

# **The European-focused strategy for entrepreneurship education**

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**Abstract:** Views on the role of the university are changing. There is pressure and desire for institutions to contribute actively to the creation of new wealth and new opportunities in the economy. The intention of the EU for fostering Entrepreneurship Education has been outlined in leading documents and actions already begun. How important that subject is for driving forward the establishment of an European Education and Research Area shown by the endeavours taking place on national and European stages. Ongoing activities and measures taken at national level by the EU Member States have been assessed. These show that entrepreneurship is often neither integrated into the curriculum, nor part of a coherent framework. This paper will explain the importance of the intentions of the EU in order to encourage not only European partners to participate in the framework Entrepreneurship Education. It will give an overview and explain structures of current programmes created by the European Union. The European Commission has even tabled programmes for action at national and European levels to foster innovation as a main asset of the EU economy.

## **1. Introduction**

It is true that Europe's competitive performance lags behind that of the United States. But there are signs of change in Europe. Policy reform is making it easier to start and grow a business, and the success of European companies such as Nokia (Finland), Ryanair (Ireland) and Skype (Estonia) is inspiring a new generation of entrepreneurs. The EU is a patchwork of 27 countries, 23 official languages, 500 million people, different cultures of capitalism and wealth production, and different stages of economic development. Swedish corporatism is very different from the way business is done in the UK, which in turn differs from the Greek business culture. Some of the newer member states are former communist countries returning to free-market economies after many decades and showing very rapid rates of growth. These new members may be poor, but they bring dynamism to the EU and strong skill bases in math and engineering. This heterogeneity is reflected in the levels of entrepreneurial activity. Overall, the rate of entrepreneurial activity in the EU is about half that of the United States, but this masks regional variations and variations in the type of entrepreneurship. Poland and Ireland show levels of entrepreneurship similar to those in the United States. Despite very different social models, France and the UK have identical levels. The reasons behind the regional differences are at the heart of policy reform and a challenge for Europe's citizens. Low levels of risk taking and high levels of job security combine to make starting a business a less attractive proposition in countries like Sweden and Germany. A high proportion of Poland's entrepreneurial activity is motivated by lack of jobs rather than the exploitation of great business opportunities. The level of technology start-ups in the UK, Germany and Italy is broadly comparable to the United States, but other countries lag far behind in exploiting technology and intellectual property. Small and medium-sized enterprises (SMEs) are responsible for three quarters of EU employment. Economic recovery has taken hold in the Eurozone, including Germany, and jobs are being created. Consensus is breaking out in the debate over reform of Europe's social model. Levels of construction and occupation of incubators and science parks is soaring. There are lucrative opportunities in the further liberalization of the EU's single market.

Europe's challenge is to embed positive reforms and positive thinking across 27 countries. Politicians and policymakers are agreed on the areas which need improvement in order to boost Europe's competitiveness. The key policy areas are:

1. Fostering entrepreneurial mindsets through school education
2. Encouraging more people to become entrepreneurs

3. Gearing entrepreneurs for growth and competitiveness
4. Improving the flow of finance, and;
5. Reducing regulatory burdens. [1]

There are different terms, which are used frequently in the connection with entrepreneurship in education system. So the term entrepreneurship education is mostly used in Canada and USA whereas the preferred term in UK and Ireland is enterprise education. But there are also different meanings behind this. The UK primarily focussed on the development of personal attributes whereas the USA also included the development of a real entrepreneur. In our explanations we want to use the term entrepreneurship education that even embeds the development of personal skills as well as more specific skills that to be need to become an entrepreneur.

## 2. Economics and Labour market context

It is now widely accepted that the competitiveness and future prosperity of a country economy depends on the application of knowledge, innovation, and entrepreneurship. Schumpeter recognised long ago the importance of innovation in his discussion of creative destruction and economic development. He also recognised that innovation is introduced through both large corporations and entrepreneurial new business formation. More recent work shows that many of the world's most radical innovations are taken to market by entrepreneurial start-ups with much of the subsequent incremental innovation and development taken forward by the established corporate sector.

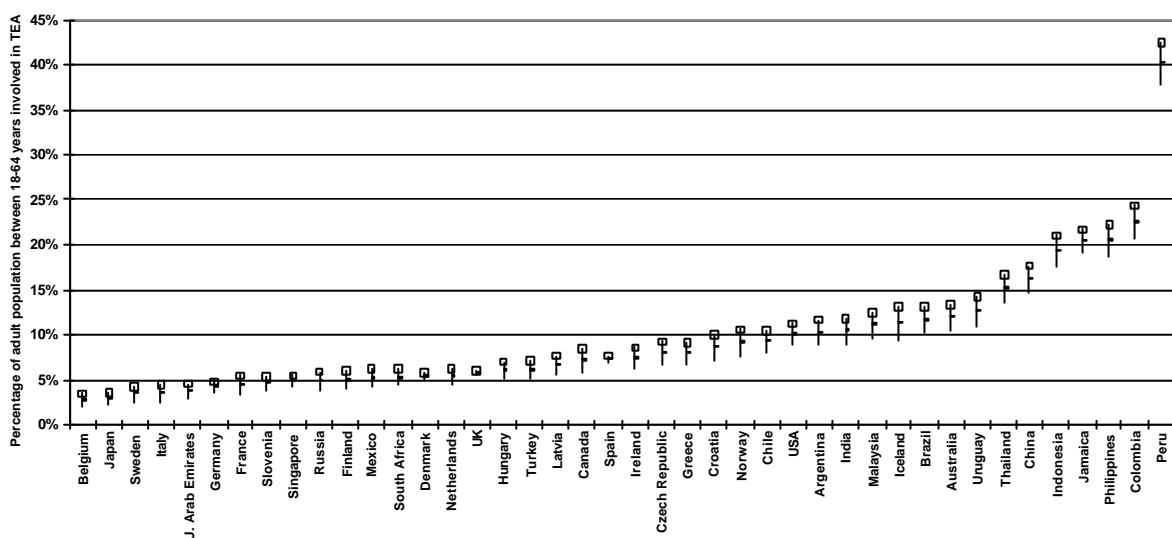


Figure 1: Early-stage entrepreneurial activity (TEA) by country, 2006

Source: Global Entrepreneurship Monitor 2006

The entrepreneurial activities of European countries and non European countries are different. So it makes sense to compare a sample at the beginning. It are used the results of the national Global Entrepreneurship Monitor (GEM) reports 2006 of the respective countries as well as the summary report of GEM 2006. Within this context it can be pointed out overall that entrepreneurial activities have been changed a lot in comparison to the last years. Figure shows significant development we need to counteract. In this context it should be defined the following terms. GEM divides into three stages of entrepreneurial activities. Nascent entrepreneurs are those individuals, between the ages of 18 and 64 years, who have taken some action towards creating a new business in the past year. In order to qualify in this category, these individuals must also expect to own a share of the business they are starting and the business must not have paid any wages or salaries for more than three months.

New business owners or early stage entrepreneurs are individuals who are active as owner-managers of a new business that has paid wages or salaries for more than three months, but less than 42 months. In addition to those individuals who are currently involved in the early stages of a business, there are also many individuals who have owned and managed a business for a longer time. These individuals are included in GEM's estimates of the number of established business owners. Specifically, the percent of individuals in a population who owns and manages a business that has paid wages or salaries for more than 42 months. [2]

### ***USA***

One of the critical drivers of America's economic dynamism and flexibility has been the strength of its entrepreneurial economy. The United States created an early lead in entrepreneurial activity through three key attributes: ready access to capital and state-of-the-art research; a culture that encourages experimentation and risk; and a regulatory structure that enables firms to start-up and enter new markets while enabling less productive firms to exit. And in turn, its entrepreneurial strength generated a high proportion of the new jobs, productivity gains and innovations in the marketplace.

As Carl Schramm, President of the Kauffman Foundation, contends, "For the United States to survive and continue its economic and political leadership in the world, we must see entrepreneurship as our central comparative advantage. Nothing else can give us the necessary leverage to remain an economic power." [5] Early stage entrepreneurial activity in 2006 measures 10%, a combination of nascent entrepreneurs at 7.5% and new business owners at 3.3%. This represents a decline from the 12.4 reported in 2005. More than 32% of early-stage companies will use the very latest or new (1–5 years old) technology in their business as compared to 16% of established businesses. Here are interesting recent trends: In the second quarter of 2006, biotech investments overtook software investments as the industry category in which the most classic venture capital was invested. Investment in the wireless sector of telecommunications hit a four-year high in 2005 and continued strong in 2006. Entrepreneurial activity continues at a high level. Public policy for entrepreneurship is positive. Probably the biggest concern is the cost of health care, which is an increasing burden for businesses of all sizes, but hits start-up and young businesses particularly hard.

### ***Russia***

Early-stage entrepreneurial activity in 2006 measures 11.7 %. This is the equivalent of more than 10 million people. Approximately 40% (almost 3.6 million people) of this number are nascent entrepreneurs while 60% (more than 6.4 million people) have been new firm entrepreneurs. The prevalence rate of informal investors is 3.1 % of the adult population. The most positive conditions affecting entrepreneurial activity are: a general growth in economic activity (and internal demand in particular); the national educational system at all levels, and access to resources and commercial and professional infrastructure (apart from financial resources). The most negative conditions affecting entrepreneurial activity are: the absence of a well-grounded, efficient state policy supporting entrepreneurial activity; insufficient financial support both from state and private sources; existing taxation policy and administrative barriers. On the other hand there is increasing support in the form of science parks and business incubators; by the end of this year the total amount of business incubators will approach 50 units. Also a new law "On the development of small and medium sized entrepreneurship in the Russian Federation" will be issued this year. By the end of this year 15 regional venture funds supporting entrepreneurial activity with total capital of about roubles 4 billion (circa US\$150 million) will be established.

### ***Thailand***

Thailand takes a special place in this comparison because of the development of the last years in the country. It is not the typical example for Asia but represents the consequences/impacts of natural disasters to the economic development. Early-stage entrepreneurial activity of Thailand has significantly declined to 15.2% in 2006 (from 20.7% in 2005). The decline is predominantly in terms of the nascent firm prevalence rate, whilst the rate for established businesses has increased from 14.1% in 2005 to 17.4% in 2006. The decline in early-stage entrepreneurial activity can be partly attributed to political instability and economic stagnation in the past year. Experts believe that the most positive factors are social and cultural norms (a very positive attitude towards entrepreneurship), the economic climate and market openness. Nevertheless, a number of factors continue to hinder entrepreneurial activity in the country. These include the capacity for entrepreneurship, and government measures. Furthermore, education and training, research and

development capacity, and intellectual property rights are seen to limit the potential of new ventures in Thailand. Recently, the government has shifted its policy standpoint from competition policy towards a new approach, which focuses on building platforms for multiple industries and enabling the creation and commercialisation of local knowledge. The government introduced and enacted new laws and regulations such as the SMEs Promotion Law, the Innovation Development Fund, and an Asset Capitalisation scheme. These laws and regulations have led to the establishment of new public organisations for promoting new firms and business development.

Entrepreneurship is mostly opportunity based, rather than necessity-based and the population is supportive of entrepreneurship. It can be pointed out that Thai society strongly supports women's participation in entrepreneurial activity. There is a need to develop entrepreneurship educators and promote role models in Thailand. Unfortunately the recent governmental activities may be less than efficient, through a lack of concerted effort and coordination across the various government sectors responsible for providing support for entrepreneurship.

### **Germany**

Even Germany takes a separate place in the scale of the entrepreneurial activities comparison. The total early-stage entrepreneurial activity of Germany measures 4.2% in 2006 (down from 5.4% last year). This places Germany far behind almost all comparable industrialised countries such as the USA, Australia, Norway, the Netherlands or Finland. After an increase between 2004 and 2005 activity fell again, following the trend since 2000. Similar to previous years, the absolute and relative share of necessity based activity is high. The necessity entrepreneurship rate is 1.5% (1.6% in 2005) and no other industrialised country shows a higher value. The opportunity/necessity ratio is 1.6:1. The German population express rather negative attitudes in two important variables. Just 17.6% of the people perceive good start up opportunities for Germany, whereas almost 50% amongst the Germans still "fair the failure". However, entrepreneurial skills are assessed more positively than in previous years. According to the experts, government policies towards entrepreneurship receive the most positive grades. ***On the other hand, the role played by entrepreneurship in education both at primary schools and at universities is evaluated very negatively.*** The federal government has developed various programmes to reduce the unemployment rate, including bridge funding that supports start-ups by unemployed people. These programmes initially helped to increase entrepreneurial activities, but after modification of the programme the rate decreased again. Policymakers are still quite active and their activities are rated positively. Due to the fact that entrepreneurship is high on the policy agenda, the media even tries to improve the image of entrepreneurs – and they are partially successful. [3]

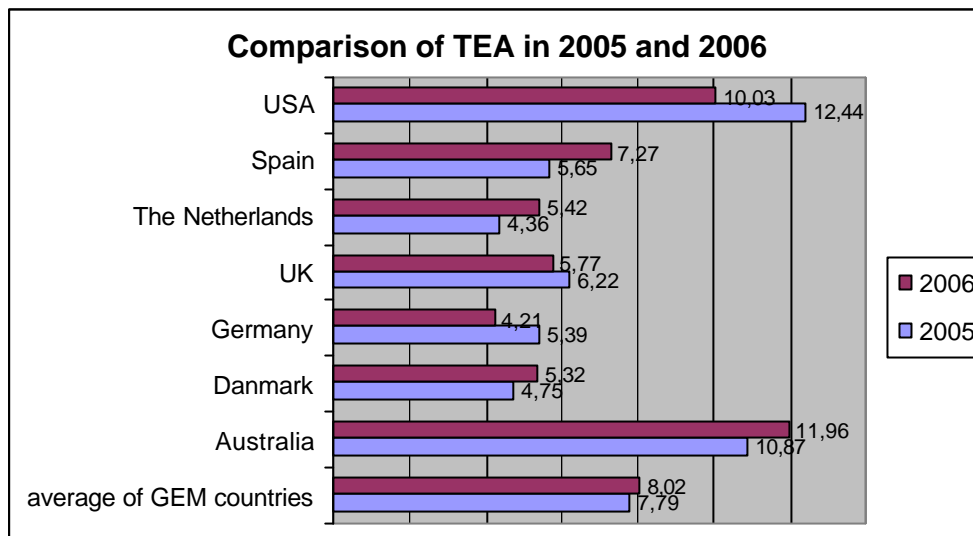
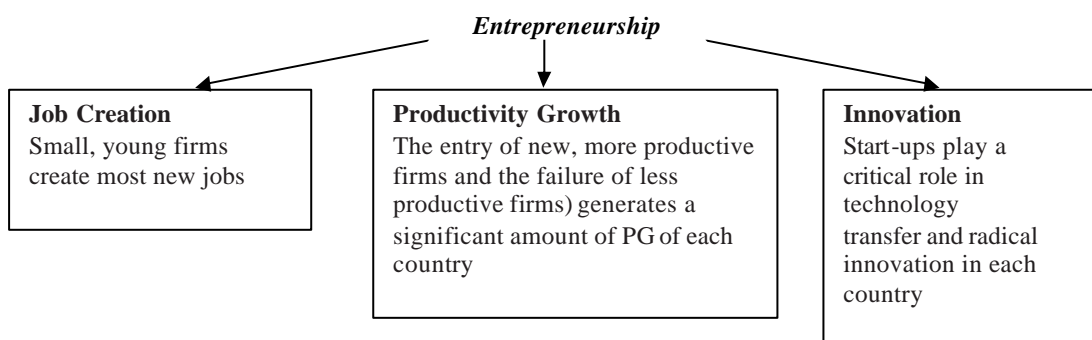


Figure 2: Comparison of Total Entrepreneurial Activity in 2005 and 2006  
Source: GEM 2006

### 3. Entrepreneurship as key driver of regional economic growth

Promoting effective entrepreneurship requires sound framework conditions. The main message is that improving framework conditions are essential for entrepreneurship. Framework conditions operate through a variety of channels. For example, the innovative activities benefit a lot from stable macroeconomic conditions. Likewise, open, competitive product markets are essential for innovation and firm dynamics. It leads to a better allocation of resources and greater efforts on the part of managers to reduce slack at the firm level. More competition should also foster dissemination of best practice and sharpen incentives to innovate at the technological frontier. Even education plays a significant role in preparing future entrepreneurs. A unique framework has to develop that allows each country to adapt to the respective regional circumstances. Within this orientation entrepreneurship education should be considered as a heart of the framework because it is embedded in each stream of the framework. [4]



**Job Creation** New companies create most of the new jobs in the EU and the USA. From 1980-2001, the entire growth in net U.S. jobs was attributable to young firms (less than five years old). Mature firms (older than five years) actually lost jobs over the period. From August 2003 to October 2006, 6.8 million new jobs have been created in the USA—the majority of them coming from small businesses. Young, educated Americans continue to choose entrepreneurship as their career: 52% of early-stage entrepreneurs in the

United States are under 35 years old and 64% of them have some college education with 52% having one or more degrees.

**Productivity Growth** Economic growth is not an orderly process of incremental improvements — it happens because new firms are created and older firms are terminated. As mentioned already above the economist Joseph Schumpeter introduced the term “creative destruction” to describe this process of transformation and radical innovation. And entrepreneurs are the moving force behind this process that underpins the dynamism of the economy. Productivity growth occurs as much through this entry and exit of new businesses as through performance improvements in existing businesses.

**Innovation** Entrepreneurial companies are increasingly important drivers of innovation, an area traditionally dominated by large companies and their substantial R&D budgets. Small firms are an essential mechanism for commercializing breakthrough discoveries and new technologies. Companies like Hewlett-Packard, Google, Genentech and Amgen all started as spin-offs from university based research. Small firms have been the source of a range of world-changing innovations — from the integrated circuit to biosynthetic insulin. Larger firms often depend on small firms for new ideas and technologies. They invest in start-ups, acquire small companies with promising technologies, and partner with small firms to develop new products.

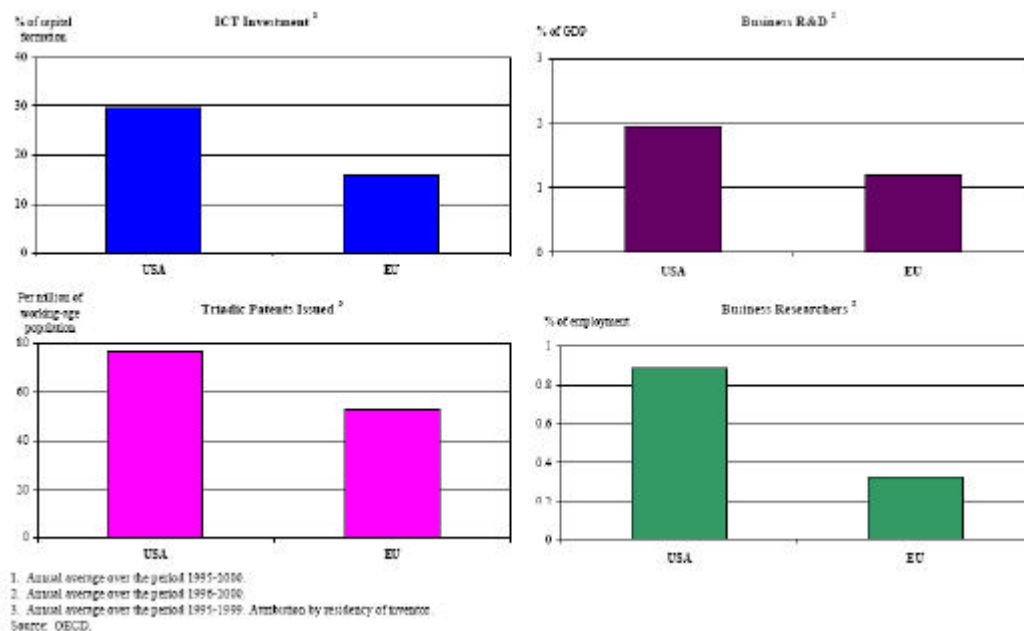
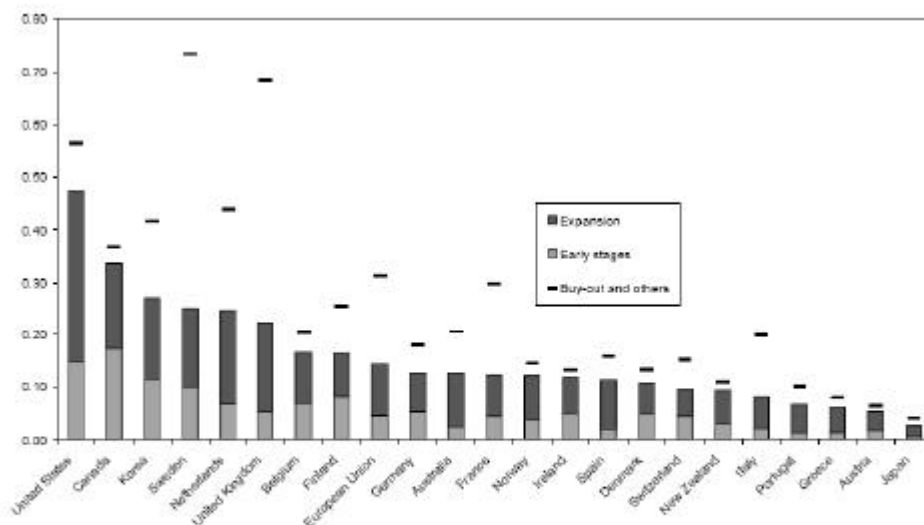


Figure 4: In the EU, indicators of innovation activity fall short of the U.S



Note: 1998-2001 for Australia, Japan, Korea and New Zealand. The definition of private equity/venture capital tends to vary by country.  
Source: OECD venture capital database, 2003.

Figure 12: Venture capital investment by stage as a share of GDP, 1999-2002

#### 4. The importance of Entrepreneurship Education within the Entrepreneurial Framework

Many countries face daunting challenges in this century. Aging populations and the retirement and medical needs they require, global warming, and new security concerns—to name just a few—all demand the resources that can come only from continued rapid economic growth. Economic growth, in turn, will require continued entrepreneurial innovation. Ideally, much of that innovation and entrepreneurship should take place where the potential and resources are. More, as in Kauffman report was pointed out: “If we want future generations to reap the benefits of individual success, as well as contribute to a thriving economy and a nation able to compete at the highest levels globally, we must focus on better preparing our students.” [5] In order to meet this challenge we need to collaborate in cross border projects that deal with interdisciplinary modules implement able in each course. Also for succeeding we need to develop an outstanding network between industry and academia. It is insufficient to cooperate in special joint projects within the region. We need to lay the emphasis on educating our future human resources already with the industry sector on board. Again, the Kauffman Foundation is a meaningful example to demonstrate the demand from industry to the educational sector. It conducted a survey in U.S. that can be overtaken by almost every country. The survey consists of questions to entrepreneurs to the most important issues of university concerning their regional responsibility. It has shown that one main issue should be to **Ensure a Skilled Workforce**. They tell that perhaps the most significant constraint on their future growth, and on the growth of future entrepreneurs, is the difficulty finding and attracting “talent”—highly skilled, entrepreneurial workers. This also looms as one of the more important challenges facing the economy of each country. And this requires major, entrepreneurially driven improvements throughout each educational system. Another very important aspect for current entrepreneurs is the **Promotion of Innovation**: Innovative entrepreneurship cannot occur unless the innovation pipeline is full and incentives for commercializing innovation are in place. Every country is still in a development process that requires a lot of innovation. The last point entrepreneurs emphasized is to **Limit Overly Burdensome Regulation and Liability Litigation**. [6]

#### 4.1. University and entrepreneurship– still an insufficient approach

Though entrepreneurial activity has played a dominant role in Europe's economy, the study of entrepreneurship is relatively new to higher education – and what is taught is not consistent from institution to institution. Currently the traditional education system has been focused on

- Introducing entrepreneurship education almost exclusive in business administration courses
- Mainly established Organisations
- Mid-size and larger companies
- Optimizing the utilization of the resources and the organization in order to maximize short-term profits

When Entrepreneurship is taught, it's often about what entrepreneurship is and less about how to improve the process of creating and developing a company. There is a need to both develop entrepreneurs to make them better prepared to act as a manager and handle the financial and organizational issues as their company develops and grows and develop business people and managers who understand the nature of an entrepreneurial business and who can work with entrepreneurs in a constructive way.

#### 4.2. EU contribution to fostering entrepreneurship education

##### *Commission statement*

In a paper published by the General Direction (DG) Enterprise it was pointed out that Europe needs a vibrant and adaptable private sector and one which encourages invention and is comfortable with risk-taking. Entrepreneurship education helps young people to develop a keener eye for opportunity and an aptitude for “thinking outside the box”. And being entrepreneurial applies as much to people who are employed as to those who are independent. Europe's demographic shifts will place a great deal of pressure on the younger generation over the next decades and it is imperative that they be more self-sufficient. The success of Europe's political expansion and economic integration depends on it. It is highly commended that the collaboration is presently taking place between DG Enterprise and DG Education in this field as it has already done much to raise awareness of the issues.

The Commission's plan to boost entrepreneurial mindsets is a positive exercise, stepping in the right direction. More favourable framework conditions are a must to foster Europe's entrepreneurial spirit. One single measure cannot change mindsets and release our entrepreneurial potential but rather a series of measures such as integrating entrepreneurship education into curricula, increasing the financial support for such initiatives and improving the image entrepreneurship has today in Europe.

The goal of the General Direction of Education, Training, Culture and Multilingualism is to reach at least 4.5 million students by 2010, and now they are at 1,7 million. But programme impact and the ability to expand also depend on the close working relationships that were established with education authorities (access to schools) and the private sector (access to business volunteers). This three-way partnership has been enormously successful and highly cost-effective. However, to achieve these goals, the EC has to deepen and strengthen these partnerships, focus on those areas in Europe where the growth potential and the need is greatest. [7]

The growing internationalisation of economies affects the world of work with rapid and frequent change through the introduction of new technologies and new approaches to organising companies. Employees need to both update specific job-related skills and acquire generic competences that enable them to adapt to change. The knowledge, skills and attitudes of the workforce are a major factor in innovation, productivity and competitiveness and they contribute to the motivation and job satisfaction of workers, as well as the quality of work. However, the High Level Group on the Lisbon Strategy made it clear in November 2004 that:

*... far from enough is being done in Europe to equip  
people with the tools they need to adapt to an  
evolving labour market, and this applies to high- and  
low-skilled positions.*

It has been estimated that almost a third of the European labour force (80 million people) is low skilled. [8] Furthermore, a 2004 report by the European Centre for the Development of Vocational Training (Cedefop)

suggested that by 2010 only 15% of newly created jobs will be for people with basic schooling, whereas 50% will require highly skilled workers [9]. The recognition that people are Europe's most important asset for growth and employment was clear in 2000, and has been regularly restated most recently in the relaunched Lisbon Strategy and at the European Council of March 2005, which called for increased investment in education and skills. The mandate was reiterated and developed in the *Education and Training 2010* work programme adopted by the Barcelona Council in March 2002, which also called for further action to *improve the mastery of basic skills* and to strengthen the European dimension in education [6]. The recommendation proposed here, therefore, presents a European reference tool for key competences and suggests how access to these competences can be ensured for all citizens through life-long learning.

This Framework sets out the eight key competences, specifically:

1. Communication in the native tongue;
2. Communication in foreign languages;
3. Mathematical competence and basic competences in science and technology;
4. Digital competence;
5. Learning to learn;
6. Interpersonal, intercultural and social competences, as well as civic competence;
- 7. Entrepreneurship;**
8. Cultural expression.

Within this context, entrepreneurship refers to an individual's ability to turn ideas into action. It includes creativity, innovation and risk taking, as well as the ability to plan and manage projects in order to achieve objectives. This supports everyone in day-to-day life at home and in society, employees in being aware of the context of their work and being able to seize opportunities, and is a foundation for more specific skills and knowledge needed by entrepreneurs establishing social or commercial activity. [10]

In order to make progress on the entrepreneurship agenda, the EU Commission published the Green Paper *Entrepreneurship in Europe* to involve the largest possible audience of stakeholders in setting the future policy agenda [11]. This consultation provided an example of the importance that the Commission attaches to upholding the dialogue with Small to Medium Enterprises (SMEs) and their representatives.[12] Entrepreneurship education in universities should be available for students and researchers from all fields, notably at technical universities. Matching scientific potential with entrepreneurial skills will contribute to the better commercialisation of research results through spin-offs and more start-ups in knowledge-based sectors. Within this orientation, the key action is to foster entrepreneurial mindsets among young people.

Under the open method of coordination, the Commission and external experts reviewed the policy approaches to entrepreneurship education in the EU. Promising results showed that entrepreneurship is gaining importance in education programmes and that many policy initiatives are underway. [13]

Under the title of *Delivering on the Modernisation Agenda for Universities: Education, Research and Innovation*, the European Commission published a paper in May 2006 [14]. With 4,000 institutions, over 17 million students and some 1.5 million staff – of whom 435,000 are researchers – European universities have enormous potential, but this potential has not been fully harnessed and put to work effectively to underpin Europe's drive for more growth and more jobs. Structured partnerships with the business community (including SMEs) bring opportunities for universities to improve the sharing of research results, intellectual property rights, patents and licences (for example through on-campus start-ups or the creation of science parks). They can also increase the relevance of education and training programmes through the placements of students and researchers in business, and can improve the career prospects of researchers at all stages of their career by adding entrepreneurial skills to scientific expertise. Links with businesses can bring additional funding, for example to expand research capacity or to provide retraining courses, and will enhance the impact of university-based research on SMEs and regional innovation. In order to secure these benefits, most universities will need external support to make the necessary organisational changes and build up entrepreneurial attitudes and management skills. This can be achieved by creating local *clusters for knowledge creation and transfer* or business liaison, joint research or knowledge transfer offices serving as an interface with local/regional economic operators.

#### **What the commission can and should do?**

The Commission is not a direct participant in the modernisation of universities, but it can play a catalytic role by providing political impetus and targeted funding in support of reform and modernisation. It can also provide funding with a significant impact on the quality and performance of universities. This includes

incentives to help universities meet the goals outlined in this Communication [6]. The mechanisms include not only the new programmes for 2007-2013, such as the 7th Framework Programme (FP7) for R&D, Life-long Learning Programme, Competitiveness and Innovation Programme, but also Structural Funds. In the following section, the authors want to demonstrate the implementation opportunities given by the EC within special programmes using a few examples [12].

The European Commission laid down general provisions for the following funds:

- European Regional Development Fund (ERDF);
- European Social Fund (ESF);
- Cohesion Fund.

These have served to establish the framework for action by the Structural Funds and the Cohesion Fund [14]. The Structural Funds can provide funding for the improvement of universities' facilities and resources, the fostering of partnerships between the academic and business communities, as well as the support of research and innovation relevant to regional or Member State economic development objectives. The Structural Funds' system of decentralised management, which gives local or regional governments a role in the management and administration of the funding, enables regional specificities to be taken into account. Member States, regional authorities and universities should take full advantage of these opportunities to improve synergies between education, research and innovation, particularly in the EU's less economically developed Member States and regions. Concerning the authors' intentions, this programme provides preconditions for creating a basic communication platform among the stakeholders. The ESF will be implemented in line with the European Employment Strategy and will focus on four key areas, amongst these the increasing the adaptability of workers and enterprises [15].

Therefore, the ESF supports the enhancing of human capital, in particular, by promoting the following elements:

- The design and introduction of reforms in education and training systems in order to develop employability, the improvement of the labour market relevance of initial and vocational education and training, and the continual updating of the skills of training personnel with a view to innovation and a knowledge-based economy;
- Networking activities between higher education institutions, research and technological centres, as well as enterprises;
- Development of human potential in research and innovation, notably through postgraduate studies and the training of researchers.

The regulation of the ERDF defines its role and fields of interventions, such as the promotion of public and private investments, and helping to reduce regional disparities across the Union. The ERDF will support programmes that address regional development, economic change, enhanced competitiveness and territorial cooperation throughout the EU. Funding priorities include research, innovation, environmental protection and risk prevention, while infrastructure investment retains an important role, especially in the least developed regions.

On the education and training sector the European Commission decided to establish a new Life-long Learning Programme, which will replace the existing Socrates and Leonardo da Vinci programmes when they expire at the end of 2006, is on the point of being adopted by the European Parliament and Council. It is expected to come into force in December 2006.

The Life-long Learning Programme (LLL programme) comprises four sectoral programmes, specifically:

- School education (Comenius);
- Higher education (Erasmus);
- Vocational training (Leonardo da Vinci);
- Adult education (Grundtvig).

The programme budget will be €6,970 million for the total period of 2007-2013 [16].

The aim of the new programme is to contribute through lifelong learning to the development of the Community as an advanced knowledge society, with sustainable economic development, more and better jobs and greater social cohesion. It aims to foster interaction, cooperation and mobility between education and training systems within the Community, so that they become a world quality reference. Relevance to the introduction of entrepreneurial behaviour in this programme comes in the first line of Erasmus. It is the higher education action of the LLL programme. It seeks to enhance the quality and reinforce the European dimension of higher education by encouraging transnational cooperation between universities, boosting European mobility and improving the transparency and full academic recognition of studies and

qualifications throughout the Union. Erasmus consists of many different activities. Relevant for our consideration are:

- Joint development of study programmes / modules (curriculum development);
- Co-operation between industry and academia;

This programme supports the changing process within the curriculum development through embedding of entrepreneurial parts in existing courses or creating of separate modules or courses in the field of entrepreneurship. Another sub programme supports interaction with the business sector in order to meet the demands of industry and share the expertise of our experienced entrepreneurs whilst studying.

Erasmus action is targeted all 27 Member States of the European Union, the three countries of the European Economic Area (Iceland, Liechtenstein and Norway), as well as Turkey as a candidate country. Currently, 2,199 higher education institutions in 31 countries are participating in Erasmus. Even the sectoral programmes, such as Leonardo da Vinci and Grundtvig, offer the means to meet the entrepreneurial agenda – but only partly.

New funding instruments for EU cooperation with third countries are launched for the period 2007-2013 as well. For instance at the centre of the new *TEMPUS IV Programme* that likely will be launched in December 2007 is placed the development of the university nature in the context of cooperation between universities and other institutions from the European Union member states and the partner countries. This programme should be contributed to the following important aspects:

- Curriculum development in the academic field;
- Reform of universities, their structures and administration (reconstruction, modernisation, equipment);
- Internationalisation of higher education systems in partner countries;
- Improvement of the theoretical and practice oriented knowledge of those staff who are not related to the academic field.

#### **4.3. Entrepreneurship education in Europe - Case studies**

An aim should be in Europe to support Member States in developing a more systematic strategy, based on good examples. Coherent entrepreneurship education initiatives are still too few. However, good practice can be found in Europe. The challenge lies in spreading further the existing positive examples. Most of the action needs to be taken at national or local levels, however the European Commission has an important role of coordination and support.

Case presented allowed to highlight a number of critical factors for success in developing entrepreneurship education within universities and technical institutes. Real life experience is the key. It is insufficient to bring entrepreneurs into the classroom: students should be directly involved in enterprise projects. The approach should be student-driven: not teaching to them but mutual interaction between the educator and the students, involving feeling and emotions.

The following cases were introduced at the Conference “ENTREPRENEURSHIP EDUCATION IN EUROPE: FOSTERING ENTREPRENEURIAL MINDSETS THROUGH EDUCATION AND LEARNING” that was held in OSLO, 26 - 27 OCTOBER 2006.

##### *Case 1: Teaching of entrepreneurship across different subjects*

Entrepreneurship as a module in its own right has been taught at Dundalk Institute of Technology (DKIT) in some form since the mid 1980s. Initially originating from within the Institute’s Business School, entrepreneurship first appeared on the curriculum as “Innovation Studies” and “Enterprise Development”. The content, structure, duration and delivery style of such modules have developed significantly over the years, resulting in a differentiation between both levels and disciplines. Currently, entrepreneurship is taught at DKIT across all four schools/faculties (Business & Humanities; Informatics & Creative Media; Nursing & Health Studies; Engineering) and across different levels of the framework.

The module on one level is taught interactively in workshop-style sessions and, although it carries 5 ECTS, there is no formal written exam. Rather, a team-based creativity project forms the basis of the assessment. Students can then progress to a upper level, where they will encounter “Entrepreneurship”, a module offering a higher level of study with a more theoretical and academic content, along with the “Business Project” where students will research the potential for setting up a new business in the region. Entrepreneurship is taught within programmes as diverse as Agricultural Science, Sports Leadership, Hospitality and Tourism, Event Management, Food Science, Engineering, Early Childhood Studies,

Creative Multi-Media, Cultural Studies, Business Information Systems, Accounting & Finance, Marketing and Business Studies. [17]

*Case 2: Science enterprise challenge-changing the culture at UK universities*

Science Enterprise Challenge (UKSEC) was a UK government initiative launched in 1999 by the Office of Science and Technology. By mid 2000, 12 centres had been set up, involving 33 universities and, after the second round of funding in 2002, there were 13 centres networking 65 universities.

By the end of 2004, when UKSEC became a national network of enterprise centres open to all UK universities, it had enabled 160,000 students and 1000 staff to become more involved with enterprise learning, set up 70 student enterprise societies and ran 180 business plan competitions involving 8700 new ideas. Its challenge was to change the culture in UK Universities and particularly to change the learning experience of science and engineering students and increase the wealth creation capacity of universities. At a national level, UKSEC provides a community of practice for those involved in enterprise development across the UK. Its largest event is its annual conference and gala. At the gala, prizes are given out to the winners of the national student business plan competition - a winners of winners competition to celebrate the best of student entrepreneurship.

At a local level, enterprise development depends upon the culture and strategies of the individual universities and the skill and vision of those individuals involved. There is a diversity of approach; one size does not fit all. Whilst some universities have developed enterprise learning programmes driven by their business schools others, such as the University of Sheffield, have chosen an embedded approach where the learning is closely connected with the science or engineering subject and led by academic staff in those departments. The key to success in this approach is the infiltration of 'enterprise teaching' into the professional standards of the teaching staff. Cultural change is apparent at universities throughout the UK. It is a complicated and lengthy process that has strategic implications. The key consequences of a move to an enterprise culture are that research becomes more focused on its applications and teaching more focused on how to get and how to use rather than just the acquisition of subject knowledge. [18]

*Case 3: TOP- programme for young start-ups*

The process of knowledge and technology transfer should bridge the gap between basic research, applied research and society. In practice it is somewhat more difficult: the transfer of knowledge obtained by research does only work for the larger companies that can afford to invest in new knowledge and technology and, in most cases, have a research-laboratory of their own. It does not work for small and medium sized enterprises (SMEs). At the Dutch Institute for Knowledge Intensive Entrepreneurship (NIKOS), part of the University of Twente, we develop models/projects to reduce the gap between basic research, applied research and SMEs. The TOP-programme is one of those projects and was set up in 1984 to start knowledge-based companies with the help from the University.

The objective of TOP is to encourage graduates of the university to start their own knowledge-based companies. During one year, knowledge-based firms can be in the TOP-programme. Prerequisites for entering the TOP-programme are having a business idea that matches with the interest of staff members in one of the research-groups of the university and having a consistent business plan. The programme offers the entrepreneur the following support:

- Office space: The entrepreneur is housed physically in the research-group. The research-group receives a financial compensation for its hospitality from the TOP-project.
- Secretarial support: The entrepreneur can use (within certain limits) communication aids as computer, fax, copier and telephone in arrangement with the research-group.
- Laboratory facilities: Depending on the type of company, the entrepreneur sometimes needs the access to expensive equipment.
- Course "Becoming an Entrepreneur": TOP is learning by doing but we strongly advise students to follow this course which helps to develop skills and to write a business-plan.
- Financing: The TOP-entrepreneur receives an interest-free loan of 12.000 euro if necessary. It is a personal loan, not a loan to the company, which has to be paid back in 4 years, starting the second year.
- Mentorship: Because the starting entrepreneur lacks experience in doing business, the entrepreneur is matched with an experienced businessman who started his own business..

Since 1984 till the end of 2005, 355 entrepreneurs established 280 knowledge-based firms. The evaluation of the TOP-programme medio 2000 showed that 75% of the companies established through the TOP-

programme still does exist, only 22% stopped their activities. These existing companies offer, on average, 8.7 jobs. [19]

#### *Case 4: Innovative entrepreneurship education-junior enterprises at universities*

JADE – European Confederation of Junior Enterprises - is a student-run, pan-European network representing more than 20 000 young entrepreneurs in 225 local Junior Enterprises. Together with the affiliated Junior Enterprise Network in Brazil and several contacts to student consulting groups in non-member countries, the JADE Network is the largest network of entrepreneurial students in the world. By running professional consulting studies and managing small- to medium sized enterprises, the students add practical experience to their theoretical skills, develop entrepreneurship at an early stage, broaden their skills as well as horizons and of course prepare themselves for challenging careers throughout Europe. JADE helps to set up new organisations and furthers the exchange of knowledge and management skills between its members. Also JADE represents the network towards international organisations and companies. Students of 13 countries are already part of the network, the Junior Enterprises of three more are coordinated by JADE. [20]

## **5. Conclusions**

Successful Entrepreneurship Education should be integrated in all programmes. We should offer the range of education from a minor to complete specialized programmes, integrate elements of practice and facilitate start-up during the programme. We need to review best-practices and develop a well-articulated common set of principles and skills for entrepreneurship that can be taught. Such a canon will significantly accelerate the rate at which students become aware of entrepreneurial activity, its importance to our economy and society, and the extraordinary future opportunities it offers. One outcome of the future common research could be new curriculum guidelines in the entrepreneurship education programmes.

Let us close this paper by going back to where we started: we have growing evidence that, in our knowledge-based economies, entrepreneurship education matters more than ever. But if we want to provide sound advice to policy makers on how to foster the entrepreneurial environment we need better collaborative activities between academia and industry. This requires the efforts and support of every stakeholder from both the academic and business side. We have made some progress, but we need to push this agenda forward with determination.

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