the Wageningen University and initiates, promotes and develops education in innovation, knowledge valorisation and entrepreneurship. The goal is to enhance the entrepreneurial spirit and entrepreneurship of BA, MA and PhD students. The university got a grant for this activity from the Dutch government. The grant is hard to get because there are lots of good competitors in the Netherlands. Also, Wageningen is not under the Ministry of Education but is part of the Ministry of Agriculture and therefore not in the frontline when it comes to grants distributed by the Ministry of Education. However, they got the grant because of their long experience and because the network was already set up when they applied for the grant. In that way, the ministry did not give money to promised activities but to actual ones.

One of the initiatives of the DAFNE is the entrepreneurial boot camp. This is a summer school for PhD students in the USA and the Netherlands focusing on innovation, entrepreneurship and valorisation in life sciences. The goal is to create awareness of new inventions and the possible impact through scouting, screening and assessing. Also, attention is given to protecting and commercially exploiting knowledge (intellectual property). The course is a highly interactive and intense experience in entrepreneurial learning. The education includes analyses of cases, exercises and assessments. Some of the topics are business idea creation, assessment of business opportunities, entrepreneurial attitude versus entrepreneurship, entrepreneurial finance, business concepts, business plans and intellectual property protection.

The entrepreneurship activities are well known among students in Wageningen, but prof. Omta does not think that it attracts more students for this reason only. He considers it more like a plus that the students discover when they come to Wageningen University. However, exchange students seem to be particularly interested in entrepreneurship courses and other offers.

Entrepreneurship education is a parallel to traditional academic subjects and values, not a contradiction, according to Prof. Omta. If you want to succeed as an entrepreneur, you have to be just as honest and critical in what you do and make analyses at an academic level.

Factors of success/obstacles

One of the greatest success factors in Wageningen is the fact that it is a multidisciplinary university with which already had a lot of cooperation between the departments/disciplines before the entrepreneurship activities started. They did not have to change the system to promote entrepreneurship courses across disciplines and faculty.

Recommendations

At the Wageningen University, the people working with entrepreneurship have experienced that it is just as important to offer extracurricular activities as to offer regular courses. This makes the students even more engaged. When the students choose to spend time on those kinds of activities outside the curriculum, it shows that they are really interested and want to do something in the field. It is important that the university organises events and adapts so that the students' interest in entrepreneurship does not get lost.

40. AIESEC DENMARK

Interviewees: Michael Hännchell, MA student at CBS, Management of Innovation and Business Development, Newly elected LCP, i.e. Local President for AIESEC – CBS; Therese Hjermind, Executive Vice President of External Relations, AIESEC Denmark, i.e. member of the national board, finishing a one-year full-time position in the organisation; and Morten Ring, LCP at AIESEC Aalborg University, who is taking over Therese's position on the executive board.

Keywords: close to praxis, cross-discipline collaboration, innovation, project and workshop

Context

Established in 1948, AIESEC is the world's largest student organisation with a presence in over 1,100 universities and business schools in 105 countries. The international organisation of AIESEC is located in Rotterdam, and in each country there is a national board and a number of local committees. This interview was conducted with members from both the Danish national board, and two of the six Danish local committees.

The aim of AIESEC is to be: "the international platform for young people to discover and develop their potential so as to have a positive impact in society".

They do this through allowing the young members to explore and develop their potentials as managers and entrepreneurs in the organisation and the organisation provides internships in companies around the world.

"The way we work is very innovative – and entrepreneurial. People can test out their ideas here in the AIESEC circle."

Entrepreneurship is high on the agenda of the organisation worldwide and in Denmark. In the Danish organisation one of the ways that they try to foster entrepreneurship is by arranging exchange of students in entrepreneurial companies and by arranging events with successful entrepreneurs from London and Denmark as guest speakers.

AIESEC sees itself as an alternative to the educational system. They let people try and develop their entrepreneurial skills inside the organisation, and through the internships. Many of the members have as their main ambition to start a company at one

time. You can be involved on different levels, as full time employee for a year, with projects in a shorter period of time, developing your managerial skills and trying things in real-life settings. The internships are between two and 18 months long, and everything, visa, lodging etc. is taken care of by the organisation, making it a good and easy option for companies who thereby get access to talented and motivated young students or graduates.

"We try to be relevant to the surroundings, so we follow what is happening, the trends, and develop our activities around that."

AIESEC is also used by companies to provide the youth opinion – to ideas, products etc. – and due to the international outlook and the broad approach one of the strengths of the organisation is that it has a very diverse member group.

AIESEC and the higher-education institutions

AIESEC is not a political organisation, but they try to influence the institutions indirectly, and they cooperate a lot with them in developing the extracurricular activities. Many of these activities are for members of AIESEC but they also participate in conferences, fairs etc. that are open to all. AIESEC in Denmark, and in many other countries, is a partner in Venture Cup, and supplies participants for the events, as well as helping to promote it. The interviewees believe that the institutions see AIESEC as a very relevant actor in the field.

"We do it because we want to create young entrepreneurs – and intrapreneurs."

"AIESEC is good on entrepreneurship because we are structured and multidisciplinary and we want to be innovative."

The work and cooperation with the educational institutions is supported at the moment because entrepreneurship is a very hot topic at the moment in Denmark, as well as in many other places in Europe. One example of this is a virtual course in entrepreneurship offered to all students at Aalborg University. But in general it depends a lot on which faculty you are studying at, even within institutions. Accounting majors might not be so prone to have entrepreneurship teaching as for instance students at the Management of Innovation and Business Development, where entrepreneurship is a more key element. The students at this programme and the like also get more invitations to for instance Innovation Camps or business plan competitions, where the Accounting students are often headhunted by the large companies before they even start their Master's studies.

Strengths

The interviewees from AIESEC think that it is very positive that the mood has shifted so that it has become more positive towards entrepreneurship in general, and also to some degree in the educational system. The attitude has definitely been strengthened over the last years. Among students this is evident in the fact that they experience that more and more of their student colleagues already have started ventures, or plan to do so. It seems a more natural thing to do, also while studying.

Furthermore, entrepreneurship is also good as an option for those who are perhaps not so academically inclined. They will still have the opportunity to excel in something and have a part of the positive energy that entrepreneurs are surrounded by at the moment.

Barriers

For the educational institutions one of the great barriers or obstacles is to find the balance between theory and practice. There is inertia in the system, which prevents the development from happening fast enough – it happens but it could be faster. The teaching material is often too old, and it is also focused on existing companies, and mainly large companies, and that influences how and what is being taught. This teaching material is not really geared to entrepreneurship education, and some of the lecturers also seem to find that it is just a trend, and that it might be disappearing again soon. New trends and issues should be integrated in the curricula faster. CSR was for instance not introduced until a few years ago, and that is not fast enough considering the pace of the economic and business world around.

Furthermore, there is a barrier and some insecurity connected with taking the step from being a student entrepreneur to being a real entrepreneur full time. This step is difficult to take, and there is not really any support for it.

Recommendations

The universities should have to have an experience-based starting point for their entrepreneurship education, not a research-based starting point, but at the same time it is important to have a combination of the theoretical and the practical perspective. The theory is important – especially for the exams that are mostly theoretically based. To secure the experience-based approach external lectures are very useful.

The teaching material for entrepreneurship teaching should be developed to really fit the field, and great emphasis should be put on including real-life examples; entrepreneurs who tell HOW they did. The next step is to try it yourself, and this is important too. The teaching methods should reflect the field, be innovative, use new technologies and be more participatory.

The higher-education institutions need to adapt to the needs of the students and the employers who want people who can think, act and be innovative. It would be a good idea to involve young people more in the development of the educational institutions, their strategies and action plans. This could be achieved by arranging focus groups with young entrepreneurs and students where important aspects could be discussed and the input from the young could be included.

The higher-education institutions support student entrepreneurship in different ways and that is a very good thing to keep up. Career centres is one good example. They give assistance to people in search of jobs, but can also assist nascent entrepreneurs by giving them help in starting up ventures or helping to find the right people with whom to develop your idea. Another good example is the arranging of events, conferences or fairs, like the Career Days, arranged by AIESEC every year in cooperation with different national partners in each country.

The higher-education institutions should support fora where students can hear about entrepreneurship, and the building of networks. Things like student-run networks for entrepreneurs – <http://stardust-cbs.dk> – are really important and give the potential entrepreneurial students an insight that the teaching does not give.

Finally, the institutions could follow this up by arranging specific days for graduates who are interested in starting companies, where they could get their questions answered broadly, for instance in cooperation with the state or some institutions together or even with networks such as AIESEC. There is room for more activity in this field.

41. EUROPEAN UNIVERSITY ASSOCIATION (EUA)

Interviewee: Howard Davies, independent consultant to the EUA, speaking for himself and for the EUA. He used to work for the London Metropolitan University and was involved in developing EUWIIN, EU Women Inventors and Innovators Network

Keywords: cross-institutional collaboration, external funding, involving process, lecturing and pedagogical tool

Context

The European University Association (EUA) represents more than 800 institutions of higher education in 46 countries, providing them with a forum for cooperation and exchange of information on higher education and research policies.

Members of the Association are European universities involved in teaching and research, national associations of rectors and other organisations active in higher education and research. The EUA has not so far promoted entrepreneurship education but it does have a strong focus on the link between enterprise and research and on how universities can best link to business and commerce: It has accumulated a body of project work on such issues as clustering, intellectual property, knowledge transfer, responsible partnering and university-enterprise collaboration in doctoral degrees.

EUA members have not yet collectively addressed the question of entrepreneurship education – but EUA is interested in teaching and pedagogy, and within the framework of the Bologna process it is one of the players pushing very hard for the conversion of all HEIs in Europe to student-centred learning. It sees student-centred learning as one of the prerequisites for entrepreneurship education to develop: credit transfer, credit accumulation, identifying learning objectives, staff development of teachers, participation of students in quality assurance – all these are central to entrepreneurship education and need to be present for the universities to evolve. This is a policy which the EUA strongly supports and actively promotes.

Thirdly, the EUA is committed to the autonomy of universities and HEIs. Entrepreneurship education is in line with EU thinking in respect of giving universities more autonomy, encouraging them to seek additional funding, not to depend wholly on state funding and to develop more entrepreneurial attitudes among senior management. This is consistent with EUA's view that higher education is a public responsibility and a public good.

To support all of these areas the EUA runs an institutional evaluation programme, in which a group of rectors and ex-rectors visit an institution to advise on how best to adapt to the conditions in the 21st century. All of the above areas are included in the procedure: research, student-centred learning, autonomy, governance, quality assurance and enhancement, and so on. The programme has been running for more than ten years, and about 250 institutions have been evaluated. The EUA normally gets involved at the request of the rector of an institution who feels that the institution could benefit from a review to trigger organisational change, measures to strengthen competitiveness etc. Many Eastern European institutions have found it useful as part of their adaptation process. Of late governments too have requested that the EUA look at the HE system and give its recommendations. The procedure is not an accreditation, but a peer-review process.

Success factors

The EUA subscribes to the view that entrepreneurship education is important because it is important for the growth of the economy. The list of success factors mentioned in the expert group is good, and it is difficult to disagree with it, but it is important to be clearer about the needs of the non-business students: What is it that they really need, and what are their entrepreneurship possibilities? Sometimes the experts' approach is somewhat old fashioned; for instance, the view that humanities students are best suited to social enterprise and charity. The need for science and technology students and even more, social science students, and their opportunities for entrepreneurship are not directly addressed. This is an opportunity for further work, if the goal is to teach entrepreneurship to types of students other than business students.

Howard Davies is not convinced that the business school should necessarily have a leading role in entrepreneurship education. The ways in which multi-faculty universities work, in terms of funding allocations and internal competition, often gives the business school a special status that may make it hard to involve other faculties if the business school is the driving force. It would be better to aim at an evolved, disseminated horizontal approach which is stimulated by senior management and which addresses all the faculties, looking at regional and national labour market needs in depth, and taking its point of departure in an understanding of the specificities of different kinds of students.

"It has to start with senior management – with government encouragement and incentives."

The term entrepreneurial university is ambiguous because it can mean both a university which within its own strategic and management perspectives is entrepreneurial, and a traditional and conservative university which believes that enterprise education is important, and which therefore sets up departments to teach entrepreneurship. But with the growth in institutional autonomy and the fact that public funding will diminish in the future, there is a need to be more holistically entrepreneurial – and this should come from a consistent and coherent thinking on the part of senior management.

A good example is HEIF 'third-stream' funding in the UK which has given the universities the possibility of setting up enterprise centres, incubators and innovation hubs, to

have much closer cooperation with municipal and regional stakeholders, much more sensitisation to labour market needs and more teaching to non full-time students. All of which are key factors for success.

Recommendations

The lifelong learning perspective should be more than rhetoric. It opens some possibilities, and it is a mistake to think that entrepreneurs are only in a limited age group. The HEIs should think about making sure that they have offers for those in their 40's and early 50's who want to embark on entrepreneurship, and this could be an opportunity for the universities, because this group needs somewhere to get the skills and the insights that they need.

Furthermore, more importance should be put on the European level in entrepreneurship education. A basic comparative module in entrepreneurship could show students, for example, how easy it is to set up a business in one EU country and how difficult in others. Would-be entrepreneurs would gain from knowing something of, for example, the Commission's proposed Small Business Act.

42. JADE

Interviewees: Tanya Muller-Borges, President of JADE, and Luiz Piovesana, Senior Project Manager

Keywords: action learning, cross-discipline collaboration, policy, self-realisation, student incubator

Context

JADE was founded in 1992 as an international non-profit and non-political organisation to promote entrepreneurship among European students. It is a student-run, pan-European network representing more than 20,000 young entrepreneurs in 225 local non-profit organisations, called Junior Enterprises.

The mission of the organisation is:

“JADE is promoting the Junior Enterprise concept to third parties, ensuring constant quality of its members and offering a platform for knowledge transfer. We provide extensive support and coordination to our international network in order to foster the entrepreneurial spirit among students during their higher education.”

In a Junior Enterprise (JE) students set up and run their own company and offer professional consulting, market research and management to small- to medium-sized enterprises, among also other areas such as IT and Engineering. By doing so the students add practical experience to their theoretical skills, develop entrepreneurship at an early stage, broaden their skills as well as horizons and prepare themselves for challenging careers throughout Europe. JADE has as its central idea that “learning by doing” is not good enough – it should be “learning by having the responsibility”

JADE fosters the development of Europe’s Junior Enterprises by implementing European projects and providing the framework for cross-border co-operation on multinational studies. JADE organises international congresses and meetings that facilitate exchange of knowledge and experience and intercultural understanding and promote the European idea. In 2004, together with the Brazilian sister network, “Brasil Júnior”, they organised the First World Conference of Junior Entrepreneurship.

JADE is the international body of the JE organisation. In each of the countries there is a national board and a number of JEs. JADE has a board of four people plus two senior project managers (although the number is not the same every year). Board Mem-

bers hold one-year positions in the organisation, whereas Senior Project Managers are working for JADE for a period of a minimum of six and a maximum of 12 months. Project Managers are entrusted with smaller less time-consuming work. The board as well as the Senior Project Managers, and all persons working for JADE, work on a voluntary basis.

Together with the affiliated Junior Enterprise Network in Brazil and several contacts to student consulting groups in non-member countries, the JADE Network is one of the largest student networks in the world.

As an international organisation JADE works to get their points through by attending events, getting press coverage and participating in different networks and groups with, among others, AIESEC, JCI and the European Foundation for Entrepreneurship Research and FSF as well as different working groups in the EU.

On the national level JADE's work is centred on providing a platform of exchange among the JEs and among National Federations, as well as working with the legal status of the JE, and tax rules. JADE works closely with the national organisations, some of which have existed longer than JADE. The French organisation has for instance existed for 40 years and has been very successful in securing a special status for the JE and special tax rules, and through an audit system they have succeeded in making the JE into a well-known trademark.

The overall question of entrepreneurship education has to be pushed forward on the political agenda, and on the agenda of the educational sector.

Junior Enterprise and the universities

A huge majority of JEs are located in universities, where they get good support. When a new JE wants to start up JADE tells them to contact the local university, to establish links. JADE provides the know-how and contacts to the JEs in the area, but experience shows, that it seems to be helpful for the JE to have the support of the university, All the entrepreneurs in the JEs are volunteers. Some of them get grants to work with the JE, but it differs from country to country.

40 percent of the students engaged in a JE are engineering students, 50 percent are business students, and 10 percent are a mixture of many other types: political science, communication, physics, chemistry, etc.

The clients of the JEs are mainly SMEs and entrepreneurs, but there are also very large companies on the reference list like for instance Deutsche Bank and Deutsche Telekom.

The cooperation with the universities is important. If this is well functioning and the university also dedicates itself to entrepreneurship and has it on the curriculum, this makes the success for the JE more apparent. Furthermore, it seems also to promote the JE if the university has good connections to the business.

"The topic entrepreneurship education has to be taken up again and again at this level although there is a political pressure, the Lisbon Strategy etc, but on the mem-

ber level (national) the interest is very low, and therefore it needs to be pressed again and again. We need to work on how we influence the mindset of the students."

Strengths

It seems there is a larger "buzz" about entrepreneurship education now – also among the students.

The students want to differentiate themselves, distinguish themselves, and they see entrepreneurship as one way of doing that. To them it seems that to have the entrepreneurial tool box, seems very appropriate both for starting ventures themselves and for intrapreneurship. The employers want people who can work in teams, not only those who execute, but people who are proactive, think out of the box – as entrepreneurs do. Therefore, there is a push from the students, and the institutions need to follow. It is competition.

Barriers

It is too late to think about entrepreneurship in higher education. It should be introduced earlier. Especially the teaching of the mindset should start earlier.

The restructuring and modernisation of the education systems that is underway is too slow. The universities are slow to adapt to the new pedagogic methods, and that is largely a question of the way they are funded. It is conservative. But it is underway, and then entrepreneurship education will also grow. It is working well for private schools now. They are more flexible and change prone.

It is also a barrier that there is too much focus on research on entrepreneurship and not on the practical level in the curricula in the universities. The practical level should have more weight.

Finally JADE sees that the new structure of Bologna with the 3+2 system gives the students less time to do JE or other things, and that is something that influences the number of students involved in this type of extracurricular activities.

Recommendations

It is important to continue the good work with for instance the Entrepreneurship Week and to make sure that all the talk about entrepreneurship education is transferred to action. Right now it is hard to see a clear line in all the initiatives. The important thing is also to reach a point where it really begins to matter – a leverage point.

More effort should be put into securing the interest of the students because they can help push the institutions towards entrepreneurship education.

Different approaches could be seen to ensure this: First, a strengthening of marketing of entrepreneurship education, a more widely and more modern way of communicating results, good practice, so that it was not just about finding good practice but also showing it. And to reach the students the web should be used much more, for instance by using Web2.0 technologies

"More clips – less text."

Another way of stimulating student involvement could be by introducing a business plan competition, but where the prize was not money but a good grade – or ECTS points. The important thing is to help students participate in things like JE or other extra-curricular activities that foster entrepreneurship without them losing time in their studies or money. The advantage of the JE concept here is that it goes beyond the conventional “learning by doing” to “learning by responsibility”, which addresses the topics of risk averseness and failure stigma.

The viewpoints of students should be heard in more international settings. Students should be more active in the development of entrepreneurship education, by bringing them into more panel discussions, strategic work on the organisational level etc. Student organisations present in Brussels can provide the student perspective.

The work of restructuring and opening the minds of the institutions should still be promoted. It takes a long time for new entrepreneurial teaching methods to be integrated, and the universities could still be more open-minded and flexible, although they have already moved a long way, at least in some countries.

Finally, it is important to keep influencing the national and the institutional level because this is where most change can happen.

43. FOSTERING ENTREPRENEURSHIP IN HIGHER EDUCATION IN BRITAIN

Interviewees: Ron Downing, Department for Business, Enterprise & Regulatory Reform (BERR), Ron Allen, Department for Innovation, Universities and Skills (DIUS) and Tim Simons, BERR

Keywords: action plan, advisory service, cross-institutional collaboration, evaluation and assessment, goals and objectives

Context

In Britain in the 1990's there was a strong focus on increasing the employability of graduates. Ministers in the British government were concerned that graduates should leave university with a range of skills associated with employability. An increasing focus was also to give graduates an alternative to employment – i.e. becoming an entrepreneur.

A substantial amount of resources were made available for increasing the employability of graduates through an initiative called "Enterprise in Higher Education (EHE)". Overall, the focus was very much on employability and not on entrepreneurship as such, although there was a recognition that participating students would benefit from the skills gained whether becoming employees or going on to start up their own businesses. However, the recognition that entrepreneurship can play a vital part in increasing the employability of students and graduates continued to increase over the years.

At first, entrepreneurship was primarily seen as an alternative career path to employment – becoming self-employed instead of becoming an employee. But the views on entrepreneurship were changing. Entrepreneurship was no longer understood solely as setting up businesses; rather it was viewed as a certain mindset – being innovative, inventive, thinking outside the box, good at communicating ideas, enthusiastic, professional, ethical, persistent, committed, driven and multi-tasking. And infusing such an entrepreneurial mindset into students and graduates would improve their employability – not only as entrepreneurs in the traditional sense, but equally important in salaried employment as well.

Hence, the British government recognises on a strategic level that the entire education system – from primary to tertiary education – plays a vital role in achieving the objective of fostering entrepreneurship activity as a means to improve Britain’s productivity and competitiveness²³.

“The ultimate goal is to achieve a continuous journey of enterprise learning from the very lowest levels – primary education – right up to and including higher education, with an increasing focus on teaching business skills as students prepare to leave education and enter the world of work.” Tim Simons, BERR

Over the years, the British government has initiated a number of activities and projects as well as established various organisations with the purpose of fostering entrepreneurship in the education system in Britain. A few of these initiatives and organisations that focus on fostering entrepreneurship in *higher* education will be described in the following.²⁴

The National Council for Graduate Entrepreneurship

In 2004, Gordon Brown, who very much wanted to stimulate entrepreneurship among students and graduates, took the initiative to found the National Council for Graduate Entrepreneurship (NCGE) with the aim to promote a culture of entrepreneurship within higher-education institutions through research, education and facilitation.

The NCGE is a national focal point for entrepreneurship in higher education. The NCGE was founded as an independent company, although it is funded by two government departments – BERR and DIUS (in 2008, the Council gets an increase in their total funding from GBP 700,000 to GBP 1 million a year for three years). In addition to the government funding, the NCGE also gets funding for particular (research) projects from other types of investors, e.g. private corporations. The NCGE also receives funding from the English Regional Development Agencies (RDAs) to run campaigns promoting student and graduate entrepreneurship.

The NCGE is based in Birmingham and has a range of stakeholders including higher education, businesses, RDAs, and business support organisations, which are also represented on the council’s advisory board. The principle is to engage careers advisers, academics, institutions and start-up organisations to help the NCGE develop its activities against knowledge of actual needs and to raise the profile of entrepreneurship within higher-education institutions.

²³ For more information please see: http://www.hm-treasury.gov.uk/media/E/3/bud08_enterprise_524.pdf

²⁴ For a more extensive overview of the efforts taken by the British government, please visit <http://www.dius.gov.uk/policy/highereducation.html> and <http://www.berr.gov.uk/index.html>.

Through three main areas of operation – research, education and working directly with students and graduates – the NCGE has four targets it wants to achieve:

1. Long-term cultural change in higher-education institutions
2. Shape the institutional environment for enterprise and entrepreneurship and embed good practice
3. Increase the number of enterprising graduate businesses
4. Inform the development of national and regional policies that affect enterprise and entrepreneurship in higher-education institutions

A range of activities are undertaken to meet these targets. Two of these activities are the Flying Start programme and the regional University Enterprise Networks (UENs).²⁵

Flying Start

It is through Flying Start that the NCGE, in cooperation with RDAs, works directly with students and graduates. Flying Start programmes comprise awareness events that aim to inspire students to think seriously about starting a business, followed by 12-month business readiness programmes dedicated to helping those who decide to do so. The programmes are specially designed for students, graduates and postgraduates who want to start a business. The NCGE has introduced a number of specialist Flying Start programmes targeting certain groups as for example women, people within the creative industries, social enterprises, graduate engineers, etc.

The programmes are focused on the practical aspects of getting an actual business up and running. The participants receive experienced, hands-on intensive support to refine their business ideas. This entails receiving help from accountants, lawyers, enterprise support agencies, mentors and local business networks to develop their idea into an investment-ready proposal. There are three parts in the Flying Start programme:

1. **Rallies:** One-day regional events that offer support, business training and inspiration for those interested in setting up a business.
2. **Programmes:** Provide an intensive, residential training period for student and graduate entrepreneurs, enabling them to develop and hone skills and relationships contributing to making their business venture a success.
3. **Online:** Offers a comprehensive resource for those attending the rallies. Here, the participants can get support from a dedicated mentor and get access to funding information, and it provides a marketplace to buy and sell products and services as well as a strong network of like-minded students and graduates and business owners.

²⁵ To learn more about the NCGE and its activities, please visit: <http://www.ncge.com/home.php>

At present, Flying Start has approx. 10,000 members; and since 2005, 5,500 students and graduates have attended Flying Start Rallies. An evaluation of the programme from 2005 showed that approx. 50 percent of the graduate start-ups participating in the programme started trading.²⁶

Regional University Enterprise Networks

To transform a nation's educational system into an entrepreneurial system is a complex and resource-consuming task. Furthermore, it requires an interdisciplinary approach as well as a great amount of interaction between academia and business. Therefore, in connection with the launch in March 2008 of the new Enterprise Strategy, the government has given the NCGE the task along with extra resources to build and manage university-enterprise networks (UENs).

The aim of this initiative is to achieve the government's vision of a national network of university clusters that are exemplars in their whole approach to enterprise and entrepreneurship. Moreover, the initiative is a way of encouraging the private sector to work with the NCGE and RDAs to develop university-enterprise networks, where the private sector organisation will sponsor the formation and running of the individual UENs. In that sense, the government is allowing the market to shape the UENs – the activities of the UENs are not dictated beforehand by the government. Microsoft is the first private organisation to commit to financially supporting a UEN and wants to focus their network on those students who are studying for a technology-related degree.

"If you can attract private-sector support and the private sector sees that it is getting value out of it – through say exposure to students – it is possible that the funding of these things [entrepreneurship education] is far more certain than relying on government funding which is likely to vary as ministers are required to review their priorities." Ron Downing, BERR

Sponsoring the UENs is not seen as charity by the private sector organisations. For them sponsoring a network is a means to get access to students as future employees as well as customers. Furthermore, through the networks they get in contact with those developing the course curricula who determine what the young people are to learn during their studies.

The NCGE is taking part in increasing the academic credibility of entrepreneurship

Entrepreneurship is still in its infancy as an academic field, and some might even argue that it cannot be regarded as an academic discipline. Ron Downing from BERR puts it like this, *"There can be a conflict between a vice chancellor wanting to see his or her university well up in the research ratings, and teaching something like entrepreneurship which, unlike a subject such as Economics, is not regarded as having high academic status. And that leads to another role that we have for the NCGE. They are actually trying to change academic attitudes by, for example, encouraging articles on entrepreneurship to be accepted for inclusion by the peer-reviewed journals."*

²⁶ For more information on the Flying Start programme, please visit: <http://www.flyingstart-ncge.com/public/>

The NCGE has created a research vision that, in addition to increasing the academic credibility of the field of entrepreneurship, will provide governments and institutions with a robust and comprehensive evidence base for shaping policy and practice. The NCGE has developed four strategic themes that bring together the council's priorities into a set of focused research activities: 1) Illuminating the Graduate Entrepreneurship Landscape; 2) Assessing the Impact of Graduate Entrepreneurship; 3) Understanding the Journey from Student to Entrepreneur; and 4) Building Institutional Capacity and Professional Capability.

The NCGE is teaching of teachers

Along with three partners, the UK Network of Science Enterprise Centres (UKSEC), the Ewing Marion Kauffman Foundation, and the UK Higher Education Academy, the NCGE has initiated the International Entrepreneurship Educators Programme (IEEP).

Educators are essential in an institution's efforts to become an entrepreneurial institution. The NCGE has done a lot of work on trying to define what an entrepreneurial institution is. Based on this, the NCGE has developed a programme for entrepreneurship teachers. The challenge for teachers is to support the development of entrepreneurial capacities and mindsets via engagement right across the university curriculum. This places substantial demands upon teachers, facilitators and organisers of entrepreneurship education. The IEEP is designed to enable participants to take a leadership role in meeting these demands.

Hence, the aim of the programme is to create future leaders in the field of entrepreneurship education through building the professional capability of entrepreneurship educators. The objective is to equip the participants with key skills in facilitating, teaching and organising entrepreneurial learning. The programme runs over a period of up to eighteen months and includes six residential modules focusing on various aspects of entrepreneurship education, together with an optional summer school.²⁷

Influencing higher-education institutions through funding and examples of positive outcomes

Due to the autonomy of higher-education institutions in Britain, the government cannot decide what the institutions should include in their curricula. The institutions themselves set their curriculum and also decide how to teach the curriculum.

"We are not in a situation where we can say to the universities "You will incorporate entrepreneurship training as a module in all your degrees" – so what you have to do is to try to do it through the influencing route. Trying to demonstrate to the university hierarchy that it [entrepreneurship education] is a good thing for them to teach, and support." Ron Downing, BERR

The NCGE plays a central role in obtaining good practice examples as well as engaging in studies showing the impact of entrepreneurship education. Here, the NCGE is working with a range of stakeholders as for example the Council for Industry and

²⁷ For information about IEEP, please visit: <http://www.ncge.com/communities/education/content/get/5>

Higher Education, the Small Business Service, the Higher Education Academy and Enterprise Insight to develop a robust rationale for higher-education institutions to engage in entrepreneurship education.

The principle vehicle for working with higher-education institutions through funding is the Higher Education Funding Council for England. This is done through encouraging and facilitating the reshaping of the individual institutions' teaching curricula through incentives of funding.

The Higher Education Funding Council for England (HEFCE)

The main task of HEFCE is to distribute public money to universities and colleges in England that provide higher education. HEFCE was set up by the Government in 1992 as a "non-departmental public body". The HEFCE support four main areas of activity by universities and colleges: 1) Enhancing excellence in learning and teaching; 2) Widening participation and fair access; 3) Enhancing excellence in research; and 4) Enhancing the contribution of higher education to the economy and society.²⁸

With regards to funding of entrepreneurship initiatives in higher education, there are two primary means of funding: the Strategic Development Fund (SDF) established in 2003²⁹ and the Higher Education Innovation Fund programme (HEIF), which is primarily related to the fourth area mentioned above (enhancing the contribution of higher education to the economy and society) and which has a key focus on knowledge transfer.

HEIF is a funding programme designed to encourage knowledge transfer in universities and other higher-education institutions in England. It is the core mechanism for supporting knowledge transfer within the English higher-education sector. HEIF is a partnership between HEFCE and the Department for Innovation, Universities and Skills (DIUS).³⁰

Obstacles

Investigating the impact of entrepreneurship education is a daunting task, but it is quite crucial also at the policy level. It is important to know what impact entrepreneurship education has on students and graduates to improve on current and future policies. However, because of the nature of the political system, focus is often on the short-term effects, while measuring long-term effects gets lower priority.

Recommendations

During the interview, the British policy makers came up with a number of recommendations:

²⁸ For more information on HEFCE, please visit: <http://www.hefce.ac.uk/>

²⁹ For more information on the SDF, please visit: http://www.hefce.ac.uk/pubs/hefce/2007/07_22/07_22.pdf

³⁰ For more information about HEIF, please visit: <http://www.hefce.ac.uk/econsoc/buscom/heif/>. So far there have been four rounds of funding from HEIF. The first round of funding took place in October 2001 (GBP 77million), the second totalled GBP186 million for the period 2004-2005, the third round started in the academic year 2006-07 with GBP 238 million available, and the fourth round will cover the following academic years: 2008-09 (GBP 112 million is available), 2009-2010 (GBP 134 million) and 2010-2011 (GBP150 million).

- Focus must be on the entire educational system as one study level feeds into the next. The formation of an entrepreneurial mindset should be a continuum from primary education through to tertiary education.
- It is important to remember that entrepreneurship education is a single part of the entire entrepreneurship eco-system. If the objectives of entrepreneurship education are achieved resulting in more entrepreneurial people, it is important to make sure that the rest of the entrepreneurship eco-system is geared to support this increase –sufficient access to advisory services, a well-functioning venture capital market etc.
- A recommendation for the EU is to ensure that the collection of good-practice takes place across the member states, and that this knowledge is made widely available. Circulation of good practice should also be complete with contact information to encourage the networking of institutions, policy makers and so on.
- There is no need for national governments to over-manage entrepreneurship education and constantly forcing the agenda. There are a lot of activities already taking place at individual institutions, and the national governments should take advantage of this and learn from these initiatives.

“There is a lot happening within the individual universities that we can draw on and in a sense success will come from growing entrepreneurship education organically and perhaps slowly instead of massively inject some new government-funded initiatives. The NCGE is very small – it is operating at the right kind of level. It is not a massive intervention – it is a small supportive one tailored to the UK’s particular circumstances.”

44. FOSTERING ENTREPRENEURSHIP IN HIGHER EDUCATION IN NORWAY

Interviewee: Christian Wold Eide, Ministry of Trade and Industry

Keywords: action plan, evaluation and assessment, person driven

Context

The Norwegian government aims to be a driving force and partner in the work on entrepreneurship in education. As part of the policy on this area, the government launched a strategy on entrepreneurship in education in 2004. The plan was revised in 2006 and runs to 2008. The strategy serves as an instrument for the strengthening of entrepreneurship education. It shall profile entrepreneurship as an educational objective and training strategy. In addition, it aims at motivating educational institutions, municipalities and county authorities to plan and anchor entrepreneurship in collaboration with trade, business and other relevant parties. The strategy covers the entire education sector.

The Strategy was prepared in collaboration between the Ministry of Education and Research, the Ministry of Trade and Industry and the Ministry of Local Government and Regional Development. The plan is to be a dynamic plan administered by the Directorate for Education and Training. The fact that three ministries have cooperated on the strategy and that the strategy helps all three ministries in obtaining their goals, means that it has a strong standing and is of importance to the Norwegian government. Also, it is interesting to note that the main goals and means for entrepreneurship education have not changed even if the government has changed. This signifies that there is agreement on the importance of a more entrepreneurial education and that the strategy benefits from continuous support.

The primary goal of the strategy is that "the education system shall contribute to productive work and innovation by encouraging acquisition of knowledge and skills, enjoyment and mastery of work, independence and community feeling in pupils, students and teachers at all levels, and development of a culture propagating entrepreneurship."

The strategy serves three interlinked purposes for the above ministries: develop knowledge and competences related to entrepreneurial activities, strengthen young people's belief in and capabilities of their own creative forces and hence foster a cul-

ture for entrepreneurship. This will strengthen the ability to innovate and restructure and hence create value and contribute to development in the regions.

First, the education system has a role to play in stimulating attitudes, knowledge and skills of pupils, students and teachers at all levels and developing a culture for entrepreneurship and behaviour which promotes the capability to be creative. This must take place through long-term work with good progression. Young people must develop a strong belief in their own creative forces and the ability to see and apply local resources as a basis for creative values. With this belief in themselves, young people can be productive, develop workplaces and take responsibility in their local community. This may also prevent young people from quitting school at an early stage. Entrepreneur projects may motivate and teach pupils to be responsible. Further, entrepreneurship education may prove that they can succeed in running a business even if they are not the strongest in regular school subjects. Entrepreneurship courses can also be seen as a meeting place across disciplines, where social scientists, engineers, lawyers and economists can learn to communicate and see the value of combining the different skills.

Secondly, the human capital in terms of competence and workforce is the main part of Norway's national fortune. It is considered of major importance to develop knowledge to further develop the Norwegian society. Also, it is important to develop an entrepreneurial culture that enhances the ability of people in social life and workers, leaders, owners and policy makers in business and trade to innovate and restructure. The latest mentioned is important not only for starting new business, but also for existing enterprises in order to remain competitive.

Thirdly, the strategy serves the regional and the local perspective. Through young enterprises a foundation is laid for future entrepreneurship, innovation and productive work in the whole country. Stimulating entrepreneurship is a central dimension in the development of business and industry, and newly established workplaces can contribute to strengthening the local labour market. New workplaces are often situated where the entrepreneurs are living, and they offer young people a greater possibility/freedom of choice when it comes to settling down.

A new national curriculum for primary and secondary education and training was introduced in 2006 and describes entrepreneurship as a means of renewing education and training.

For pedagogical reasons training in entrepreneurship should be organised differently at different school levels. Education in Norway now emphasises greater variations in learning methods and learning arenas, more practical learning and more freedom of choice in close collaboration between schools and society.

The strategy period ends in 2008, and the document is now being evaluated. The evaluation will not be ready before this project ends, but some challenges and opportunities have already been identified.

Obstacles for fostering entrepreneurship education at national level

The emphasis so far has been on the primary and secondary school. By fertilising the ground among young pupils it will be easier to implement entrepreneurship education in higher education later on. As for the next strategy period, more emphasis will probably be put on higher-education institutions.

However, this does not mean that entrepreneurship does not exist in higher education. The university in Trondheim (NTNU) has been doing good practice in the field for many years (see also case description of NTNU in this report). The university college of Oslo (HiO) and the Norwegian School of Management (BI) are both offering courses in entrepreneurship. Several universities have joined in offering a summer programme to their students called the "entrepreneur school." In addition, several higher-education institutions take actions and several participate in the JA-YE challenge every year.

So far, the government decides the national curriculum for the primary and secondary education. Apart from that, the schools are relatively free in how they emphasise the different parts of the curriculum and how they implement new subjects. Also, the higher-education institutions have a quite independent position, meaning that they are free to interpret the guidelines from the government and implement them the way that suits the institution. This is not only the case for the entrepreneurship education; it is the case for all education in general. As a consequence, entrepreneurship courses have been implemented in schools where some of the staff has a particular interest in the field. It is often driven by local enthusiasts and may therefore be very vulnerable.

Entrepreneurship is a new subject in schools in Norway. There might be a shortage of persons with competence or experience in the field, which means that schools may be unsure about how to teach it. It might therefore be easy to implement only a minimum or ignore it until the schools find an appropriate way to implement it. However, they are still responsible for implementing the curriculum.

The fact that entrepreneurship is a new subject also means that teaching resources, text books and methods are scarce. As for higher-education institutions, there are only a few professors in the field, and normally only in business schools/departments. It may be hard to recruit the right staff for teaching entrepreneurship – both at primary/secondary and higher level of education. Since there are few academic staff with entrepreneurship experience/degrees, the recruitment problem is probably more important in academia. In schools it is easier to hire people with experience from business and trade etc, but in academia there may probably be some barriers for employing people without a university degree.

Today, entrepreneurship education still has the charm of novelty in Norway. It is important that the government follows the area closely in the coming years, so that it does not lose interest among politicians and in the education sector. Entrepreneurship in education is a field characterised by many participants and stakeholders. The responsibility for implementation of the strategic plan for entrepreneurship in education lies with owners of the educational institutions. The responsibility for coordination lies with the Directorate for Education and Training and the Ministry of Educa-

tion and Research. The Ministry of Education and Research, the Ministry of Trade and Industry and the Ministry of Local Government and Regional Development have over time developed good collaboration about entrepreneurship. The inter-ministerial reference group and the Directorate of Education and Training have a major role to play in following up the Plan.

In order to achieve the goal of making entrepreneurship an objective and strategy at all levels of education, the entrepreneurship competence of teacher training personnel must be enhanced. This will lay the foundation for developing entrepreneurship competence both for students at teacher training institutions and teachers who are already working in schools.

Recommendations for fostering entrepreneurship education

In order to succeed in implementing entrepreneurship in higher education, it is important to establish a broad cooperation between the education institutions, research institutions, technology transfer offices and other public support systems, industry and policy makers. It is especially important that universities open up towards other actors/stakeholders in the field. In cooperation with industry, researchers can find usage for their (ground) research. And vice versa – industry can discover new technology and new theory when communicating regularly with researchers in academia.

Local enterprises and the rest of the community must be involved as collaboration partners. A stimulation of this kind of collaboration will lead to improved knowledge of what collaboration about entrepreneurship may mean for both schools and business and community life, thus increasing the motivation for establishing partnerships. A successful commitment to entrepreneurship in education requires long-term thinking and coordinated efforts from the County Governors, county authorities, municipalities, school leaders and owners, teachers, the social partners, local business life and policy makers, providing clear responsibilities for the various participants.

Traditionally, there is a barrier for many researchers in moving from ground research to applied research. The university should not be commercial, and research should be done for the sake of science and knowledge. However, a new law in Norway should make the step easier: Earnings from innovations done at universities are now distributed with one third to the researcher, one third to the faculty of the researcher and one third to the university. This creates a positive incentive for researchers, faculties and universities to make use of the research in business and trade.

To remedy the lack of experience and competences in entrepreneurship education it is important to find good routines for spreading best practice. This should be done both on regional, national, European and international level. Efficient ways are publication of evaluations and research reports, conferences (national/European), case studies which can be published in all EU-countries and internet sites/databases which should be updated regularly with tools and good examples. By sharing information and learning from other stakeholders and countries, one can implement good practices and also avoid making mistakes and thereby avoiding dissatisfaction among involved actors.

45. FOSTERING ENTREPRENEURSHIP IN HIGHER EDUCATION IN THE NETHERLANDS

Interviewees: Jurgen Geelhoed, Ministry of Economic Affairs; Koen de Pater, Agency SenterNovem, Ministry of Economic Affairs and Marinke Sussenbach, Ministry of Education

Keywords: action plan, evaluation and assessment, external funding, entrepreneurship centre, cross-discipline collaboration

Context

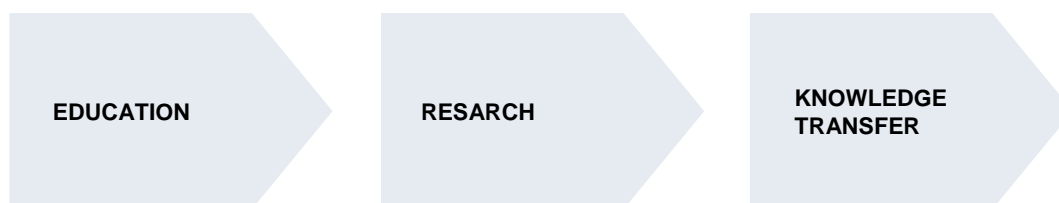
The Netherlands is on an annual basis measuring its performance with regard to entrepreneurship through international benchmarks. International benchmarks as the FORA benchmark and the GEM (Global Entrepreneurship Monitor)³¹ indicated that the Netherlands had an unleashed entrepreneurial potential having an entrepreneurship performance below the EU average.

“The Ministry of Economic Affairs saw that there was a lack in entrepreneurial attitudes and we also looked at how we scored in international benchmark at starting up businesses and at the TEA index [Total Entrepreneurial Activity from GEM] the Netherlands scores just under the EU-average. Well, we think that we must be in top 5 or top 3.” Jurgen Geelhoed, Ministry of Economic Affairs

To fulfil this ambition of being among the top five countries when it comes to entrepreneurship performance, the Dutch government decided to take action to foster and support entrepreneurship in the Netherlands. In these efforts the Dutch government put a lot of emphasis on fuelling entrepreneurial attitudes in the population, where the Dutch educational system was to play a crucial role.

³¹ Link to the benchmark of the Dutch innovation capacity for the Dutch Ministry of Economic Affairs: http://www.foranet.dk/upload/from_benchmarking_to_policy_priorities_final.pdf. Link to the GEM Benchmark: <http://www.gemconsortium.org/>.

In the Netherlands – as in most other countries – higher education is associated with three main tasks:



However, analyses revealed that entrepreneurship activities in the Dutch higher-education institutions were primarily related to the knowledge transfer task while entrepreneurship activities related to education and research were lacking. The same picture could be seen at the national level where policies mainly focused at getting SMEs and entrepreneurs to work with the knowledge institutions (as for example the Innovation Vouchers³²).

Therefore, in 2004, the Ministry of Economic Affairs, in close cooperation with the Ministry of Education, presented an Action Programme for Entrepreneurship and Education. The Action Programme was to focus more on the education task of higher-education institutions. Through this renewed focus the aim of the programme was to promote an entrepreneurial attitude and to strengthen the entrepreneurial knowledge and skill among young people and thereby increase the pool of entrepreneurial talent.

Evidence-based Action Programme

The Dutch government has a strong focus on evidence-based policies and therefore the Ministry of Economic Affairs and the Ministry of Education mapped what entrepreneurship activities were going on in the Dutch higher education institutions to spot good practices that could be mainstreamed. Furthermore, a delegation from the Ministry went on a trip to the USA to identify good-practice initiatives that could be imported and adapted to the Dutch system. The delegation not only visited higher-education institutions, but a whole range of members of the entrepreneurship education eco-system, e.g. venture capitalists and actual entrepreneurs.

The fact-finding trips along with other analyses were used to make a list of critical success factors to guide the Action Programme on Entrepreneurship and Education. One of the important spin-offs from the Action Programme was the establishment of an “Entrepreneurship in Education” Partnership in 2005. The objective of the Partnership was to unite the forces of leading organisations involved in entrepreneurship and education. The approx. 20 organisations in the partnership include business, employer organisations, knowledge institutions, the chamber of commerce and the two ministries.

³² More information about the Innovation Vouchers can be found at:
http://www.senternovem.nl/mmfiles/def%2E%20Toelichting%202006%20Engels_tcm24-189017.pdf

The Partnership decided to create roadmaps on both national and institutional level for integrating entrepreneurship at the different levels in the Dutch educational system. One of the objectives of the roadmaps was to have a strategic plan that the ministries could use to guide the entrepreneurship education policies in the years to come. But it was also the intention that the roadmaps should be used by the institutions themselves to guide their integration of entrepreneurship in education. The roadmaps pinpointed the ambitions, targets, main obstacles and tools for integrating entrepreneurship in each of the educational levels as well as critical success factors for making the entrepreneurship education sustainable.

The roadmaps were created by experts from within the educational institution making sure that they had knowledge of the particular educational levels as well as knowledge of entrepreneurship and entrepreneurship education. The experts also served as ambassadors among their peers in the educational system contributing to the support and commitment to entrepreneurship education.

The roadmap for the higher education is centred on the notion that all students who are interested in entrepreneurship should through their studies be supplied with the necessary knowledge, skills and attitudes to be entrepreneurial. The next step was to turn the roadmap into concrete policy.

From roadmap to policy – the subsidy scheme

The Netherlands has a national fund (FES – Fund for the improvement of the structure of the economy) that is created with the revenues the country earns from its gas resources. In 2005/2006 the funds totalled EUR 1.3 billion. Each year 50 percent of the funds are reserved for investments in physical infrastructure and 50 percent are invested in the Dutch knowledge infrastructure. All ministries can apply for funds to various projects.

The two ministries saw the FES fund as an opportunity to get the resources needed to be able to turn the strategic roadmaps into policies. Therefore, in 2006 the two ministries along with a number of educational institutions wrote a proposal and submitted it to the FES fund and were subsequently granted EUR 20 million in 2007.

With these resources in hand the State secretaries of Economic Affairs and Education, Culture and Science launched the subsidiary scheme Entrepreneurship and Education in 2007. The scheme was inspired by the Kauffman Campuses Initiative³³ and has two pillars:

- Seed money for the Partnership Entrepreneurship and Education: stimulating projects from primary school to university (this part of the subsidy scheme is directed

³³ For more information about the Kauffman Campuses Initiative:
<http://www.kauffman.org/items.cfm?itemID=475>

towards the entire Dutch educational system and not only the tertiary level and will therefore not be described further).³⁴

- Stimulating the establishment of Centres for Entrepreneurship in higher education.

Centres for Entrepreneurship in higher education

The vision of the Centres of Entrepreneurship was to support higher-education institutions in creating a hub for entrepreneurship activities – a hub where entrepreneurship activities could be created, organised and coordinated within the existing institutional frames and infrastructure.

“[The centres] should become some sort of platform of entrepreneurship knowledge – creating knowledge, transferring knowledge and exchanging knowledge between institutions.” Marinke Sussenbach, Ministry of Education

Depending on the starting points of the institutions, it was proposed that the Centres could focus on developing initiatives such as:

- Create entrepreneurial learning environments
- Develop entrepreneurship teaching material and methods
- Improve the teachers’ entrepreneurial teaching skills
- Find ways of recognising achievements in entrepreneurship education
- Enhance interaction and networking of students from different disciplines

The Centres were also urged to find ways to deal with institutional barriers related to entrepreneurship education – e.g. lack of mobility of teachers, timetable issues, internal distribution of resources and the academic priority of entrepreneurship.

However, though a list was presented of elements that the centres could focus on, it was essential for the ministries that the establishment of the centres happened on a voluntary basis. This is general for the Dutch approach to entrepreneurship education. Making it voluntary is seen as critical for success because, if institutions are forced to make entrepreneurship compulsory at once, it will increase the risk of the institutions making entrepreneurship education a separate add-on to the existing programmes. Instead the ministries work under the assumption that introducing entrepreneurship education on a voluntary basis will give the institutions the time needed to integrate entrepreneurship into the existing programmes.

Through a call for proposals higher-education institutions (alone or in consortiums, public as well as private) were invited to present their plans for the development of a centre for entrepreneurship. The call for proposals was very loose in order not to lead

³⁴ More information about this part of the subsidy scheme can be found at: <http://www.lerenondernemen.nl/index.php?pageID=2169&n=287> (Dutch only)

the institutions into a pre-defined direction and to make it possible for the institutions to take into account their regional economic and societal eco-system. The call therefore concentrated on six main criteria that the institutions had to adhere to – how to do it was more or less up to the institutions themselves:

- It must be accessible for all the students at the institution
- It must be sustainable after the project period ends
- It must be done with entrepreneurs/the business environment
- There must be commitment from the board of the institution
- There must be a multi-disciplinary approach
- There must be 50 percent co-financing

“The essence [of the Entrepreneurship Centres] is of course to teach the students to become more entrepreneurial both in attitude and behaviour, and the way they did it is completely up to them.” Koen de Pater, SenterNovem

The application process was divided in two phases:

Phase 1:

The institutions were asked to submit their dream vision for integrating entrepreneurship at their institution – what is the starting point and where does the institution want to go? The starting point was important as the Centres of Entrepreneurship should take into consideration existing activities in order not to re-invent the wheel.

In six pages the institutions were asked to write down the ambitions, objectives and activities to be undertaken. The ministries also asked the institutions to make clear how it intended to collaborate with the business environment, because the ministries worked under the assumption that entrepreneurship education cannot be done successfully without the involvement of entrepreneurs and corporate partners.

Moreover, the institutions should indicate how they were to ensure the sustainability of the centres with regard to both financial and organisational matters during and after the project period. Last, but not least, in order to get the commitment from the top-management at the institutions, the boards of the institutions were required to sign the proposal as a sign of commitment and support.

As a response to the call for proposals the ministries received 24 plans in which individual institutions or institution partnerships had put down their visions. Based on the visions submitted, 13 plans were chosen to go on to phase 2. The selection process was undertaken by an advisory board consisting of experts from the entrepreneurship education eco-system, e.g. experts from the educational systems, the private business sector (both experienced business people and entrepreneurs) and other relevant organisations.

Phase 2:

Here the selected institutions or partnership of institutions were to make their vision more specific and were asked to elaborate on the following elements:

- The objectives of the Centre
- The activities for the Centre
- The manner in which business and industry are involved
- The entrepreneurship activities related to education, research and networking activities in the region
- How to measure the results of the Centre
- How to ensure the sustainability of the Centre
- How they will bring in the required 50 percent co-finance (this finance could come from third parties, but the institutions were also allowed to use internal funds – e.g. the government funds from the Ministry of Education that all higher-education institutions receive on a yearly basis).

The advisory board was responsible for selecting the institutions that were to receive a grant. In January 2008 six Centres for Entrepreneurship started. In total, EUR 12 million were granted for the establishment of the Centres of Entrepreneurship, with a maximum of EUR 3 million per centre for the four-year project period.³⁵

Obstacles for fostering entrepreneurship education at national level

When working with creating and implementing national policies for fostering entrepreneurship in higher education, the partners involved have faced a number of obstacles:

Creating and implementing policies often demand a lot of resources measured in both time and money. But rarely the success of the policies can be guaranteed beforehand. Therefore, the Netherlands – when possible – makes use of evidence-based policies. However, because entrepreneurship education policies to some degree are still in their infancy and as monitoring of their effects is scarce, there is lack of empirical evidence to guide policy making in this area.

When talking to the institutions the Dutch policy makers often heard that the lack of mobility of teachers presented a problem for the institutions.

³⁵ More information about the institutions selected and the size of the grants can be found at: <http://www.lerenondernemen.nl/index.php?pageID=3453&n=595> (Dutch only). Two of the Centres of Entrepreneurship are included as cases in this report. These are the Utrecht School of the Arts and Delft University of Technology.

The lack of resources and skills the institutions experience with regard to entrepreneurship education can have the effect that the institutions do not want to promote entrepreneurship education in fear of straining their resource base.

From the national perspective, there seems to be a great distance between the academic world and the business world and, unfortunately, little interaction. It seems that entrepreneurs and businesses have difficulties approaching the higher institutions – to find the appropriate point of contact. The institutions are often very large, and even people within the institutions can find it difficult to refer to the right people. Moreover, the academic staff seldom have time to interact with entrepreneurs and businesses.

The definition of entrepreneurship also proves to be an obstacle. The concept entrepreneurship is understood in a multiple of ways – is it setting up businesses, is it having an entrepreneurial mind. The institutions want to know: What does entrepreneurship mean for my institution? The definition needs to be broad enough to incorporate all the aspects of entrepreneurship, but it also needs to be specific enough to build policies on.

Recommendations for fostering entrepreneurship education at national level

When making policies at national level to be implemented at institutional level a lot of institutional barriers are bound to emerge. For instance, some institutions have semesters, while others have trimesters; some institutions value certain courses at 5 ECTS while others value it at 10 ECTS. However, the Dutch policy makers recommended that instead of trying to streamline the differences, which can be an overwhelming task, the policies should instead be made so flexible as to give the institutions room to work around the institutional barriers in ways they see fit and workable in their particular institution.

Also, it should be attempted to identify the front runner institutions when it comes to entrepreneurship education; to give them a platform on which to develop their ideas. In general, flexibility in the policies is a key issue – if policies are rigid the innovative and creative ideas will not flourish. In the policies it is better to make the initiatives voluntary instead of compulsory – the policies should be based on positive reinforcement where the success of the front-runner institutions can spur other institutions to engage in entrepreneurship education as well. In relation to the establishment of the Centres of Entrepreneurship, the Netherlands has initiated network groups where the institutions that are in the process of establishing Centres of Entrepreneurship can meet and exchange knowledge and experience. But equally important, the network groups also include those institutions that applied for resources, but were not granted any. In these network groups the institutions can get the knowledge needed to proceed with their entrepreneurship education plans, even though they did not receive funds from the subsidy scheme.

Recommendations for the EU

The Netherlands suggested that the EU take the initiative to make a generic framework that can be used globally to measure the effects of entrepreneurship education and make international benchmarking. This framework could be used to make annual or bi-annual benchmarking. This will help national governments overcome the obsta-

cle of lacking empirical evidence that can be used to guide entrepreneurship education policy-making at a national level.