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Entrepreneurial Education & Innovation

Developing Entrepreneurial Mindset for Knowledge Economy

Analytical Compendium

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1. Definitions

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, makes employees more aware of the context of their work and better able to seize opportunities, and it provides a foundation for entrepreneurs to establish a social or commercial activity. (*"Effects and impact of entrepreneurship programmes in higher education"*, pg. 7)

According to the Key Competence Framework put forth in 2006 by EU: The overall goal of entrepreneurship education is to give students the **attitudes, knowledge and skills** to act in an entrepreneurial way, for either a commercial or non-commercial objective. (*Rethinking education: investing in skills for better socio-economic outcomes*, pg. 39)

Entrepreneurship education should not be confused with general business or economic studies, as its goal is to promote creativity, innovation and self-employment. In this project, it was therefore agreed that existing activities and programmes qualify as education for entrepreneurship if they include at least two of the following elements:

- a) Developing those personal attributes and generally applicable (horizontal) skills that form the basis of an entrepreneurial mindset and behaviour;
- b) Raising students' awareness of self-employment and entrepreneurship as possible career options;
- c) Work on practical enterprise projects and activities, for instance students running minicompanies;
- d) Providing specific business skills and knowledge of how to start and successfully run a company. (*Entrepreneurship in Vocational Education and Training*, pg. 10)

Entrepreneurship is the individual's ability to translate ideas into action. It encompasses creativity, innovativeness and risk-taking, as well as ability to plan and direct action towards the achievement of goals. Entrepreneurship education mainly refers to wide-ranging work within the educational administration with a view to enhancing entrepreneurship. It is provided and supported by many educational institutions, labor market parties and organizations. Entrepreneurship education is rooted in lifelong learning and a networked mode of operation. (*"Entrepreneurship education in the Nordic countries: Strategy implementation and good practices"*, pg. 4)

Core to the development of indicators and benchmarks for entrepreneurship education remains the issue of definition. There has been an inherent lack of a common definition – with scholars using the terms, for example, entrepreneurship education, enterprise education and entrepreneurial education interchangeably within the academic literature – but recent years has seen the emergence of common understandings.

In a recent review of the literature on entrepreneurship education, Mwasalwiba (2010) found that scholars most commonly define entrepreneurship education as some kind of educational (or training process) that is aimed at influencing individuals' attitudes, behaviour, values or intentions towards entrepreneurship, either as a **possible career** or to enhance among them an **appreciation of its role in the community** (i.e. creating an entrepreneurial society). Significantly, though he found relative agreement that the major rationale for entrepreneurship education is **more economic than social** (with entrepreneurship seen as a panacea to a range of economic problems, especially employment), there has been a partial convergence towards a behavioural view of an entrepreneur with entrepreneurship education seeking principally to

influence attitudes, values and the general community culture. In this way, **scholars are reluctant to associate entrepreneurship education strictly with new venture creation as a sole educational objective.**

This distinction between entrepreneurial attitudes, values and behaviour in contrast to skills is similarly reflected in the recent OECD review of entrepreneurship education which divided the multiplicity of entrepreneurship education activity into **three separate (but overlapping) categories** on the basis of overarching aims and objectives:

- **The acquisition of key (or core) skills:** these may relate to literacy, numeracy, communications, ICT and problem solving. They represent the fundamental requirements for operating effectively in a working environment, and for career planning and the process of identifying and accessing appropriate work opportunities;
- **The development of personal and social skills:** a whole raft of skill areas or personal attributes may be subsumed within this category, including: team working; self-confidence; self-awareness; risk taking; problem solving; creativity; and the desire to innovate; and,
- **Skills relating to business start-up or financial literacy:** such as drafting business plans, marketing, financial management, sales, and human resource management. Participants often undertake an exercise in setting up and running their own company. In some programmes, the inclusion of a financial element enables participants to develop the ability to plan personal and family budgets.

Most recently, High Level Reflection Panels convened by DG Enterprise and DG Education and Culture to inform the 2010 report 'Towards Greater Cooperation and Coherence in Entrepreneurship Education' have found a broad consensus between Member States on the aims and objectives of entrepreneurship education.

Stakeholders were clear that entrepreneurship education should develop both **general competences** (for example, self-confidence, adaptability, risk-assessment, creativity, etc.) and **specific business skills and knowledge** creation. Thus, entrepreneurship education is seen as comprising a dual approach:

- It can be '**mainstreamed**' into the curriculum, at all levels, where it tends to focus on general competences such as creativity, initiative and self-reliance; and,
- It can be taught as **a component of a separate subject, typically from the upper secondary level onwards**. It tends to have a stronger focus on learning the skills and know-how of setting up and running a business and to be an **elective rather than mandatory part** of the curriculum.

Stakeholders also recognised the substantial implications for how entrepreneurship education is currently delivered across Europe, including the need for a more structured and systematic approach to its delivery within and across national education systems. This implication contrasted with the very uneven landscape across countries, municipalities, schools, lecture theatres and classrooms noted by the Panel and, ultimately, a significant need for Member States **to embed and deepen implementation of entrepreneurship education. (Order 121 - Study on Support to Indicators on Entrepreneurship Education, pg. 10)**

2. Concepts & State of Play

Much debate surrounds the meaning of entrepreneurship education, and different definitions can apply in different countries and at different levels and phases of education. Recent thinking has shown that **narrow definitions** based around preparing learners for the world of business **may place limitations on both learners and the teaching community**. Instead a broader definition which sees entrepreneurship education as a process through which learners acquire a broad set of competencies can bring greater individual, social and economic benefits since the competences acquired lend themselves to application in every aspect of people's lives. Entrepreneurship in this sense refers to an individual's ability to turn ideas into action. It includes creativity, innovation, showing initiative 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, makes employees more aware of the context of their work and better able to seize opportunities, and provides a foundation for entrepreneurs establishing a social or commercial activity.

Entrepreneurship education is thus about life-wide as well as lifelong competence development. As well as contributing to European competitiveness, entrepreneurship education also helps to ensure a number of positive social benefits. The entrepreneurship key competence plays a vital role in Europe 2020 as a consequence. (*Entrepreneurship Education: Enabling Teachers as a Critical Success Factor*, pg. 2)

Equally it was evident from the discussions at the Symposium that alongside the **entrepreneurial teacher** it is also important to see the development of the **entrepreneurial school**. Indeed, the entrepreneurial teacher and the entrepreneurial school are in practice inseparable if we wish to see entrepreneurship education available for every student in every school. As was noted in the 2010 European Commission report, Towards Greater Cooperation and Coherence in entrepreneurship education, progress in the field has thus far tended to **depend too much on the individual entrepreneurial teacher**. Without entrepreneurial schools we shall never establish an institutional framework through which entrepreneurship education can be fully implemented and sustained. In the following sections we therefore look at two key objectives: the qualities of the entrepreneurial teacher and of the entrepreneurial school. (*Entrepreneurship Education: Enabling Teachers as a Critical Success Factor*, pg. 7)

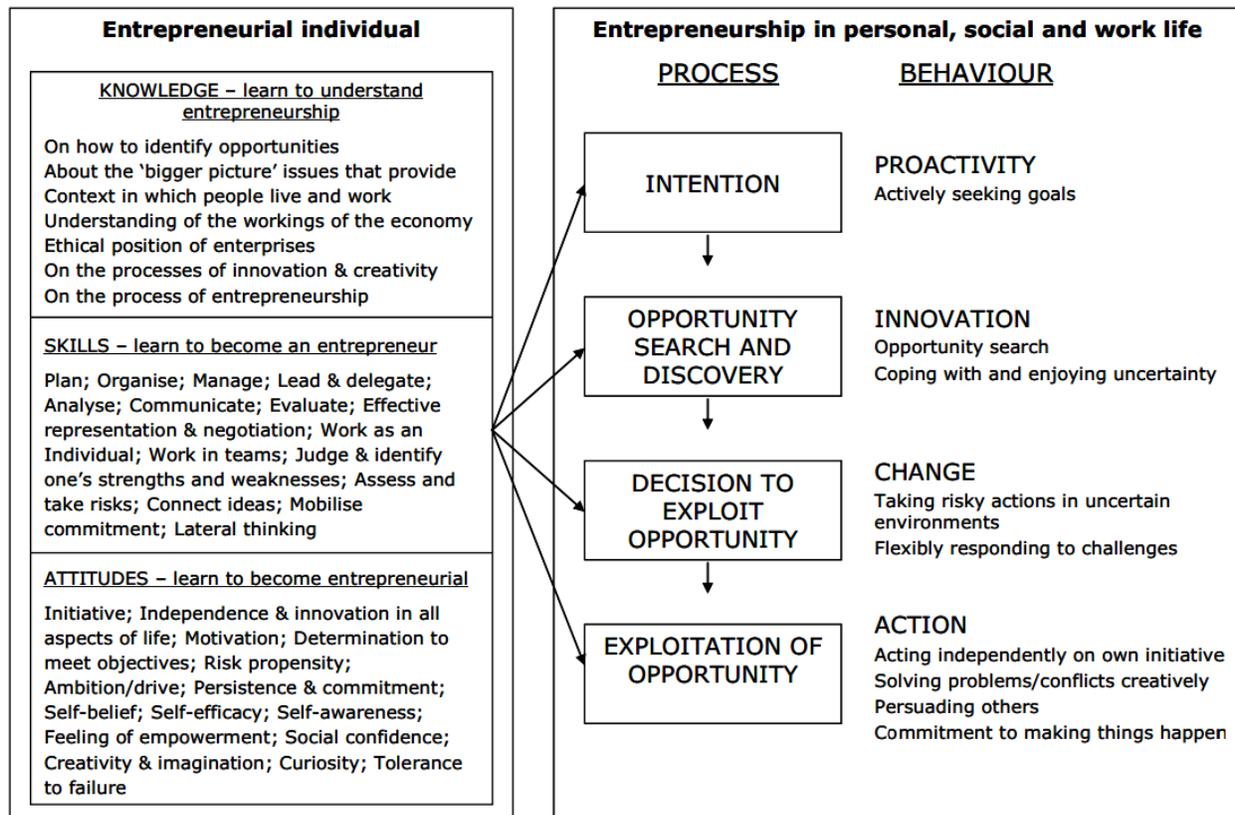
The fourth long term objective of ET 2020 is to enhance creativity and innovation, including entrepreneurship, at all levels of education and training. The importance of entrepreneurship education is also visible in the Europe 2020 Strategy where the need to embed creativity, innovation and entrepreneurship into the education systems is highlighted in three flagships: Youth on the Move, An Agenda for New Skills and Jobs, and Innovation Union. Results from a 2011 survey on entrepreneurship education show that **23 EU Member States** have **current strategies or on-going initiatives addressing the implementation of entrepreneurship education into general education at primary and/or secondary level**. **Specific strategies/action plans** focused exclusively on the integration of entrepreneurship education are found in **Sweden, Denmark, the Netherlands, the UK (Wales), Estonia and Lithuania**. The survey also looks at whether entrepreneurship education is explicitly recognised in central level educational steering documents. Such recognition is found in two thirds of the EU27 countries at primary level and at upper secondary level all Member States integrate entrepreneurship into the curriculum in some form.

At secondary level most countries have defined learning outcomes for entrepreneurship education, in many countries covering all three dimensions: attitudes, knowledge and skills. **No country has learning outcomes linked only to entrepreneurial skills**. There is currently a lack of international data providing comparable measurements of entrepreneurship as a key competence. Most available data apply to a

narrower understanding of entrepreneurship, i.e. linked to business start-ups, and do not allow conclusions on the role of entrepreneurship education for such start-ups. (*Rethinking education: investing in skills for better socio-economic outcomes*, pg. 39)

The **demand for entrepreneurial learning** has been and is still **steadily increasing**. However, there are a number of obstacles hindering the implementation of entrepreneurship education. For one, there is a **shortage of human resources and funding** for this type of education; therefore it is not possible to meet this demand fully. Action-oriented teaching is labour-intensive and costly, and requires specific training. Also due to the historic development, where entrepreneurship education often started as a course on small business management and it evolved from the business school setting; there has been a tendency in academic/teaching communities to perceive entrepreneurship education exclusively with learning how to start and run a business. Some academics find this **entrepreneurship endeavor to be at odds with the general objectives of higher education institutions** and therefore they are reluctant to engage in entrepreneurship education. More insight into the impact of entrepreneurship education can contribute to overcome these obstacles. (*“Effects and impact of entrepreneurship programmes in higher education”*, pg. 23)

The elements in entrepreneurship education



(*“Effects and impact of entrepreneurship programmes in higher education”*, pg. 43)

Primary education determines to a large extent the entrepreneurial mindset of people, whereas at a **higher educational level** one of the main purposes of entrepreneurship education is to **develop entrepreneurial skills**.

Entrepreneurship education will include at least one or more of the following elements:

1. Foster those **personal attitudes and skills** that form the basis of an entrepreneurial mindset and behaviour (creativity, risk propensity, self-confidence, independence, etc.);
2. **Raise awareness of students about self-employment and entrepreneurship** as possible career options;
3. **Use practice-based methods**, where students are involved in **project work** and/or in activities outside the classroom (linking them with the business world or with the local community);
4. Provide **basic business skills** for self-employment or self-management, and knowledge of how to start and develop a commercial or social venture successfully.

Entrepreneurship education should not be confused with general business and economic studies, as its goal is to promote creativity, innovation and self-employment. Entrepreneurial programmes offer students the tools to think creatively, to be an effective problem solver, and to communicate, to network and to lead. Entrepreneurship is not necessarily a topic - it is also **a different way of teaching and of helping young people to fully develop their potential.** (*“Effects and impact of entrepreneurship programmes in higher education”*, pg. 44)

To establish entrepreneurship education as a clear and defined entitlement for all pupils, a range of strategies and procedures can be used, e.g. an agreed list of annual activities, specific timetabling, use of a pupil diary, a school schedule, etc. Reference to entrepreneurship education should appear through explicit references in a number of curriculum policies.

The entrepreneurial school would also be clear as to how entrepreneurship should be introduced to pupils, discussing it with them well before activities take place. It is part of the ethos of entrepreneurship education that pupils are made aware of why they are involved in entrepreneurship activities, and of the intended learning outcomes and longer term benefits of developing entrepreneurship capabilities. All entrepreneurship education activities should be preceded by a structured briefing in which the purposes of the activity are explained and the intended learning outcomes are defined, emphasising the applicability of entrepreneurial skills throughout life, not just at work, and also the ethical aspects.

The entrepreneurial school would explicitly identify time for entrepreneurship education in the school timetable. This would include time identified within the ‘normal’ curriculum across a broad range of subject areas, and also opportunities created through collapsing the timetable, operating ‘themed’ sessions and, in addition, extra-curricular activities.

Entrepreneurship education activities in the school would aim to develop the full range of entrepreneurship capabilities and pupils would be increasingly encouraged to take on responsibility for their own learning. Entrepreneurship education activities would require pupils to apply decision-making and problem-solving skills, to work as part of a team and to get involved in ‘supported’ risk-taking and learning activities that incorporate the possibility of failure. Entrepreneurship education activities would be adequately varied to allow for the preferred learning styles of different pupils/students.

An entrepreneurial school would also make sure that it uses **student assessment methods** that are appropriate to assessing **transversal skills and attitudes** like those involved in entrepreneurship. Such methods can differ markedly from those that are often used which are designed mainly to assess knowledge acquisition. They are critical to ensuring teachers have the incentive to engage in entrepreneurship education. (*“Entrepreneurship Education: Enabling Teachers as a Critical Success Factor”*, pg. 44)

The Commission, within the Small Business Act, will:

- By the end of 2010, launch a proposal to extend and transform the Preparatory Action Erasmus for Young Entrepreneurs (EYE) into a permanent programme.
- Support specific teacher-training programmes as well as the exchange of best practice to develop teachers' training in entrepreneurship, and launch a policy handbook on entrepreneurship education in order to enhance the spread, impact and quality of entrepreneurship education in Europe. (***"An Agenda for new skills and jobs: A European contribution towards full employment"***, pg. 19)

The model sets out four sequential stages from 'pre-strategy' through to 'mainstreaming' and specifies in detail the required steps to be taken for: national strategy and frameworks; schools; teachers; regional and local authorities; and businesses private associations and organisations.

The model foresees:

- a conceptual shift from entrepreneurship education as 'how to run a business' to **how to develop a general set of competences applicable in all walks of life**, and experience their application at school; and from being a curriculum 'add on' mainly available at upper secondary level to being **an integral part of the curriculum at all stages**;
- the development of a **vision shared at national level by all the key stakeholders**, with learning outcomes, and objectives, targets and indicators, with enhanced mechanisms for interministerial cooperation and social partner involvement; and
- the key role for developing **more systematic and sustainable approaches** being taken by teachers, schools, and businesses at local level supported by private associations and organisations and by local, regional and national support infrastructures involving teacher training, teaching resources and tools, mechanisms to share good practice, clusters and partnerships. (***"Towards Greater Cooperation and Coherence in Entrepreneurship Education"***, pg. iii)

Since the 2006 Communication "Fostering entrepreneurial mindsets through education and learning", the Commission in cooperation with Member States had identified the need for strong and well organised **cooperation between relevant ministries** in order to develop and implement effective entrepreneurship education. In particular, it had shown that progress starts from co-operation between different ministries, especially those responsible for enterprise and for education, while also involving relevant stakeholders from the business world, and should ultimately lead to a coherent and comprehensive approach to entrepreneurship education at all levels. However, despite the 2006 Communication, **little progress had been made in this area**. In 2008 the Small Business Act for Europe (SBA) increased the momentum for development and intensification of entrepreneurship education, stating:

'The education system, and in particular the school curricula, do not focus enough on entrepreneurship and do not provide the skills which entrepreneurs need. **Children can learn to appreciate entrepreneurship from the beginning of their education.**'

In Principle I, the SBA identified the need to **'foster entrepreneurial interest and talent'**, and in particular invited Member States to:

- **stimulate innovative and entrepreneurial mindsets among young people** by introducing entrepreneurship as a **key competence in school curricula**, particularly in general secondary education, and ensure that it is correctly reflected in teaching material;
- ensure that the importance of entrepreneurship is correctly **reflected in teacher training**; and

- step up **cooperation with the business community** in order to develop systematic strategies for entrepreneurship education at all levels. (*“Towards Greater Cooperation and Coherence in Entrepreneurship Education”*, pg. 3)

The Decision of the European Parliament and of the Council concerning the European Year of Creativity and Innovation (2008) again highlighted the role of entrepreneurship for personal development, as well as for economic growth and employment, and emphasised the need to foster entrepreneurial mindsets, particularly among young people.

In essence, then, **two key goals** resulted from the European Commission's work on entrepreneurship education:

- to develop greater **co-operation between ministries** responsible for entrepreneurship education, and between ministries and other relevant stakeholders; and
- to develop **more systematic approaches** to the development and delivery of policy and practice in entrepreneurship education. (*“Towards Greater Cooperation and Coherence in Entrepreneurship Education”*, pg. 4)

Entrepreneurship is included in the national curricula for vocational education in a majority of European countries, at least to some extent. Moreover, some countries report that between 90% and 100% of vocational education students participate in entrepreneurship programmes at some point during their vocational education path. However programmes and activities included in those figures may differ greatly in intensity and effectiveness. In any case, there is in general **a perception that there is still a gap to be filled.**

Some **major reasons for the gap** identified are the following:

- **entrepreneurship is not included in all parts of the VET system;**
- **student participation is limited;**
- **teaching methods are ineffective;**
- **the practical element of entrepreneurship is missing;**
- **teachers are not fully competent;**
- **entrepreneurship is not linked to specific training subjects or professions;**
- **business people are not sufficiently involved.**

Therefore, despite some encouraging data, it appears that the **uptake and the effectiveness** of entrepreneurship education in European vocational schools are **still far from being fully satisfactory.** A partial lack of competence of teachers is in many cases perceived as a problem, at least as regards their practical experience of entrepreneurship. Improvement is greatly needed in this area. Most countries report that some training courses on entrepreneurship are offered to teachers, but few offer a systematic approach. (*“Entrepreneurship in Vocational Education and Training”*, pg. 7)

Summary of some key findings

- In general, there is in Europe a **shortage of entrepreneurship studies within nonbusiness institutions** and disciplines: **entrepreneurship is not yet sufficiently integrated** into different subjects of the curriculum.
- Available data from some European countries show that the **majority of entrepreneurship courses** are offered in **business and economics studies.**

- Coverage of entrepreneurship in non-business studies is **particularly weak** in some of the Member States from **central and Eastern Europe** that joined the EU in and after 2004.
- While the demand for learning about entrepreneurship is increasing, there is a **shortage of human resources and funding** for this type of education, making it impossible to meet this demand fully.
- There are currently **too few professors of entrepreneurship**. There is a need to graduate enough PhD students in entrepreneurship who can become teachers.
- There is very **little in terms of incentives to motivate and reward teachers for getting involved in entrepreneurial teaching** and activities with students. It is currently difficult to build a career in entrepreneurship, as research remains the main criterion for promotion.
- Increased **funding from the government** can enforce changes within universities. Policy level changes to funding would have an immediate effect on institutional behaviour and the internal allocation of resources.
- The development and delivery of entrepreneurship is significantly affected by the **internal organisational structure of the institution**. However, in general terms even current structures can accommodate entrepreneurship education. The main problem is a lack of commitment on the part of decision makers within the institutions.
- **Faculties and departments are working quite separately**, with too many obstacles for students who want to move and for teachers interested in establishing cross-disciplinary courses. A rigid curriculum structure is often an **impediment to an inter-disciplinary approach**.
- Although a wide range of methodologies exist — supplementing lectures as the most basic tool of teaching — there seems to be a **gap between the methods applied** and those that are seen as the most effective and appropriate.
- The use of experience-based teaching methods is crucial to developing entrepreneurial skills and abilities. **Traditional educational methods (lectures) do not correlate well** with instilling entrepreneurial traits and attributes.
- Methods seen as the most effective are based on “**group and team techniques for creating new business ideas**”, the use of “**case studies**” and “**business planning workshops**”.
- **Crossing boundaries between disciplines**, and multi-disciplinary collaboration, are essential elements in building entrepreneurial abilities.
- There is a need for **greater flexibility in course design**. Work placements, alternation between full- and part-time study, the organisation of intensive courses and the accreditation of informal and non-formal learning all have a role to play.
- A challenge lies in **integrating start-up activities into degree studies, as they are currently mostly outside the curriculum and sporadic in nature**. Business incubators exist in many cases outside university, for all starters. It is advisable but not essential for them to be embedded within universities: what is important is that students are linked and directed to them.
- If the business idea and/or innovation is developed inside the university, there will be basic problems as to intellectual property rights and to teachers’ role as civil servants (in some countries the law prevents teachers and researchers from working as entrepreneurs and exploiting innovations developed in the course of their work).
- The degree of **mobility of teachers and researchers** between higher education institutions and business is in **general very low**, and **this practice is not encouraged**. There are in many cases few or no incentives, or even disincentives. For instance, lecturers may be banned from taking part in external commercial activities.
- Although entrepreneurs and business practitioners are in general involved in the teaching, there are few examples of entrepreneurial practitioners engaged in the full curricula experience. Most frequently, they are only engaged in short presentations to students (e.g. as testimonials or guest lecturer) or as judges in competitions.

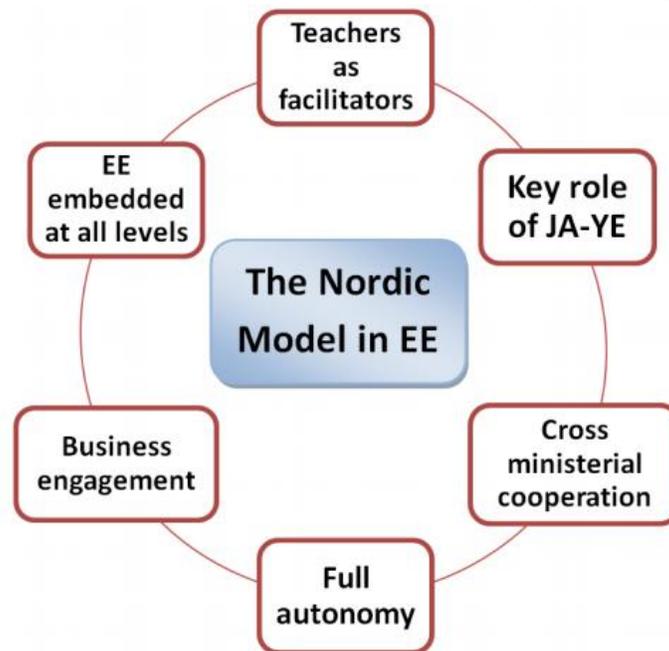
- European higher education institutions are not sufficiently involved and effective in working with alumni, who can bring back knowledge and also funds.

(“Entrepreneurship in higher education, especially within non-business studies”, pg. 65)

Through years of developing entrepreneurship education, all the Nordic countries have adopted certain common features which distinguish them from other countries. For example, in Asia, the strategy for entrepreneurship education is generally formulated only by the Education Authority, and entrepreneurship education is mainly offered by higher education. There are no non-profit organizations which would play a key role in enhancing and promoting entrepreneurship education.

The ‘Nordic Model in entrepreneurship education’ could be seen as a starting point when discussing possible Nordic collaboration in this area.

The combined features of the ‘Nordic Model in entrepreneurship education’



(“Entrepreneurship education in the Nordic countries: Strategy implementation and good practices”, pg. 43)

Entrepreneurship support in universities, in particular entrepreneurship education, is demanding reinforcement and development of existing human resources and employing new staff. Working with entrepreneurs, chief executives, bankers, venture capitalists and business angels is important too. It provides access to the „world of business, and can help to overcome staff bottlenecks, as we will see further down. The **first entrepreneurship course** was introduced in the **Harvard Business School** in the **1940s** by **Professor Myles Mace**. Yet, it took until the **1970s** before **entrepreneurship education found its way into other universities**. Still today, there is debate as to whether entrepreneurship should (and can) be taught at universities. We start from the assumption that “everyone who can face up to decision making can learn to be an entrepreneur and to behave entrepreneurially” and that entrepreneurship is “behaviour rather than personality trait” (Drucker, 1993: 26; 34). Entrepreneurship can therefore be promoted by appropriate teaching. To complement entrepreneurship education, certain

targeted start-up and early growth support needs to be provided, such as finance and training. (*“Partnering for Success in Fostering Graduate Entrepreneurship”*, pg. 10)

On the differences between Europe and the USA:

Many of the interviewed experts felt that entrepreneurship education in their country was **lagging behind the US**. Looking at this from the debate in the literature, it seems that whilst the US may benefit from a more mature state and increased legitimacy of entrepreneurship education, the impacts at classroom level have not yet been fully explored. It is questionable whether (i) the course contents and delivery is significantly different to that in Europe, given the differences in the latter, and (ii) whether the US curriculum development is applicable to other socio-economic contexts.

From what is known at present, it appears that **US universities are stronger in multidisciplinary entrepreneurship education**. In Europe, building inter-disciplinary approaches, making entrepreneurship education accessible to all students, mixing students from economic and business studies with students from other faculties and with different backgrounds, and creating start-up teams remain key challenges. **Crossing boundaries between disciplines**, and multidisciplinary collaboration, are, however, **essential elements in building enterprising abilities**. (*“Partnering for Success in Fostering Graduate Entrepreneurship”*, pg. 12)

While entrepreneurship education policy is often coordinated by education ministries, it can be covered by one or more ministries – including ministries of education, culture, industry/enterprise, research, and science and technology. For example, the **Danish Government** has developed a **Strategy for Education and Training in Entrepreneurship**, with specific goals set for 2015. All of this work comes under a new **Foundation for Entrepreneurship**, which plays a key role in **teacher training, curriculum reform**, and the assessment of entrepreneurship education. A **partnership initiative between the public and private sectors** is also a key pillar of the entrepreneurship education strategy in Singapore (see <http://www.ace.sg>). A growing number of countries have developed national entrepreneurship education strategies to provide a roadmap to ensure that the necessary players are engaged and that appropriate budgeting and financing is made available to implement those policies. (*“Entrepreneurship education, innovation and capacity-building in developing countries”*, pg. 7)

In designing policy approaches to entrepreneurship education, it is also important to recognize the type of entrepreneurship and to make a **distinction between “opportunity” and “necessity” entrepreneurship**. The Global Entrepreneurship Monitor (GEM) measures levels of entrepreneurial activity, and shows that overall activity is higher in developing countries than in developed, and opportunity (and high-growth entrepreneurship) is more prevalent in developed countries. Given the high rates of necessity entrepreneurship in developing countries (informal and micro-entrepreneurial activity), it is important to establish policies which can not only help transition successful necessity entrepreneurs (often with low levels of formal education) into opportunity entrepreneurs (with social and basic business skills necessary to run their own small business), but also **encourage more high-growth-oriented entrepreneurs**. This often means that **coordination on entrepreneurship education policy between ministries** within a country is critical. (*Entrepreneurship education, innovation and capacity-building in developing countries*, pg.4)

In developing countries, it is important to **integrate entrepreneurship education** into the **overall poverty reduction strategy**. Malaysia has for many years included the development of entrepreneurship skills in its economic plans, with the goal of contributing to the eradication of poverty in the country, and entrepreneurship education continues to be on the national agenda. Its recent poverty eradication plans,

and the New Economic Agenda (2010), include entrepreneurship skill development programmes as a means to combat poverty in disadvantaged communities, particularly targeting ethnic minorities.

Unfortunately, many of the least developed countries (LDCs) **do not mainstream entrepreneurship education into their poverty reduction strategies**. However, there are some notable exceptions. Rwanda has made efforts to target entrepreneurship education to women and rural populations, as part of its economic development and poverty reduction strategy. Other countries, such as Mozambique, have begun to address entrepreneurship education as a poverty alleviation strategy through technical cooperation projects involving the United Nations and donors. (*Entrepreneurship education, innovation and capacity-building in developing countries*, pg.6)

So far only a **few higher education institutions** have explicitly directed their training **towards high-growth enterprises**. At most universities and colleges that are either international or national leaders in entrepreneurship, one or more growth modules have been integrated into the teaching, or activities are organized which are oriented towards spinning off enterprises from the university. In Europe, these institutions are frequently sponsored by the government on a project funding basis; this is in contrast to the US, where most entrepreneurship centres are privately funded. However, “research shows that until today, **even in the United States** commercialization of university research remains differentially successful and is **concentrated in just a handful of universities**”. (*“Educating the Next Wave of Entrepreneurs: Unlocking entrepreneurial capabilities to meet the global challenges of the 21st Century”*, pg. 76)

3. The Potential of Entrepreneurial Education

Better knowledge about the impact of entrepreneurship education is one of the things that Member States are constantly looking for. However, so far there are only a limited number of studies on the effects of entrepreneurship education and many are often from the US and/or project-based. Despite the **lack of evidence on the effects of entrepreneurship education**, the key role of entrepreneurship education must not be disregarded. In addition to equipping young people with the skills needed for the 21st century, entrepreneurship education is a means to increase social inclusion; it can increase the number of entrepreneurs – social and commercial, and it can be a gateway for a greater integration of the framework for key competences for lifelong learning. (*“Effects and impact of entrepreneurship programmes in higher education”*, pg. 7)

Development of the entrepreneurial competence is expected to lead to more innovative behaviour by individuals and consequently this would mean that the enterprises that these alumni are leading are more innovative than other enterprises. This expectation seems to be the case, as **relatively more alumni of the entrepreneurship group assess their enterprise as innovative** in terms of introducing new or improved processes, introducing new or improved goods/services and/or introducing new and improved forms of organisation, business structures and practices. (*“Effects and impact of entrepreneurship programmes in higher education”*, pg. 17)

Common objectives appealing to and aiming at all students are, for instance:

- exploiting opportunities;
- developing an idea further into a product or service;
- daring to deal with problems and to solve them;
- creating networks with other students and adults;
- accepting the implications of their own choices;
- seeing self-employment as a valuable choice of career;

- managing resources and money in a responsible way;
- understanding how organisations operate in society.

For students who will start an own activity at some point after their studies, more specific skills will be necessary, such as:

- being able to draft a business plan;
- knowing the administrative procedures for starting a company;
- understanding the principles of accounting, commercial law and tax law;
- being conscious of business ethics and social responsibility;
- having a clear understanding of market mechanisms;
- being acquainted with selling techniques. \

Regardless of the vocational training area, the most effective way to achieve these objectives is to have students participate in practical projects and activities, in which learning by doing is emphasised and real experience with entrepreneurship is gained. **Problem-driven** and **experience-oriented** education is essential to fostering entrepreneurial mindsets and abilities. Especially good results can be achieved by working in small groups. (*“Entrepreneurship in Vocational Education and Training”, pg. 22*)

Through appropriate methods of delivery, programmes and courses should be geared to the acquisition of **generic and horizontal skills, aiming to make students:**

- more creative/innovative; highly motivated; pro-active; self-aware; self-confident; willing to challenge;
- better communicators; decision-makers; leaders; negotiators; networkers; problem solvers; team players; systematic thinkers;
- less dependent; less risk averse; able to live with uncertainty; capable of recognising opportunities.

In terms of specific content, programmes and courses should be adapted to different target groups (by level: undergraduate, graduate, post-graduate, PhD; by field of study: economics/business, scientific/technical studies, humanities, arts & design, etc). The **higher the level of studies, the more complex and close to real business life is the content of teaching** (up to start-up financing competitions, etc).

Teaching should use an inter-disciplinary approach, the ultimate objective being that to combine students from different faculties and different fields of study, who will cooperate in developing joint activities and projects. (*“Entrepreneurship in Vocational Education and Training”, pg. 26*)

Developing generic attributes and skills that are the foundations of entrepreneurship is complemented by imparting more specific knowledge about business according to the level of education. Emphasising the notion of “responsible entrepreneurship” will help to make an entrepreneurial career a more attractive proposition.

While not all youngsters who develop entrepreneurial competence will become entrepreneurs, some evidence shows that around **20% of participants in mini-company activities in secondary school go on to create their own company** after their studies.

Education in entrepreneurship increases the chances of start-ups and self-employment and enhances individuals’ economic reward and satisfaction. Moreover, any dynamic SME that wants to grow will benefit from young people with entrepreneurial mindsets and skills.

However, the **benefits** of entrepreneurship education are not limited to **more start-ups, innovative ventures** and new jobs created. Entrepreneurship is a key competence for all, helping young people to be more creative and self-confident in whatever they undertake and to act in a socially responsible way.

The Education & Training 2010 Work Programme included entrepreneurship in a reference framework of eight key competences for lifelong learning, necessary for personal fulfillment, social inclusion, active citizenship and employability. This forms the basis for a recent Commission proposal for a Recommendation of the European Parliament and the Council.

Traditionally, formal education in Europe has not been conducive to entrepreneurship and self-employment. However, as **attitudes and cultural references take shape at an early age**, the education systems can greatly contribute to successfully addressing the entrepreneurial challenge within the EU. (*“Implementing the Community Lisbon Programme: Fostering entrepreneurial mindsets through education and learning”*, pg. 4)

Entrepreneurship is a great enabler, which can help level the playing field between developed and developing countries and regions. Embedding entrepreneurship in education and providing greater access are important steps for building an innovative culture and creating entrepreneurial individuals and organizations which, in turn, can create economic growth and jobs, and can help to improve quality of life around the world. Despite the tremendous growth in entrepreneurship education, many challenges remain. One of **the predominant challenges is to change the culture and mindset** in countries and regions in which business and entrepreneurship are either not viewed favourably and/or are not understood. (*“Entrepreneurship education, innovation and capacity-building in developing countries”*, pg. 19)

Entrepreneurship education can be a **societal change agent**, a **great enabler in all sectors**. Not everyone needs to become an entrepreneur to benefit from entrepreneurship education, but all members of society need to be more entrepreneurial. The public sector, private sector, academia and non-profit sectors all have roles to play in facilitating the development of effective ecosystems that encourage and support the creation of innovative new ventures. We need to create the types of environments that are conducive to encouraging entrepreneurial ways of thinking and behaving.

Much has been written about the impact of entrepreneurship on economic growth. If we are to attain the Millennium Development Goals of reducing poverty, we must develop human capital in all countries and societies, in remote regions as well as major cities, and in all sectors, to address both the opportunities and major challenges we face in the world. While the contexts around the world vary dramatically, entrepreneurship education, in its various forms, can equip people to proactively pursue those opportunities available to them based on their local environments and cultures. We have seen a number of **“waves” in entrepreneurship education, starting a century ago**, developing in phases and now **expanding exponentially**. By making entrepreneurship education available to young people and adults alike, we are preparing the next wave of entrepreneurs to enable them to lead and shape our institutions, businesses and local communities. (*“Educating the Next Wave of Entrepreneurs: Unlocking entrepreneurial capabilities to meet the global challenges of the 21st Century”*, pg. 12)

National and supranational **policy-makers have focused** in the past decade on **youth entrepreneurship** as an important tool to combat persistent youth unemployment, criminality, and so on. In addition, evidence is mounting that **girls and young women may benefit disproportionately from entrepreneurship education**, in part because they are often denied full access to, or advancement within, existing (male-dominated) organizations and hence seek tools to create their own businesses.

(“Educating the Next Wave of Entrepreneurs: Unlocking entrepreneurial capabilities to meet the global challenges of the 21st Century”, pg. 25)

For entrepreneurship education, focusing on institutions of higher education offers the chance to develop knowledge intensive high-growth enterprises from all academic disciplines, not just technical ones. **Higher education institutions should create an environment that fosters entrepreneurial mindsets, skills and behaviours across their organizations.** Universities can teach students how to start and grow enterprises in ways that benefit society. Technical universities in particular provide potential breeding grounds for high technology and high-growth companies or “gazelles”. ***(“Educating the Next Wave of Entrepreneurs: Unlocking entrepreneurial capabilities to meet the global challenges of the 21st Century”, pg. 44)***

Opportunity-based entrepreneurship, access to information and a broad market orientation in the start-up phase distinguish entrepreneurs of future high-growth firms from low-growth firms. All over the world, numerous innovative new enterprises have recognized the entrepreneurial opportunity and achieved a profitable high growth. The economic and social benefits of young growing enterprises have been repeatedly demonstrated by research, especially with regard to employment, stimulation of innovations, industrial dynamics and regional development. ***(“Educating the Next Wave of Entrepreneurs: Unlocking entrepreneurial capabilities to meet the global challenges of the 21st Century”, pg. 44)***

An increasing number of university officials also have recognized the **economic significance** of entrepreneurial education and, in particular, of **spin-offs for universities and colleges**. This has been true for some time in countries where universities and colleges primarily finance themselves privately and are therefore in a position to make investments in enterprises (for example in the United States, Canada, Australia). However, as countries where state universities and colleges predominate are increasingly forced to retrench their expenses, and universities and colleges subjected to budget constraints have to look out for new ways of financing, entrepreneurial and commercial university initiatives will also gain in importance. At the same time, the benefits with regard to finances and reputation for the university and the faculty from which new business have evolved, and finally for the national economy as a whole can be considerable. ***(“Educating the Next Wave of Entrepreneurs: Unlocking entrepreneurial capabilities to meet the global challenges of the 21st Century”, pg. 50)***

These two facets of entrepreneurial activity in the self-employment and business administration contexts can be addressed in university education with mutual benefit as shown, for example, at the University of St Gallen, Switzerland, which caters to both future managers and entrepreneurs. Overall, developing entrepreneurial mindsets via entrepreneurship education at universities and colleges can **improve the image and the standing of entrepreneurs and intrapreneurs in society**, an improvement needed in many countries of the world. ***(“Educating the Next Wave of Entrepreneurs: Unlocking entrepreneurial capabilities to meet the global challenges of the 21st Century”, pg. 52)***

Interesting aspects of this study are networks, in which universities have made a special contribution to the generation of new ventures, particularly to those with a high growth potential. Typical benefits of **continuous relationships of spin-off ventures with their university** are assistance in the protection of intellectual property rights, reputation signalling by the university and a brokerage role of the university to external stakeholders, in particular potential investors and technology partners.

Networks are intended to promote knowledge and technology transfer and can generate business opportunities in the first place. A specific form of networks, which is of particular interest for new high-growth enterprises, is the **formation of clusters**. In a modern knowledge economy, growth will depend to a large extent on existing or emerging networks. They provide a **favourable environment, which**

encourages innovations based on the entrepreneurial culture of the region and the skills, attitudes and motivation of its workforce. (*“Educating the Next Wave of Entrepreneurs: Unlocking entrepreneurial capabilities to meet the global challenges of the 21st Century”*, pg. 59)

A large number of private enterprises and entrepreneurs finance **entrepreneurship chairs, institutes and centres**. As regards private financing of higher education institutions, the United States leads the way, where an almost unique **culture of pay-back** is highly developed among prominent personalities. In Europe and Asia, higher education institutions are mostly financed by the state, although in recent years many of these universities and colleges have increasingly made efforts to raise funds from private enterprises and entrepreneurs. In terms of synergies the potential for collaboration between established companies and universities and their spin-offs should be nurtured further because of the benefits evolving from such cooperation. (*“Educating the Next Wave of Entrepreneurs: Unlocking entrepreneurial capabilities to meet the global challenges of the 21st Century”*, pg. 78)

4. Challenges

Better knowledge about the impact of entrepreneurship education is one of the things that Member States are constantly looking for. However, so far there are only a **limited number of studies** on the effects of entrepreneurship education that are often from the US and/or project-based. Despite the lack of evidence on the effects of entrepreneurship education, the key role of entrepreneurship education must not be disregarded. In addition to equipping young people with the skills needed for the 21st century, entrepreneurship education is a means to increased social inclusion, it can increase the number of entrepreneurs – social and commercial, and it can be a gateway for a greater integration of the framework for key competences for lifelong learning.

Meanwhile, an increasing number of Member States are implementing national strategies on entrepreneurship education, which creates a platform that provides an opportunity where the impact can be measured in a European context and at a policy-level instead of at a project-level. Currently, the Member States are contemplating how they can measure the impact of their policies and here the European dimension can really provide added value. It is important to ensure that **Member States are not producing their own individual national measures**, but instead that they will join forces to find ways to measure the broad impact of entrepreneurship education. (*“Effects and impact of entrepreneurship programmes in higher education”*, pg. 23)

To move entrepreneurship education from being an **extra-curricular 'add-on'** to an **integral part of the curriculum involves:**

- **changes in teaching methods:** greater use of experiential learning and a new coach/moderator role for teachers which helps students to become more independent and to take the initiative in their education;
- **changes in the education context**, which takes students out of the classroom into the local community and real businesses, and which establishes less hierarchical relationships within schools; and;
- **a key role for governments:** only they can bring about the required step change in the spread and quality of entrepreneurship education.

(*“Towards Greater Cooperation and Coherence in Entrepreneurship Education”*, pg. ii)

First, within a system strongly characterised by voluntarism, **teachers have often played the key role, taking the first steps in the teaching of entrepreneurship education** and in shaping current practice.

This is the case even in countries where entrepreneurship education might be said to be most widely available and well developed, such as the **UK** before the recent development stimulated by **central government**.

Secondly, entrepreneurship education has tended **not to be treated systematically in the curriculum**. Instead, it is **typically an extra-curricular activity**, added at the margins of mainstream education, reliant on the enthusiasm of individual teachers and schools. This has meant:

(i) the focus has tended to be on **topics** more directly related to **how businesses function** or on giving students a **general appreciation of the world of work** rather than more general competences related to entrepreneurship per se;

(ii) it tends to consist of providing **opportunities to interact with businesses** rather than on developing competences like creativity and risk-taking; and

(iii) it tends **not to be assessed as part of the mainstream curriculum**: teachers and schools instead rely on in-house prizes and awards, or take part in competitions run by well-known organisations such as **Junior Achievement-Young Enterprise (JA-YE)**, outside of mainstream qualifications.

Thirdly, the **lack of systematic treatment of entrepreneurship education** means that teachers have drawn on a variety of resources to support their teaching, very often developed and provided by private business and/or non-profit organisations (see below). The range of **approaches, methods and tools** includes using virtual **simulations** of business situations, **practical, hands-on experience** of businesses, and 'Enterprise Days/Weeks' where students develop ideas, carry out activities such as market research and design and turn their ideas into mock products or services. In all these cases, entrepreneurship education offers alternative methods to mainstream teaching practice. (*"Towards Greater Cooperation and Coherence in Entrepreneurship Education"*, pg. 15)

Fifthly, whilst many **programmes and simulations can be run by teachers within schools, only businesses can provide real, practical, hands-on experience of entrepreneurship in action for students**. Unfortunately the availability of businesses that are willing and able to support entrepreneurship education is highly variable across – and even within - countries, Schools and teachers often have to depend on serendipity when it comes to making connections with local businesses; **individual parents often provide the links**. However, in some areas the interaction between businesses and schools has become well structured and formalised, with schools forming education-business partnerships, perhaps under the leadership of municipalities, and involving local business organisations (e.g. chambers of commerce). For businesses, involvement represents a significant commitment, and the motivation often comes through a sense of corporate social responsibility. In many countries many small businesses would be willing to assist but lack the time to make a long-term commitment.

Sixthly, in the absence of national policy, **regional and local authorities can play an important role as promoter and facilitator**: promoting entrepreneurship education to schools, and facilitating links between education and business, as just noted, where municipalities can provide brokerage services, act as resource centres etc. (*"Towards Greater Cooperation and Coherence in Entrepreneurship Education"*, pg. 16)

A partial **lack of competence of teachers** is in many cases perceived as a problem, at least as regards their practical experience of entrepreneurship. **Improvement is greatly needed in this area**. Most countries report that some **training courses** on entrepreneurship are **offered to teachers, but few offer a systematic approach**. (*"Entrepreneurship in Vocational Education and Training"*, pg. 7)

However, it is interesting to note that **even in those countries where entrepreneurship is included in national curricula**, there is in most cases a perception that the situation is not yet satisfactory, and that there is **still a gap to be filled**. This may be related to the extent of participation of schools and students, or to the effectiveness of methods applied.

Some major **reasons for the gap** identified are:

- teaching methods are ineffective;
- entrepreneurship is not included in all parts of the VET system;
- student participation is limited;
- teachers are not fully competent;
- business people are not involved;
- the practical element is missing;
- entrepreneurship is not linked to specific training subjects or professions.

(“Entrepreneurship in Vocational Education and Training”, pg. 14)

One of the main **difficulties** reported by experts is **involving small and micro-enterprises in school activities**. Small companies do not have sufficient time to dedicate to work placements of students in the company, or do not see any benefit in cooperating with schools. Therefore, despite the interest and goodwill of many teachers and entrepreneurs in engaging in cooperation activities, there are still a number of obstacles to be overcome, such as:

- the large number of different tasks to be performed by staff of very small companies, leaving little time for involvement with schools;
- the lack of mutual knowledge and understanding of each other’s priorities and what each party is involved in on a day-to-day basis;
- a possible lack of trust as a result of the above;
- the differences in working times / hours of working;
- the absence of a main point of contact in the school.

In some cases another obstacle is that teachers are not allowed to work in other domains outside school. Teachers should be allowed flexible periods of training in companies. **(“Entrepreneurship in Vocational Education and Training”, pg. 26)**

Support for schools:

- Coordination is lacking, because there is no single support structure and financial resources are fragmented.
- Funds and resources either are lacking or lack continuity.
- Information is poorly disseminated to schools.
- Institutional cooperation between the formal education system and the labour market is weak. **(“Entrepreneurship in Vocational Education and Training”, pg. 30)**

Obstacles and risks to schools and educators:

- Support from the school management and local community is lacking.
- Teachers and the school management are reluctant to introduce entrepreneurship programmes.
- Entrepreneurship programmes are confused with management programmes.
- The teacher does not succeed in making entrepreneurship education relevant to the students.

- Teachers lack competence and knowledge. Some teachers' knowledge is only theoretical.
- As a result, the programme is too theoretical (academic). Theoretical knowledge is stressed rather than developing entrepreneurial skills.
- Teachers are not trained in entrepreneurship education.
- Career guidance and counselling is weak.
- The learning environment is not entrepreneurial.
- It is difficult to measure the outcome of entrepreneurship education, and experience in measuring and assessing results is lacking.
- The school environment is isolated and lacks links to local entrepreneurs.
- Entrepreneurship is a separate field or course, and is not otherwise linked to or interwoven in vocational education and training.
- Entrepreneurship is seen merely as a course that ends with a grade rather than a permanent way of thinking or attitude.
- Time (and staff) commitment is lacking and there is increasing competition with other activities.
- Business people are not available as volunteers: it requires a lot of resources to recruit, train and support a large number of volunteers; furthermore, in today's environment, corporate volunteering may become less prevalent. (***“Entrepreneurship in Vocational Education and Training”, pg. 32)***)

Recent data from certain European countries show that the majority of entrepreneurship courses are offered in business and economic studies (for instance in Spain and in the UK, see Tables 1 and 2 in the previous Section). However, it is questionable whether business schools are the most appropriate place to teach entrepreneurship: innovative and viable business ideas may be more likely to originate from technical, scientific and creative studies. In Germany, most spin-offs are from universities of applied sciences and technical universities. Therefore, the real challenge is to build inter-disciplinary approaches, making entrepreneurship education accessible to all students, and where appropriate creating teams for the development and exploitation of business ideas, mixing students from economic and business studies with students from other faculties and with different backgrounds. (***“Entrepreneurship in higher education, especially within non-business studies”, pg. 23)***)

Table 1: Entrepreneurship in Higher Education in the UK

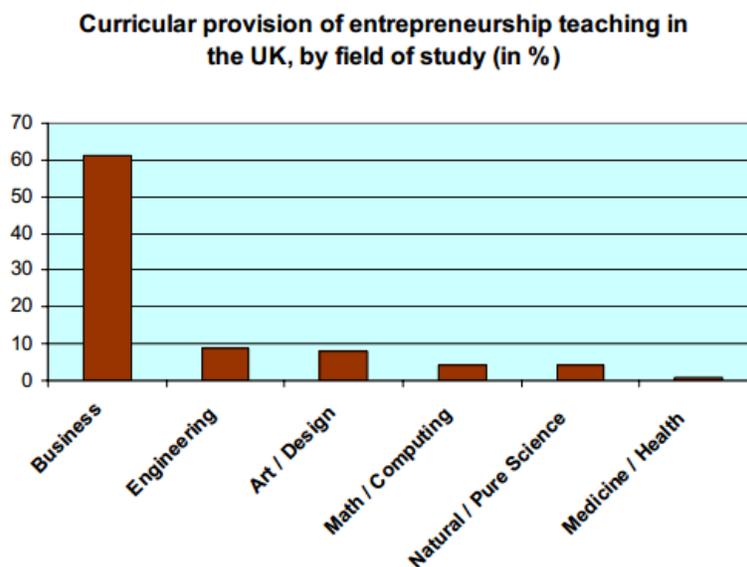
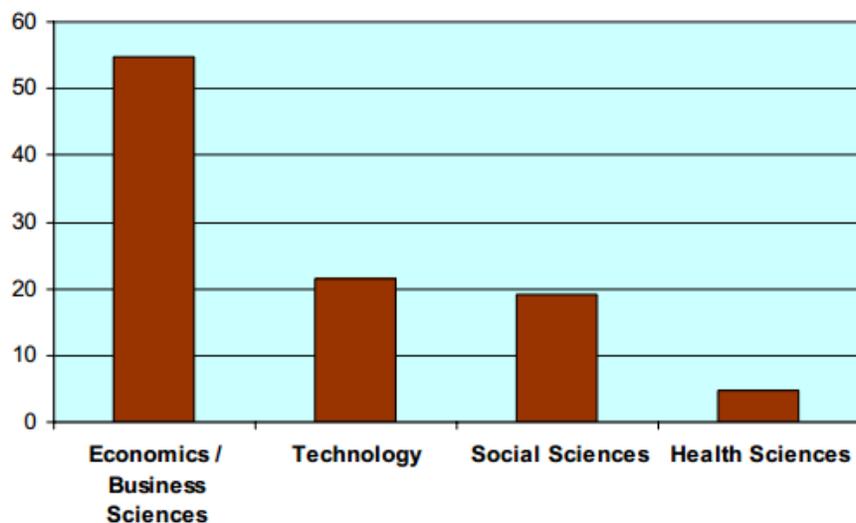


Table 2: Entrepreneurship in Higher Education in Spain

Curricular provision of entrepreneurship teaching in Spain, by field of study (in %)



(“Entrepreneurship in higher education, especially within non-business studies”, pg. 22)

An indicative list of main risks and obstacles identified by the Experts is set out below:

- lack of support from decision-makers;
- changing political environment, with changing priorities and orientations;
- a bureaucratic culture inside institutions, and organisational inertia; inappropriate institutional policies, practices, cultures and structures;
- conflicting academic philosophies of the role of entrepreneurship in higher education;
- opposition to, or little acceptance of, entrepreneurship due to existing prejudices, such as the perception that entrepreneurship means business invading universities or that everyone has to become a businessman; lack of support for entrepreneurship professors within the institutions;
- lack of cooperation among different departments/faculties;
- a negative image of entrepreneurs, and a lack of positive role models for young people;
- only a minority of professors and professionals are really committed;
- some professors are still of the opinion that technical students should learn only technical know-how;
- lack of desire to change the way in which teaching has always been delivered;
- courses are taught just as academic courses by educators who have no link with business life;
- entrepreneurship may not be correctly understood, with a risk that this “heading” is used to “cover” any business course (e.g. finance, marketing, accounting);
- failure to get students enthusiastic for this type of course;
- no understanding of the need for tailored programmes; 39
- poor use of a broad base of pedagogical tools;
- lack of rewards, incentives, recognition for faculty and educators;
- no established systems for evaluating programme results;
- lack of alignment between practices, outcome and impact;

- the business world tends to underestimate the universities' role as a driver of economic development;
- sustainability issue: the fragility of funding and resources.

(“*Entrepreneurship in higher education, especially within non-business studies*”, pg. 38)

No project alone is capable to constitute a good practice

A project or practice is not capable to establish itself as a good practice without external assistance and promotion. Not only financial support is a key issue, but also the leverage by cooperating and networking with other organizations and institutions, and by receiving help from the local and regional government. The cooperation enhances knowledge transfer and cost-saving, thus providing the involved parties opportunity to focus more on their special area. For example ‘Measurement Tool for Entrepreneurship Education’ (MTEE) has YES as its marketing arm and YVI as its contents support. Therefore, educational institutions or entrepreneurship service organizations should be motivated to work with each others both at the national and the Nordic level.

Good practices require effective communication and promotion strategy

It appears that there is a lack of systematic knowledge transfer in promoting good practices. Even if we did find websites that provide good practices, the academics or school administrators may not actively carry out this type of search, or might be reluctant to change. In such cases the good practices will not be shared. In order to stimulate learning, remove inertia and increase media exposure, more proactive measures may be needed, such as periodically conducting Nordic or international seminars where organizations or institutions are invited to present their innovative projects, curriculum, teaching methods and research.

Business collaboration demands careful planning

Typical for many good practices is to engage the business sector. In order to enhance the cooperation and improve the process; the local community, universities and entrepreneurial centers play an important role, for instance, in matching schools and companies. The increasing concern for corporate social responsibility also results in higher number of companies willing to fulfill their social obligations while pursuing their economic interests.

Collaboration with business sector is a two-way process. It is equally important that entrepreneurs have a role in schools, and teachers and students ‘shadow’ entrepreneurs in companies. Various activities can be carried out, such as lectures of entrepreneurs, mentoring, company panels, internships, placements and secondments, company visits, joint projects and so on. However, simply having exchange programmes is not sufficient enough to promote entrepreneurship. It is crucial to deliberately match and select partners, followed by evaluation of the performance, in order to see whether mutual goals are fulfilled.

Funding issues

Lack of funding is a common problem to practitioners and more funding would be needed to improve the content or take the good practices of entrepreneurship education to the next level. **(*Entrepreneurship education in the Nordic countries: Strategy implementation and good practice*, pg. 65)**

As Europe needs the young generation to create new ventures and provide innovation and entrepreneurial thinking in the existing business, EIs need to overpass the barriers they face in providing education and coaching for the young entrepreneurs in a way that the new and innovative ideas do not get lost. The main barriers stated by the survey participants are the lack of funding to support the entrepreneurial activities; the entrepreneurship education depends on the efforts of individuals/few people and the lack of expertise from the academic staff.

On the overall analysis very few EIs mentioned as a barrier the “no support from the top management” (6 per cent). The lack of quality materials is also a barrier that only 9% of the EIs are facing. When taking SPACE network apart, “no support from top management” has been mentioned by 7% of the EIs. The lack of quality materials in entrepreneurship is also a barrier that only 7% of the SPACE members are facing. This could mean that entrepreneurship is heading to a mature stage, where the collaboration between top management and lecturers should be the focus point and actions towards strengthening the collaboration have to be taken. (***Survey of Entrepreneurship in Education in Europe, pg. 42***)

Entrepreneurs fuel innovation by developing new or by improving existing products, services or processes. Entrepreneurship education develops skills in creativity, opportunity identification, problem-solving, self-efficacy and leadership. In addition, science, technology, engineering and maths (STEM) are critical for developing the innovative breakthroughs of the future, but are losing popularity with young people. More must be done to ensure that both entrepreneurial and technology-based skills training is provided to students at all levels of the education process.

Entrepreneurship education will also need to introduce a diversity of management skills related to innovation. These issues may include skills related to product development, employee management and training, marketing, and public relations. Much of the knowledge presented would fall under the category of soft or process technologies and innovation. Entrepreneurs need to stay on top of developments in process innovation that affect their firms, and correctly judge when, how and at what cost to invoke process change in order to improve their competitiveness. (***Entrepreneurship education, innovation and capacity-building in developing countries, pg. 16***)

5. Good Practice

The University of Wolverhampton (UK) is coordinating the SPEED project (Student Placements for Entrepreneurs in Education), a network of 13 institutions to help students develop self-employment opportunities as an alternative to traditional work placements. Students present their business ideas to a panel. If accepted, they are offered a placement of 9 to 12 months. Each student is helped to develop a personal and business development plan, and is given access to one or more mentors selected for their experience in a related area. The placement may be full time, as part of a sandwich degree course, or part time alongside their academic studies. Each student is supported by a mixture of bursary payments, finance for business related activities and professional services. The institution provides additional resources in the form of incubation facilities and skills training. Where possible a SPEED placement will be credit bearing for the student. (***Entrepreneurship in higher education, especially within non-business studies***, pg. 29)

Entrepreneurship education is delivered at Manchester Academy through a variety of formal and nonformal settings, associating all teaching staff on a whole-school approach. The key principles of this approach are the following:

- Self-respect and self-esteem: lead students to respect themselves and to believe in their capacities. At the core of this principle is the belief that all students have talents, some of which they may even be unaware of, especially in the case of low academic achievers.
- Collide with opportunities: provide students with as many opportunities as possible, in and outside the school, to experiment new things and ideas. The involvement of the outside community is key to this principle. Partners outside the school include the local business world, schools from other countries as well as higher education providers.
- Identity is not destiny: raise students' aspirations by leading them to realise that they can open all doors, and equip them with the life skills they need to do so. This is particularly relevant given that many students at Manchester Academy come from disadvantaged backgrounds. As a result, they may conclude that some jobs / universities etc. are out of their reach or they may lack the social and transversal skills required to access these positions.

The approach followed by the Manchester Academy has improved academic results dramatically: in the ten years before it was established, the former school had never reached 15% of pupils receiving A* to C grades¹¹ in five or more GCSE (General Certificate of Secondary Education) subjects. Since becoming the Manchester Academy, this score has gone from 8% in 2004 to 81% in 2010 and 84% in 2011. (***“Entrepreneurship Education: Enabling Teachers as a Critical Success Factor”***, pg. 10)

Certificate in Entrepreneurship for Initial Teacher Education – St. Mary’s University College Belfast, UK

St Mary’s College, a provider of initial teacher training at the Queen’s University in Belfast, started offering the Certificate in Entrepreneurship to its students in 2005. All students at St. Mary’s University College Belfast are afforded the opportunity to develop and challenge entrepreneurial ideas through an intensive and inter-active programme of workshops, seminars and lectures. The course challenges the students to consider the practical/entrepreneurial dimensions to be encountered in their main degree programme. It employs a range of experiential methods of teaching which have been developed including the use of drama, business games and live case studies.

As the entrepreneurship education training programme is offered on a voluntary basis, rewarding students' effort with an accredited award (in this case a Certificate in Entrepreneurship offered in addition to their teaching degree) is reported to have made the course more appealing to student teachers and helped to secure their buy-in the optional entrepreneurship course.

Building on the experiences acquired, St Mary’s has also introduced a new course at Masters degree level for school teachers, from both primary and post-primary sectors, as part of its contribution to continuing teacher education. As part of its recently completed review of its teacher education degree programmes, St Mary’s is now proposing to enhance Entrepreneurship Education through establishing more formal cross-disciplinary linkages within its programmes, and between the degree programmes and the Certificate in Entrepreneurship. (***“Entrepreneurship Education: Enabling Teachers as a Critical Success Factor”***, pg. 25)

Fourthly, a significant role is played by private associations and organisations. Most prominent amongst these are the following organisations with international profiles:

- JA-YE, which uses hands-on experiences to help young people understand the economics of life with enterprise and economic education programmes designed for young people ages 6-25 and implemented through a partnership between local businesses and schools.

- EUROOPEN, the practice firms network, which supports, co-ordinates and develops services which promote and enhance the concept of learning in and from a simulated business environment. EUROOPEN's objectives are to facilitate exchange of information, provide innovative training tools to its members, promote the practice firm concept and to represent its members at different government levels and private institutions.
- JADE (in Higher Education), which fosters the development of Europe's Junior Enterprises by implementing European projects and providing the framework for crossborder co-operation on multinational studies. It organises international congresses and meetings that facilitate exchange of knowledge and experience, intercultural understanding and promote the European idea. The JADE network presently has 20,000 members in 11 EU countries and includes 150 junior enterprises. (***“Towards Greater Cooperation and Coherence in Entrepreneurship Education”***, pg. 15)

Strategy for Entrepreneurship in the Field of Education – The 2009 Sweden National Strategy

In the Budget Bill for 2009, the Swedish Government announced its ambition for the teaching of entrepreneurship to be an integrated theme throughout the education system. Extensive reforms of the education system are now being carried out. The Government has already taken decisions on several initiatives that support the development of entrepreneurship programmes in schools and higher education institutions. The Government will make decisions on other initiatives as the reform process continues. All these initiatives are now brought together in a strategy for entrepreneurship, published in May 2009.

The strategy consists of 11 key points, detailing action by government and stakeholders, ranging from providing greater opportunities for more in-depth studies of entrepreneurship in upper secondary school, through to mapping activity across all sectors and the development of cutting edge programmes in the fields of entrepreneurship and innovation. (***“Towards Greater Cooperation and Coherence in Entrepreneurship Education”***, pg. 39)

A Mature Context Approach: The Netherlands

The emphasis in the Netherlands is on providing policy direction, support and encouragement (through a programme approach) rather than making entrepreneurship education a compulsory part of curricula in all educational institutions. Subsidies are provided (through the National Education and Entrepreneurship Programme managed by the public agency SenterNovem) to implement entrepreneurship education across the educational phases, based on a commitment contained in the national Strategic Agenda for Higher Education, Research and Science Policy; although entrepreneurship education is not explicitly part of the curriculum. The focus is on deficits identified in the current educational system which concern the early-stage in particular, while the approach to implementing the programme is deliberately demand-led, i.e. focusing on institutions that expressed a specific interest in starting to teach entrepreneurship education. Some schools are now offering projects for pre-school children, one example being 'My Restaurant' where classes are set up as restaurants with children making menus etc, coupled to a visit to a real restaurant in the locality. Primary schools typically start entrepreneurship education at the age of eight.

There is involvement of players at all governance levels. Along with the frameworks provided by the national government, at regional level chambers of commerce are involved in: supporting startups; putting entrepreneurship education on the regional agenda via sector skills organisations; and simulating projects between schools and companies. At local level, local authorities can stimulate projects at local schools and with local companies and organisations. The Netherlands is also starting to address the issue of assessment and is putting in place a National Entrepreneurship Certificate. This will apply at middle

vocational training level up to and including university level and will build on certificates currently being offered by a number of HEIs (for example the Utrecht Academy of Entrepreneurship). In terms of measurement and monitoring the impact of the Netherlands Education and Entrepreneurship Programme is measured on a two year cycle. (***"Towards Greater Cooperation and Coherence in Entrepreneurship Education"***, pg. 43)

A Newly Developing Context Approach: Portugal

In Portugal the Education Ministry is implementing a National Education Project for Entrepreneurship Education (Projecto Nacional de Educação para o Empreendedorismo or PNEE) which aims to establish entrepreneurship education as a cross-curricular subject within the curriculum. Within the framework of the PNEE, elementary, secondary and vocational / professional schools have been invited on a voluntary basis to develop a set of initiatives leading to the creation of entrepreneurship competencies and attitudes. In doing so, the PNEE also seeks to contribute to a continuous programme of qualifications and of learning, both for education professionals and learners.

In 2007/2008, 99 schools participated, involving 4153 pupils in both general and vocational tracks in more than 357 projects, and covering both technical and social dimensions entrepreneurship. Some of the projects are likely to be "upgraded" into real enterprises in the future. In the final trimester of 2008, a national training for trainers action was launched involving around 300 professionals from schools participating in the PNEE. A national strategy is now being considered based on the PNEE. (***"Towards Greater Cooperation and Coherence in Entrepreneurship Education"***, pg. 44)

Teacher Training in Austria

In Austria the Initiative for Teaching Entrepreneurship (IFTE) has been created to develop and provide teacher training and each year it runs a Summer School for Entrepreneurship in Kitzbühl. The course runs for one week in July and is intended for teachers from both vocational schools and colleges, and general secondary education tracks. The programme is broad, and topics include entrepreneurship in the context of educational philosophy, business ethics, and ideas creation, along with practical work on implementation, and how to use change management processes to create innovative educational organisations. There is a strong emphasis on experiential learning. The course team is drawn from across business, universities and schools, reflecting the fact that the IFTE is backed by a range of sponsors from the public and private sectors. (***"Towards Greater Cooperation and Coherence in Entrepreneurship Education"***, pg. 50)

Identifying Entrepreneurship Talents Online in Baden-Württemberg, Germany

"Talenteschmiede Baden-Württemberg" is a pilot project run by the NaturTalent Stiftung (Natural Talent Foundation) and is for students between 15 and 20 years old enrolled in schools providing a general education. The aim is to raise awareness among pupils of their natural talents and to provide guidelines for potential career paths. The rationale is that if people can apply their talents in their jobs, then they are likely to be much more effective and innovative. The first stage of the process involves pupils taking different on-line tests (those must be taken at home) which altogether take about five hours and consist of: a competence check, a check to find a potential profession, a "strength finder" to assess personal traits and talents and finally an entrepreneur talent check.

Participants also complete two written tests at home: a self-evaluation test and an assessment of their strengths completed by asking friends, parents etc. The online-tests are sent to a "talent coach" and are followed up by a one-day seminar (with maximum 12 pupils) where the participants work with the "talent coach": discussing the results of the tests and developing their own 'talent sheet'. Also, at the end of the

seminar the students go home with five concrete proposals for future vocational training, profession or studies. In the first 18 months of the project more than 4,500 students from 170 schools have participated. Financed by the Ministry of Economy of Baden Württemberg (as a result of its interest in entrepreneurship) and by the Federal Employment Office Baden-Württemberg (as a result of its interest in career guidance), the initiative provides a good example of joint-working at a regional level. (***“Towards Greater Cooperation and Coherence in Entrepreneurship Education”, pg. 53)***)

Ensuring the Direct Involvement of Entrepreneurs in the Teaching of Entrepreneurship Education: the University of Valencia, Spain

At the University of Valencia in Spain business owners finance and manage a Chair on entrepreneurship education. Teachers/lecturers on the accompanying course are drawn exclusively from the local business community. This means they not only act as role models but are involved directly in the teaching of entrepreneurship education. Over the ten years that the programme has been running, 250 business projects have been developed. A key output of the venture has been the acquisition of entrepreneurial skills and attitudes amongst students. (***“Towards Greater Cooperation and Coherence in Entrepreneurship Education”, pg. 57)***)

A concrete example of a close partnership can be seen at Køge Business College (Denmark). In this college students conclude their education by carrying out a practical project in enterprise on which the enterprise and the school cooperate. Taking a real problem as the point of departure, the student can demonstrate his/her entrepreneurial skills and creative thinking by coming up with a solution or a product that meets the enterprise's needs.

Before starting, the student drafts a project description which must be approved jointly by the enterprise and the school. This case-based final exam can be taken individually or in groups. In the city of Cagliari (Italy), La Città dell'Impresa (City of Enterprise) is a meeting place aiming to stimulate creativity and to spread an entrepreneurial culture. It has three sections: the Exhibition, the Factory and the Academy. The Exhibition is an interactive multimedia path where young people can learn about emerging local markets, test their entrepreneurial skills and receive practical advice. After the virtual part there is the real area, the Factory, where experts in the field give consultancy and practical advice, help examine the feasibility of ideas put forward by potential entrepreneurs and suggest the best ways of realising them. (***“Entrepreneurship in Vocational Education and Training”, pg. 27)***)

Good Practice indicators for entrepreneurship education in vocational schools

1) The programme or activity has well-defined objectives and appropriate measures of success. It is regularly evaluated, and receives positive feedback from students. Evaluation results are continuously fed into the development process.

2) There is a good balance between theory and practice: the programme or activity is action-oriented, based on experience and project work. It aims to improve the students' abilities to work in a team, develop and use networks, solve problems, and spot opportunities.

Students are actively involved in the learning process, and responsible for their own education.

3) The programme or activity is adapted to the students' learning environment and to their specific fields of study.

4) The institution has external links with enterprises, experienced business people and young entrepreneurs, and with the local community. Entrepreneurs are involved in the learning process.

- 5) Students are exposed to real-life work situations and encouraged to take part in extracurricular activities. External events, activities and contests are organised.
- 6) Teachers have an appropriate qualification in entrepreneurship (through experience in business and/or participation in training). They use up-to-date study materials and up-to-date knowledge.
- 7) The programme or activity stimulates the students and teachers to look beyond the borders of their school environment (e.g. by exchanging experience or ideas with other schools, with students from other countries or with other technical backgrounds).
- 8) The programme or activity is part of a wider scheme: students are followed after participation in the programme, and are referred to the right support mechanisms if they want to start up a business. (***“Entrepreneurship in Vocational Education and Training”, pg. 30***)

The Knowledge Centre ‘Competento’ (Belgium)

This broad initiative, developed in Flanders, include two main action lines: A Virtual Knowledge Centre with a large database on materials (documents on policy and research reports; models, methods and course materials; and screening instruments for entrepreneurial competences), initiatives, information, events and contests.

The Virtual Knowledge Centre is a unique platform for spreading all kinds of material on entrepreneurship education to teachers. It forms an exchange platform between pedagogical supervisors, teachers and educators, coaches in specific courses and business representatives, who are indeed ideal intermediaries.

The ‘Entrepreneurial Class’ Week aims to highlight actions on entrepreneurship in schools and training centres over one week. There is a leaflet to inspire participants. The theme for 2009 is Creativity and Innovation.

All creative and innovative ideas and initiatives get an equal chance to be known by the target public. All education and training partners are contacted so there is ample support for the transfer of new information and exchange of knowledge and experiences regarding entrepreneurial competences and entrepreneurship.

Before the Competento website was set up, the wide range of methods and initiatives was fragmented and confusing for the user. The Competento database provides an overview of options for promoting the entrepreneurial spirit and competences in Flanders, and many international initiatives. Good practices are disseminated via the Competento website. Anyone looking for examples finds them all in one place. Teachers, trainers and others in education can subscribe to the newsletter to be informed of new activities. (***“Entrepreneurship in Vocational Education and Training”, pg. 33***)

In terms of entrepreneurship promotion there appears to be a significant amount of activity in Denmark. For example, the education system promotes and supports entrepreneurial activities at all levels. There is an established network of business support organisations providing a wide variety of business support services and initiatives. Relevant initiatives are listed below.

North Jutland Entrepreneurs Network is a regional Entrepreneurs programme which has been coordinated by North Jutland Growth House (Væksthus) since 2001. It is a network of business development agencies providing wide variety of consultations for participants in the programme. Participants of the programme receive 16 hours of free consultations in the form of vouchers from local

business service, business plan evaluation, accountants, solicitors, marketing etc. Some 80% of all new business registrations in the North Jutland region had participated in the programme which accounts for 1,200-1,300 entrepreneurs per year. The evaluation of the programme highlighted that 98% of all registered entrepreneurs are still active (to some extent) after three years.

Further development of the programme is foreseen by providing further support for the top 10% of entrepreneurs. They would benefit from an additional 100 hours of consultations. The tools foreseen for this are: growth guides, networks, mentors, springboard, training/certificates.

Øresund Entrepreneurship Academy unites and develops strong competences and experiences with entrepreneurship education at the universities in the Øresund region. Currently, cooperation involves 12 universities in Denmark and Sweden. (***“Entrepreneurship in Vocational Education and Training”, pg. 23***)

In France, the mobility of teachers and researchers between higher education and business is encouraged at the state level. Since 1999, a law has allowed researchers to quit universities and labs to create a new venture based on their work. A network of academic incubators has been set up to support them. They are allowed to go back to university if desired. Between 2000 and 2005, 844 enterprises have been created by researchers in France, through academic incubators. Recently a new type of company, called “Young Academic Enterprise”, allows significant advantages to encourage business creation by researchers and students.

In Germany, some universities give their professors the opportunity to get practical business experience. For example, the Gelsenkirchen University of Applied Science can give professors one semester off for testing and using scientific expertise and methods as well as to get practical experience in firms (after a period of at least eight semesters).

In Spain a new Act for Universities was published in 2007, reforming the Statute of University Professors and enabling them to participate in business projects. (***“Entrepreneurship in higher education, especially within non-business studies”, pg. 32***)

Good practice criteria in delivering entrepreneurship education

- 1) The purpose of the course/programme is precisely defined, being linked to the delivery of the expected outcome (definition of objectives, and capacity to measure outcomes related to those objectives).
- 2) There is a balance between the theoretical and practical aspects. Teaching makes use of interactive and pragmatic methods; active self-learning; action-oriented pedagogy; group work; learning through projects; student-centred methods; learning by direct experience; methods for self-development and self-assessment. Delivery is through mechanisms that maintain the motivation of students at a high level.
- 3) Activities and events are organised to improve students' ability to work in a group and build a team spirit, and to develop networks and spot opportunities.
- 4) Different guest lecturers are involved (e.g. experts on patent law, company financing, etc). A close relationship is in place with the local entrepreneurial environment, and educators are part of relevant networks (formal and informal). There is a collaborative approach with real business practice and industry.
- 5) Young entrepreneurs (for instance, alumni who have started a company) and experienced business people are involved in courses and activities, and contribute to their design. Practical experience, by

means of students cooperating with enterprises and working on concrete enterprise projects, is embedded in the programme.

6) Courses and activities are part of a wider entrepreneurial programme, with support mechanisms for students' start-ups in place and actively utilised.

7) Exchanges of ideas and experience between teachers and students from different countries are sought and promoted, to encourage mutual learning and to give an international perspective to programmes, courses and activities. (***“Entrepreneurship in higher education, especially within non-business studies”***, pg. 35)

Junior Achievement - Young Enterprise as a part of the curriculum

Except in Iceland, Junior Achievement – Young Enterprise (JA-YE) has made a significant contribution to entrepreneurship education in the Nordic countries, and is therefore more than just a good practice. Most of the programmes are integrated as a part of the curriculum in educational institutions. Not only they integrate the national strategy in entrepreneurship education but, for instance, JA-YE Finland is also a part of the national working group to develop the national strategy (Finland 2009). In Denmark, the objectives for the Danish Foundation for Entrepreneurship - Young Enterprise (FFEYE) are to ensure the integration of entrepreneurship in every educational level of the Danish education system.

JA-YE has already become a significant feature of entrepreneurship education in the Nordic region. In the figure below, the aim is to identify similarities and differences in implementation between JA-YEs.

Similarities and differences in implementation of JA-YE in the Nordic countries

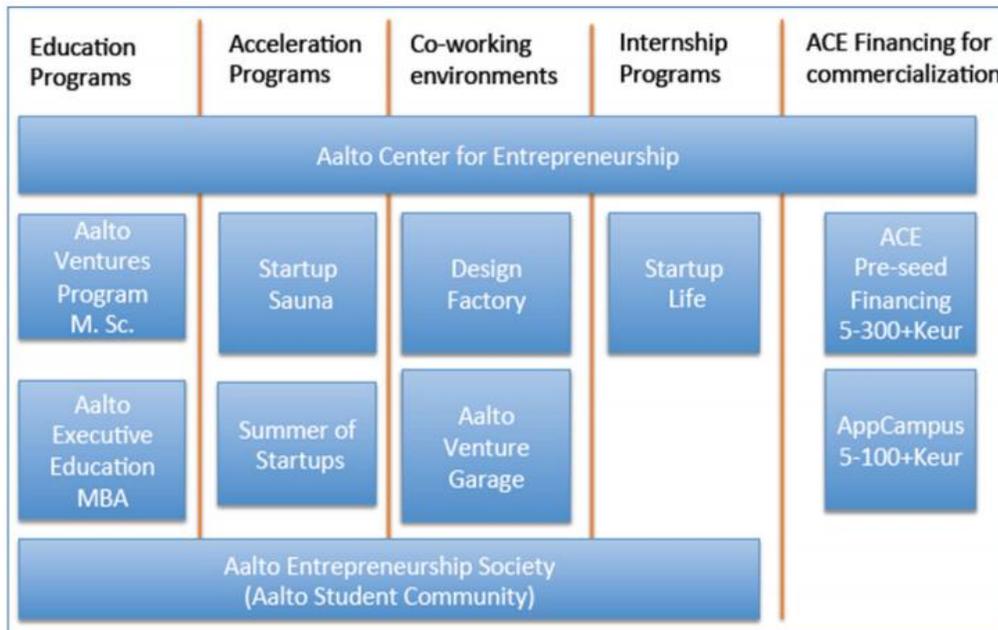
JA-YE	Covered region	Programme		External funding recd 2011	Teacher training	Teaching materials	Awards	Nordic collaborated projects	Measuring performance	Research in EE	Alumni
		category	item								
Finland	19	Pre-school & grade 1-6	3	€ 115 000	Yes	Yes	Yes	No	Coming	No	No
		Grade 7-9	3								
		Sec school	3								
		Higher edu	2								
Norway	17	Grade 1-7	3	NOK 87m	Yes	Yes	Yes	Some	Yes	Yes	Yes
		Grade 8-10	6								
		Upper sec	6								
		Higher edu	5								
Sweden	20	Grade 2-5	1	SEK 77m	Yes	Yes	Yes	Few	Yes	Yes	Yes
		Grade 6-9	1								
		Aged 16-20	1								
Denmark	12	Mostly in secondary level	10	DKK 32m	Yes	Yes	Yes	Some	Yes	Yes	Yes
Iceland	1	Aged 16-22	1	€ 3 000	At request	Yes	No	No	No	No	No

(***“Entrepreneurship education in the Nordic countries: Strategy implementation and good practices”***, pg. 44)

Entrepreneurship education focused on higher level – Aalto University, Finland

Aalto University (AU) was designed to be the world's first 'innovation university' for the cross-discipline collaboration of faculties, researchers, and students of Finland's leading universities of technology, art & design, and economics. Established in 2010, AU is a newly created university merging three Finnish universities: Helsinki School of Economics, University of Art and Design in Helsinki, and Helsinki University of Technology. The combination of three universities opens up new possibilities for strong multi-disciplinary education and research. Since the establishment, there is a determined effort to focus on innovation-based entrepreneurship. As AU moves forward, it will be better positioned to transform research ideas into competitive commercial technologies and innovative startups and growth companies.

The main entrepreneurial organizations within Aalto



According to the interviewee, AU integrates to a much closer extent technology transfer, startup acceleration, and entrepreneurship teaching and research compared to most other universities. These are embedded primarily in the Aalto Center for Entrepreneurship, Aalto Venture Garage, Aalto Ventures Program, and Aalto Entrepreneurship Society.

AU also provides platform where teachers, students and business sectors could meet and share information, in particular, at Aalto Venture Garage and Aalto Design Factory. Since establishment of Aalto in 2010, Growth Entrepreneurship has become one of the main priorities of the newly formed university. See figure above for the main entrepreneurial organizations within Aalto – Aalto University Growth Entrepreneurship.

In terms of corporate collaboration to stimulate growth entrepreneurship, Nokia and Microsoft have chosen AU to co-develop the world's leading mobile application development ecosystem. This so-called 'Appcampus' is a pilot program for creating application development hubs.

One interesting event is the 'Fail Day' celebrated by Aalto Entrepreneurship Society on October 13 every year. The initiative grew out of the risk aversion in the Finnish mentality that prevents many startups from being born. The aim of the event is to send out the message that there are many lessons to be learned from a failure on the road to success. (*"Entrepreneurship education in the Nordic countries: Strategy implementation and good practices"*, pg. 61)

Cambridge Centre for Entrepreneurial Learning: a people approach instead of a ‘how-to-approach’

The focus of the Cambridge Centre for Entrepreneurial Learning (CfEL) is on planning and implementing entrepreneurship courses, within the whole University, using a specific philosophy and a well-thought learning approach. The actual delivery of entrepreneurship courses is largely taken care of by some 200 entrepreneurs and practitioners (entrepreneurs, venture capitalists and business angels, bankers, etc.). CfEL was established in 2003 from the division of two units formerly belonging to the University of Cambridge Entrepreneurship Centre founded in 1999.

Teaching and training moved to CfEL (part of Cambridge Judge Business School), and Cambridge Enterprise became the office for university-industry relations and knowledge transfer alongside with the Technology Transfer Office and the University Challenge Fund. CfEL has nine full-time staff to plan and organise entrepreneurship courses, including a director, programme managers, a centre manager and administrative staff. All activities aim at developing self-confidence and self-efficacy amongst students. Entrepreneurship is understood as a set of skills, attitudes and behaviours rather than just venture creation. Teaching methods range from lecturing, video and online assignments, to problem-based learning, project work on real technologies, entrepreneurs in the classroom. A broad recruitment package includes a website, brochures, posters, and a series of information events. Close collaboration with the different departments allows circulation of information to student mailing lists and the organisation of tailored information events. The main strength of CfEL is its clear focus on the development of entrepreneurial skills, attitudes and behaviours through an entrepreneurial pedagogy. This means focusing on soft skills (developing student self-confidence, self-efficacy, helping students to understand the why and the when of becoming an entrepreneur, learning to deal with uncertainty, learning by trying, trial and error, learning from mistakes and failures) instead of to a „how to approach“ that emphasises business administration skills and tools to develop a (successful) business plan. (***“Partnering for Success in Fostering Graduate Entrepreneurship”***, pg. 16)

In primary education, the adoption of school books, interactive games and online tools has proved to be particularly useful. For example, the award-winning Disney Kauffman online game teaches young people (aged 9–14) about the excitement and opportunity of entrepreneurship. The Junior Achievement programme, present in 19 African countries, includes six sequential themes for pupils from kindergarten level up to fifth grade, plus one capstone experience. Students learn the basic concepts of business and economics, and how education is relevant to the workplace. External evaluators have found that elementary school students who participate in the Junior Achievement programme demonstrate significantly higher critical thinking and problem-solving skills than their counterparts. (***“Entrepreneurship education, innovation and capacity-building in developing countries”***, pg. 8)

UNCTAD's Empretec methodology Empretec is an integrated capacity-building programme of UNCTAD which is currently operating in 32 entrepreneurship centres across the developing world. Empretec distinguishes itself from other trainings by offering a behavioural approach to entrepreneurship. Research undertaken has demonstrated that there is a series of 10 key personal entrepreneurial competencies represented by 30 behaviours associated with successful entrepreneurs. The Empretec programme reinforces and strengthens these competencies through an Entrepreneurship Training Workshop (ETW) which involves self-assessment, individual transformation and business stimulation activities. The ETW encourages individuals to focus on their role as entrepreneurs, and challenges them to critically examine their personal strengths and weaknesses. The training method is highly interactive and experiential, and is combined with other services. (***“Entrepreneurship education, innovation and capacity-building in developing countries”***, pg. 11)

6. Initiatives, Proposals & Recommendations

Entrepreneurship education should be prioritised. Most Member States have strategies or on-going initiatives addressing the implementation of entrepreneurship education into general education at primary and/or secondary level, yet only in a quarter of member states did a majority of adults believe they had the right skills and knowledge to start a business. Consequently, entrepreneurship needs to be introduced early, and included at all levels and in all disciplines of education and training. (***Rethinking education: investing in skills for better socio-economic outcomes, pg. 4***)

Attention should be particularly focused on the development of entrepreneurial skills because they not only contribute to new business creation but also to the employability of young people. However, at the national level only six Member States have a specific strategy for entrepreneurship education. To address this, in 2013 the Commission will publish policy guidance to support improvements in the quality and prevalence of entrepreneurship education across the EU. Member States should foster entrepreneurial skills through new and creative ways of teaching and learning from primary school onwards, alongside a focus from secondary to higher education on the opportunity of business creation as a career destination. (***Rethinking Education: Investing in skills for better socio-economic outcomes, pg. 4***)

Real world experience, through problem-based learning and enterprise links, should be embedded across all disciplines and tailored to all levels of education. All young people should benefit from at least one practical entrepreneurial experience before leaving compulsory education. Measuring the impact of this work is important, and to support Member States the Commission will identify tools to assess progress and demonstrate the acquisition of entrepreneurial skills. At the level of individual institutions progress will be boosted by a self-assessment framework, carried out jointly with the OECD, to guide and advance the development of entrepreneurial education institutions at all levels including schools and vocational education and training (VET). (***Rethinking Education: Investing in skills for better socio-economic outcomes, pg. 4***)

Entrepreneurship education actions to include: publishing policy guidance on entrepreneurship education in 2013; establishing, jointly with the OECD, a guidance framework for entrepreneurial education institutions; and the development of tools to monitor progress and the acquisition of entrepreneurial competences. (***Rethinking Education: Investing in skills for better socio-economic outcomes, pg. 17***)

Partnerships between education, business and research such as the Knowledge Alliances, the Sector Skills Alliances and the partnership actions within the Marie Skłodowska-Curie programme will be promoted through the proposed Erasmus for All programme 2014-2020 and Horizon 2020 in order to adapt education and training systems closer to the needs of companies, especially SMEs. (***Rethinking Education: Investing in skills for better socio-economic outcomes, pg. 17***)

The following objectives are to be reached through entrepreneurship education:

- Improvement of the entrepreneurship mindset of young people to enable them to be more creative and self-confident in whatever they undertake and to improve their attractiveness for employers.
- Encourage innovative business start-ups;
- Improvement of their role in society and the economy.

(***“Effects and impact of entrepreneurship programmes in higher education”***, pg. 7)

The policy should support entrepreneurship programmes

It can be concluded in general that providing entrepreneurship education at higher educational institutions has a positive effect on entrepreneurship. The results underline the importance of the policy on the development of entrepreneurial skills through education in all EU Member States as it is presented in the Programme for the Competitiveness of Enterprises and small and medium-sized enterprises (COSME) and in the Europe 2020 strategy Agenda concerning new skills and jobs. Member States should stimulate and give full support to higher education institutions to develop entrepreneurship programmes.

Providing entrepreneurship education should become obligatory and should be extended to all disciplines

The enterprises created by entrepreneurship alumni can be characterised as being innovative, having high growth and ambitious, whereas the enterprises established by the control group can be characterised as being traditional, stable and less risky.

Apart from that, entrepreneurship programmes also have an impact on entrepreneurship in a broader sense, by stimulating entrepreneurial and innovative capabilities of individuals in paid employment. The survey results show that the employability, the entrepreneurial attitude and innovative and creative capacities of individuals have been positively impacted by the offering of entrepreneurship programmes. This made these individuals more attractive to employers.

These results show that there is an argument to make entrepreneurship education obligatory and to broaden the inclusion of entrepreneurship programmes into other disciplines in which individuals are trained for paid employment such as engineering sciences and agriculture sciences, forestry and nutrition sciences or social sciences. In recent years an extension of entrepreneurship education into other disciplines is already taking place in some countries. This extension is also visible in the institutions which participate in this study. This extension should continue in all Member States.

Learning by doing should be an important part of training

JADE is the European Confederation of Junior Enterprises. A Junior Enterprise is a student association in which students have the opportunity to add practical experience to their theoretical skills, as well as to develop entrepreneurship at an early stage by running professional studies for companies and managing the organisation itself. In these SMEs, students from different fields of studies (from business and economics, to engineering, IT and communication) can develop some technical and soft skills essential for their future careers, and also to get an early contact with the business world.

JADE alumni score better in many aspects than the other group of entrepreneurship alumni and the control group alumni. These results support the importance of including practical training in the education programmes.

Value the impact on society

Improving the entrepreneurial key competence is also expected to have an impact on the social and personal life of individuals and consequently on society. Attending entrepreneurship education does not impact the extent to which individuals participate in voluntary work according to the survey, although the participation in non-commercial projects seems to be affected in a positive manner.

This can be explained by the fact that the entrepreneurship programmes focus on the use of entrepreneurial competences in working life. Governments can stimulate education institutions to broaden

this focus to personal and social life. (***“Effects and impact of entrepreneurship programmes in higher education”***, pg. 85)

Specific attention to female students

The entrepreneurship and JADE female alumni outperform female alumni in the control group on almost all aspects. However, the survey shows that female alumni value their entrepreneurial characteristics, skills and knowledge less than the male alumni. In addition, female alumni are less inclined to become an entrepreneur. These gender differences are found in the entrepreneurship group, the JADE group and the control group. These results are important in the context of the objectives which the Commission has set in COSME to stimulate female entrepreneurship. Specific attention to this group of students is needed.

Measure impact in more than one period

In this study the impact of entrepreneurship education was measured only on one single moment. Most of the entrepreneurship programmes on the higher education institutions are less than ten years old. We also know that many graduates first want to gain some work experience before they even consider starting a business. For example it is likely that in ten years time more alumni will be involved somehow in entrepreneurship than there are at this time. Longitudinal information should be collected in order to measure the impact of entrepreneurship education. (***“Effects and impact of entrepreneurship programmes in higher education”***, pg. 86)

It is proposed that the European Commission:

I. acts as a key 'catalyst', stimulating and accelerating developments by supporting the establishment of an observatory of policy and practice, and a research hub to collect and disseminate good practices, commission new research and develop frameworks, e.g. for monitoring and evaluation;

II. builds 'platform' mechanisms through which stakeholders – especially teachers and businesses - can come together at EU level to discuss and debate common issues. Such platforms can be both virtual (web-based), and/or based on real-life contacts (e.g. seminars, training, panels on specific themes, etc.). This involves both deepening the HLRP process, which provided a new and innovative arena to consider how to develop and implement strategies, as well as mobilising critical groups of stakeholders including teachers and businesses;

III. develops an 'enabler' role. This function involves mobilising the resources available through EU programmes to support activity, both at EU level and within Member States;

IV. establishes a European Centre for Entrepreneurship Education as the main vehicle to implement the above activities, by leading developments at EU level as well as linking into national activities, observatories and hubs as they develop;

V. leads these actions through the Directorates General “Enterprise and Industry” and “Education and Culture” and develops better coordination across the Commission, including with those other DGs with an important role, such as the DG “Regional Policy” and the DG “Employment, Social Affairs and Equal Opportunities”. (***“Effects and impact of entrepreneurship programmes in higher education”***, pg. v)

The EU as Enabler: Key Activities

- Funding the establishment of a European Centre for Entrepreneurship Education to act as an observatory of good policy and practice, a research and development hub, and a platform for stakeholder engagement.

- Funding new research and development (e.g. into an EU-wide common monitoring and evaluation framework) and the collection and dissemination of good practice.
- Support the development and dissemination of teaching materials and methodologies, and teacher training, e.g. through seminars and workshops.
- Funding awareness-raising initiatives to spark new activity, for example through utilisation of the European Enterprise Awards to recognise good practice in entrepreneurship education, and by extending into entrepreneurship education the 'ambassadors' concept (as in the recently launched European Network of Female Entrepreneurship Ambassadors) to develop a network of European Ambassadors for Entrepreneurship Education which would draw upon individuals in the teaching and business worlds.
- Ensuring that identified EU priorities (e.g. on key competences) are integrated into existing programmes (e.g. Youth in Action, the Lifelong Learning Programme) through calls for proposals, new initiatives, tenders
- Incorporating entrepreneurship education fully into forthcoming programmes (post-2013) through the impact assessment/ex-ante evaluation procedures and then in the design of the programmes themselves (not as a later addition).
- Funding interventions in MS/regions to encourage cohesion and new economic growth and prosperity through National Reform Programmes (NRPs) and Operational Programmes (OPs) by promoting and developing opportunities through ESF/ERDF to ministries/programme monitoring committees and regional authorities. Entrepreneurship education activities can be supported through these funds. Business-development measures are commonplace within NRPs and OPs and can be supported and enhanced through the development of coherent packages of support for entrepreneurship education. (*“Towards Greater Cooperation and Coherence in Entrepreneurship Education”*, pg. 77)

Teacher training needs to develop the specific skills required to teach entrepreneurship, such as:

a) Project management skills

The heart of entrepreneurship education is students setting up and running a project. Teachers require the skills to support students throughout this process, which includes: planning and preparing the project (setting objectives and identifying what exactly is required and how it can be carried out, etc.); anticipating students' needs at each stage of the project; setting personal targets and goals throughout the project; and doing the final evaluation.

b) Pedagogical skills

The emphasis is on pedagogies that encourage learning: by doing; by exchange; by experiment; by risk taking and 'positive' mistake making; by creative problem solving; by feedback through social interaction; by dramatising and acting the part; by exploring role models; and by interacting with the outside/adult world.

This involves the teacher in suggesting and guiding rather than giving instruction, asking 'open' questions that do not necessarily lead to one correct answer, learning alongside the students, helping to resolve conflicts and difficulties that may arise and persuading students to face up to things they may initially resist or avoid.

c) Personal skills

Much of the success of the facilitation process depends upon a range of communication skills, including that of active listening, the ability to negotiate and work in teams with other colleagues and the ability to create a learning environment in which students can be open and frank, and feel confident and secure. The most effective way to ensure that teacher competence in this field is adequate and up-to date would be to make entrepreneurship a mandatory part of teacher education. It is also important to offer further education to those teachers who have already completed their initial education. (*Entrepreneurship in Vocational Education and Training, pg. 25*)

Public authorities:

- 1) Set up a national steering committee for entrepreneurship education, including representatives from different ministries and relevant stakeholders (including delivery partners and NGOs), with the objective of launching and developing a national strategy.
- 2) Create a legal framework that enables entrepreneurship education, and make the necessary funds available (e.g. for teaching the trainers, support tools, teaching material).
- 3) Introduce entrepreneurship as an explicit goal within the curriculum, and formally recognise entrepreneurship education activities. Develop steering documents (e.g. curricula and syllabi) and guidelines, and measure both the scope and effect of entrepreneurship education in schools.
- 4) Make career exploration mandatory, and include entrepreneurship in vocational guidance: the opportunity of learning about entrepreneurship should be offered to all students.
- 5) Raise awareness and improve knowledge about entrepreneurship education among school management, for instance by holding dedicated seminars.
- 6) Provide counselling for schools and teachers in designing VET curricula, and disseminate successful experiences and practices between VET schools. Create contact points to support teachers and schools wanting to engage in entrepreneurship education.
- 7) Help teachers to become better qualified in entrepreneurship: require entrepreneurship education when teachers are in university studies, and endorse the on-site training that teachers receive from recognised providers.
- 8) Support those non-profit organisations and NGOs whose mission is promoting and delivering entrepreneurship education and acting as intermediaries between vocational schools and businesses.
- 9) Grant 'micro-scholarships' to innovative and brilliant students in VET schools who want to start an independent activity and have a good business idea.

Vocational Schools:

- 10) Within the school, establish the role of an enterprise champion who is specifically responsible for school-enterprise partnerships, or encourage one or two teachers to take the lead.
- 11) Extend entrepreneurship to all fields of study in vocational education. Link practical training in specific fields of study with the objective of entrepreneurship, and provide support for students interested in starting up a business.
- 12) Present entrepreneurship in a practical way. Promote the use of methods based on real experience (project work with real enterprises or with the local community, student mini-companies, etc.).

13) Involve businesses in the entrepreneurship education process. Ensure access to experts (from businesses, business associations, and NGOs) who can provide training and ongoing support.

14) Organise talks and seminars by entrepreneurs to encourage students, and to make them aware of the potential and implications of becoming self-employed.

15) Encourage and motivate teachers, by ensuring access to appropriate training, information and guidance. Allow internships in enterprises in the country and abroad.

Business organisations, and other intermediary organisations:

16) Promote partnerships between VET schools and enterprises, and act as an intermediary in finding work placements for both students and teachers.

17) Provide expert help with preparing programmes and cooperate with schools on implementing entrepreneurship education activities, particularly through project work..

18) Encourage both young and experienced entrepreneurs to get involved in entrepreneurship education as role models.

19) Raise awareness among businesses, particularly at local level: start corporate social responsibility (CSR) initiatives that would motivate more business people to get involved in entrepreneurship education.

Coordination and support at European level:

20) Establish a European platform for entrepreneurship education, providing all the information, good practices, exchanges, finding partners, promotion material, etc.

21) Make funds available through existing EU programmes for students, teachers, entrepreneurship education organisations and VET providers. In particular, support trans-national projects with a European dimension.

22) Promote the exchange of good practices in teaching entrepreneurship; publish and disseminate case studies and good practices.

23) Make expertise available to all countries, for example by supporting visits by experts to deliver presentations. Support 'peer learning' and organise study visits to locations selected as good examples. Organise exchange meetings for entrepreneurship educators followed by the dissemination of results.

24) Promote campaigns to raise awareness among the general public about the importance of entrepreneurship, and in particular competitions and European awards for entrepreneurship programmes, courses and activities in vocational education. Set up or support European awards (best school, best teacher, best student, best company), and/or introduce an Education category in the European Enterprise Awards. Encourage the involvement of private sponsors.

25) Monitor and benchmark the process in Member States, and disseminate information about the results. (***Entrepreneurship in Vocational Education and Training, pg. 43***)

The lack of relevant skills and experience to teach entrepreneurship is especially acute in the post-transition countries of central and eastern Europe. This can be overcome, or at least alleviated, by:

a) establishing professional networks for the regular sharing of teaching practices and methodologies;

b) short-term exchanges of entrepreneurship teachers between the institutions of higher education in order to disseminate best practice and teaching methods;

c) short-term internships of teachers in businesses.

A main prerequisite for achieving a good level of entrepreneurship teaching is ensuring that educators are close to the problems and issues of the real business world. (*Entrepreneurship in higher education, especially within non-business studies, pg. 38*)

Public authorities (framework conditions)

1) Establish a task force or steering group (including the Ministry of Education and other departments: Economy; Employment; Science and Research) to determine how entrepreneurship can be integrated into the education system across primary, secondary, and higher education. The task force would also get the viewpoints from representatives of other relevant organisations. This should lead Member States to develop a coherent national strategy for entrepreneurship education, clearly linked to an agreed framework of desired outcomes.

2) Adopt legislation supporting relations between private business and universities, including allowing professors to work part-time with business. A joint inter-ministerial programme with a financial budget should accompany the above legislation and support institutions in developing action learning programmes that also result in new venture creation.

3) Help develop an accreditation system to validate informal learning and practical activities that favour entrepreneurship development: students should receive credits for their regular and successful work.

4) Establish awards for entrepreneurial universities, teachers and students. Promote positive examples of academic spin-offs.

5) Create Regional Centres responsible for coordinating, organising and promoting entrepreneurship action (e.g. “Entrepreneurship Houses” in France). These centres could build up a critical mass of activities at a local level, encourage the sharing of best practice and tools, provide support for networking among educators, entrepreneurs and students. Action would include training teachers, and mobilising entrepreneurs to operate in the classroom.

Activities at the level of institutions

6) Institutions should have a strategy and action plan for teaching and research in entrepreneurship — embedding practice-based activities — and for new venture creation and spin-offs.

7) Institutions should embed entrepreneurship in all faculties. One effective way of doing so will be to establish an entrepreneurship education department responsible for disseminating entrepreneurship throughout the institution. This role should be played by the Business School, where there is one. Non-business higher education establishments should create a specialised administrative unit for dealing with all activities related to entrepreneurship (Centre for Entrepreneurship). Centres for Entrepreneurship should be entrepreneurial hubs within the institution, whose function is to spread the teaching of entrepreneurship across all other departments.

8) An introduction to entrepreneurship and self-employment should be offered — as part of career guidance — to all undergraduate students during their 1st year. In addition, all students should be given the opportunity to attend seminars and lectures in the subject. Therefore, as a minimum requirement, all

higher education institutions should provide at least one entrepreneurship course, and enforce structures that allow students to choose.

9) Institutions should have incentive systems for motivating and rewarding faculty staff in supporting students interested in entrepreneurship and new business start-ups, and should acknowledge the academic value of research and activities in the entrepreneurial field.

10) Develop clear institutional rules about intellectual property. Provide templates for use as a reference, and give examples. Comparative information on IPR rules applied by different institutions should be available for teachers, researchers and students. Good practice should be disseminated.

11) Encourage the spontaneous initiative of students. Existing students' organisations aimed at developing entrepreneurial projects and activities, and of building contacts with the business world, should be given the best conditions to operate and should be supported. Where relevant, Enterprise Clubs — supported by the faculty but operated by the students themselves — could be set up. Create frameworks and support for students to organise their own activities.

12) Award academic credits for activities within student associations, and more generally for practical work on enterprise projects outside the established courses, including the development of business plans.

Other relevant players and the business world

13) Business associations should encourage the involvement of their members in teaching entrepreneurship within educational establishments, as well as in taking an active role in organising business plan competitions and in providing support for getting the winning ideas off the ground. Industry should provide sponsorship and funding for start-ups created by students, within incubators or as a result of business plan competitions.

Coordination and support at European level

14) The Commission should support programmes for training entrepreneurship teachers within a European dimension, and should back the creation of networks and crossborder exchange programmes for educators. This would include encouraging the mobility of teachers across Europe for short periods of placement within institutions in different countries, and supporting the organisation of summer schools for a one-week exchange of experience among entrepreneurship professors and sharing of case studies and methods.

15) The Commission should conduct a regular and comprehensive benchmarking of public policies in this area. Member States should define an action plan, with results measured each year by way of reports that Member States would submit to the Commission. (***Entrepreneurship in higher education, especially within non-business studies, pg. 67***)

A Framework for policy development

A1 Ensure political support for entrepreneurship education at the highest level. Real progress will be possible only with a strong commitment from national and regional governments and from the relevant Ministers, in the context of the implementation of the Lisbon strategy.

A2 Better integrate Entrepreneurship Education into the Lisbon monitoring process (Integrated Guidelines for Growth and Jobs), and make the assessment of Member States' progress in this field more effective by means of applying specific indicators.

A3 Set up a European-wide framework of what is to be achieved, followed by proper evaluation of the impact of measures taken. Coordination needs to be ensured at the EU level, with the definition of broad objectives and of desired outcomes for entrepreneurship education. The above framework could be supported by the establishment of a European Observatory for Entrepreneurship Education, with national antennae.

A4 Launch national strategies for entrepreneurship education, with clear objectives covering all stages of education. Such strategies should call for the active involvement of all relevant actors (public and private), and establish a general framework while defining concrete actions. These will range from the inclusion of entrepreneurship into the national curricula to providing support to schools and teachers. The overall goal will be to ensure that young people can progress coherently in acquiring entrepreneurial competences across all stages of the education system.

A5 Create Steering Groups, both at European and at national level, where all the different stakeholders involved in entrepreneurship education can be represented (public administrations, businesses, educational establishments, students, etc.). These Groups would have among their objectives that of setting targets for entrepreneurship education, taking into account its various elements, and that of reporting on progress achieved.

A6 Promote entrepreneurship education at regional level, with a coherent programme bringing together local stakeholders and addressing the various levels of education through a range of different instruments.

A7 Facilitate the development of entrepreneurship education within the Bologna process by: encouraging the mobility of teachers (across countries and across different institutions, including in the private sector); recognising the role of educators other than teachers (practitioners, entrepreneurs, students themselves); recognising entrepreneurial career paths in undergraduate education at university.

A8 Increase coherency between European funding programmes that can be used to support entrepreneurship education projects and activities (in particular the Lifelong Learning Programme, the ESF, the ERDF). These programmes can be valuable in supporting actions taken at national and local level.

A9 Ensure coordination at European level in the evaluation of programmes and activities, in order to allow the comparability of results. The EU could bring together a group of researchers in entrepreneurship education, to help define indicators and specify typical educational processes. ***(The Oslo Agenda for Entrepreneurship Education in Europe, pg. 1)***

B Support to Educational Establishments

B1 Better integrate entrepreneurship programmes and activities in the established curriculum for schools at all levels (primary, secondary, vocational), as a horizontal element in all fields of study (entrepreneurial mindset) and as a subject in its own right (entrepreneurial skills).

B2 In its broader definition (fostering attributes like creativity, autonomy, initiative, team spirit, etc.) entrepreneurship should be also included in the curriculum for primary schools. Especially at this level of education it is important to convince schools, teachers and parents that entrepreneurship is a key competence for all, and it does not aim to turn all pupils into businessmen.

B3 The European Commission should support curricular reforms to be undertaken at national level and facilitate comparative analysis, through a range of instruments going from the coordination of the implementation of the Lisbon strategy to facilitating the exchange of good practice.

B4 Support the use of practice-based pedagogical tools whereby students are involved in a concrete enterprise project (for instance in running a mini-company). Embed these activities as a recognised option in official school programmes, particularly at secondary level.

B5 Stimulate - through targeted public funding - the implementation of pilot projects in schools, in order to test different ways of delivering entrepreneurship education. The final goal will be to disseminate resulting good practices widely, and to encourage take up of tested methods by the largest number of schools.

B6 Ensure sustained funding/support for entrepreneurship education activities, and for the implementation of concrete enterprise projects in school. The termination of short-term project funding or the changing of funding mechanisms creates fragility to sustainable provision, unless this can become embedded within a coherent strategy.

B7 Grant public funding for the establishment of Entrepreneurship Centres at universities and the creation of a network between them. These Centres would have the missions - among others - of: spreading entrepreneurship across different fields of studies within the institution; fostering the commercialisation of research and the exploitation of new business ideas; building links with businesses; etc.

B8 Build common European and national platforms of existing programmes, projects and teaching material, in order to help sharing and dissemination. Such platforms will greatly support practitioners in improving the offer of entrepreneurship education.

B9 Develop research to assess the impact of entrepreneurship education on individuals, communities, society and the economy. The possibility of tracking alumni will be an essential success factor. (*The Oslo Agenda for Entrepreneurship Education in Europe*, pg. 2)

C Support to Teachers and Educators

C1 Providing specific training to teachers in entrepreneurship is a policy issue, and should be attached to the national curriculum reforms. The educational authorities should talk to teachers in their own language, explaining why entrepreneurship is a key competence for all and how related methods and activities can bring more dynamism and innovation into different courses.

C2 Adopt innovative methods to train teachers in entrepreneurship. These would include case studies and other inter-active methods, such as involving teachers in real work on enterprise projects or even in running themselves a mini-company. By acquiring direct experience, teachers will be more effective when using these methods with the students.

C3 Set-up incentives at school level to enable teachers to teach entrepreneurship, for instance by means of setting up staff development funds, and by recognising and rewarding the involvement of teachers in activities that require an innovative pedagogy and very often also an extraordinary effort from them.

C4 Launch innovative actions for training teachers on entrepreneurship, with a European dimension, to be supported under the Community Lifelong Learning Programme.

C5 Support the mobility of educators across Europe, particularly in higher education, through the Community Lifelong Learning Programme and/or other instruments specifically designed for that purpose. Greater mobility and exchange of experience is needed in Europe, not only between universities but also

between academia and the business world. Programmes need to be developed that allow educators to spend time at other institutions and/or in the private sector to truly engage, learn and develop. Europe needs greater sharing of knowledge and good practice across sectors and national borders. (***The Oslo Agenda for Entrepreneurship Education in Europe***, pg. 2)

D Entrepreneurship activities in Schools and in Higher Education

D1 Embed elements of entrepreneurial behaviour (curiosity, creativity, autonomy, initiative, team spirit) already in primary school education. To this end, use games, cartoons and other tools appropriate to the age of pupils.

D2 Starting from primary school, raise awareness in young children of the role of enterprises and entrepreneurs in society. Emphasising the notion of "responsible entrepreneurship" will help to make an entrepreneurial career a more attractive proposition.

D3 Disseminate within schools a book with success stories of young entrepreneurs, in order to improve the image of entrepreneurs as role models for young people.

D4 Introduce innovative pedagogies into all courses, as a necessary basis for building an entrepreneurial spirit. Extend the range of pedagogies in use through innovative curricula development. School education should build upon the curiosity and the natural entrepreneurial ability of children.

D5 As part of the final evaluation of a programme or course in entrepreneurship, test the entrepreneurial competences of students and offer them a certificate ("entrepreneurial driving licence") acknowledging the acquisition of those skills.

D6 Associate students to real companies and to business people, in order to ensure a close relation with real business experience. Students should not be kept in isolation and far from the world outside the school, for instance when running a virtual firm or simulating a business plan.

D7 Allow and support the spontaneous initiative of student associations pursuing objectives such as creating links with businesses, and involving students in work on enterprise projects. Recognise and reward the time that students dedicate to these activities by means of educational credits.

D8 Engage alumni in the activities of the school/university and in the classroom (for instance, alumni who started a company).

D9 Offer entrepreneurship education to disadvantaged groups. In particular, young people at risk of social exclusion (low-income youth, school dropouts, adolescents in danger of long-term unemployment, refugees, etc.) may greatly benefit from this type of training. It can raise the motivation of those who learn best by doing, and who have difficulties in more traditional subjects. Some programmes addressing these target groups proved very successful both in terms of startups and of social integration.

D10 Higher education establishments should integrate entrepreneurship across different subjects of their study programmes, as it may add value to all degree courses (e.g. technical and scientific studies, but also humanities and creative studies). All faculties/disciplines should develop opportunities for students at every level to experience entrepreneurship

D11 In higher education, bring entrepreneurs into the classroom and involve students directly in enterprise projects. Using active learning methods is more complex than traditional teaching methods. It requires engaging students' feelings and emotions in the learning process. Educators/facilitators therefore

must be able to create an open environment in which students develop the necessary confidence to take risks.

D12 Increase the production of European case studies to be used in the classroom in higher education. Group work on concrete cases is an effective method, as it improves the understanding of real issues related to entrepreneurship and engages students in finding solutions to real problems. To be most effective, case studies used should have a European and local dimension, rather than being imported from the US.

D13 Give entrepreneurship more academic esteem: establish good research programmes and PhD programmes on entrepreneurship, in order to create a "critical mass" of future teachers with this specific competence;

D14 Encourage students, graduates and researchers with commercially viable business ideas to develop them into companies, by providing a range of support services within the institution (incubators, financing, mentorship, etc.).

D15 Embed evaluation systematically into all programmes. The most effective evaluation is independent and comparative (i.e. it should be run before the beginning of the programme and after its conclusion). (*The Oslo Agenda for Entrepreneurship Education in Europe*, pg. 3)

E Building links and opening education to the outside world

E1 Encourage the creation of learning communities with the mission of fostering entrepreneurial mindsets, by building links between the public and the private sector, involving schools, academia and businesses, as well as relevant intermediary organisations. In particular, the role of those intermediary organisations dedicated to the dissemination of entrepreneurship activities within schools and universities, and to building links between education and the business world, should be better recognised.

E2 Encourage the involvement of private partners in education for entrepreneurship, through funding or contributions in kind. This involvement should be seen by firms as a long-term investment, and as an aspect of their corporate social responsibility.

E3 Businesses should consider donating at least a tiny part of the working time of staff to participation in activities within schools and universities. In fact, mentoring and coaching from people with business experience are a basic element in all entrepreneurship training.

E4 Develop or support research on how employers can be better engaged in school/university education. The business community needs incentives to more fully engage with educational institutions. Opportunities for mutual benefit can work, but are often not recognised as verifiable and appropriate staff activities.

E5 Help develop the pedagogical abilities of entrepreneurs and business people, in order to make their participation to activities in the classroom more effective. This task could be usefully performed by those non-profit organisations dedicated to linking schools and businesses, and by business organisations.

E6 Conceive, develop and promote a label for "entrepreneurial schools" and "entrepreneurial universities", to be used by educational institutions on a voluntary basis. Broad criteria could be defined at European and/or national level, which should be in any case adapted to the local environments and education systems. This initiative could be implemented at national level by intermediary organisations

with in-depth experience in entrepreneurship education, through cooperation with educational authorities and with schools/universities.

E7 Give young people the opportunity to develop their enterprising skills by helping them to create their own "summer job", and earn money by using their own ideas and initiatives. These activities can be promoted through cooperation between schools, non-profit organisations, businesses, local authorities.

E8 Build Entrepreneurship Centres at a local level, with the missions of assisting schools and teachers, developing links between educational establishments and enterprises, facilitating the participation of entrepreneurs and business people in programmes at school and university, promoting raising awareness initiatives in the local community. (*The Oslo Agenda for Entrepreneurship Education in Europe, pg. 4*)

F Communication activities

F1 Launch awareness campaigns at European and national level, ensuring that entrepreneurship is understood in its broader sense (not just about running a business). Broad initiatives could bring together and coordinate different actions to take place at national and local level (e.g., entrepreneurship days, or a European Year of Entrepreneurship).

F2 Celebrate entrepreneurship education activities and programmes that work well, by organising awards and competitions.

F3 Establish awards, at European and/or at national level, to acknowledge enterprises that distinguish themselves more in dedicating funds and working time of their staff to teaching, mentoring and more generally to participation in activities within schools and higher education. (*The Oslo Agenda for Entrepreneurship Education in Europe, pg. 4*)

1. Tackling Campus-Level Obstacles to Innovation

a. Faculty should not be viewed as enemies of reform, but as enablers of innovation. One strategy for making this happen is for campuses to create research funds targeted at innovative teaching models, then ask faculty to compete for research grants. Teamteaching should also be encouraged to avoid the "siloeing" of faculty. In addition, certain faculty roles, such as developing curriculum and developing testing instruments, should be unbundled to reduce redundancy and allow more effective specialization.

b. To allow for innovation to be accepted more readily, changes in curriculum and program should become a routine part of campus culture. At the same time, campus-level change will be easier if institutions work in coalitions rather than in isolation.

c. State policymakers could give colleges incentives to innovate by, for example, offering higher levels of funding to institutions with better student outcomes (and, presumably, more effective curriculum and teaching). This, in turn, will require better measures of what happens to students after graduation.

2. Rethinking Accreditation

a. There was no consensus on the elimination of accreditation called for by some participants. However, there was general agreement that accreditation should focus much less on inputs, such as the requirement that professors in many courses hold PhDs, and more on outcome measures such as student performance and loan default rates. This would foster innovation: for example, new entrants could

post a surety bond until they graduated their first cohort of students, after which they could receive accreditation and federal funds based on outcomes.

b. Accreditation should follow the “do no harm” principle, with the fewest possible restrictions on new and existing providers. Accreditation could take place at the course level, or accreditors could require that course delivery and student assessment be separated entirely. Seat time should no longer be required for a program of study to be considered legitimate by accreditors. Indeed, online learning should be largely deregulated so long as minimum course level outcomes are specified. Accreditors should require that completed course credits be transferable to other postsecondary institutions.

c. All six regional accreditors should have the same rules and procedures. At the same time, some independently administered oversight bodies may emerge to award certificates for certain programs, sidestepping the existing accreditation system entirely.

d. Federal aid and loans should be unbundled from the regional accreditation system.

3. Streamlining State and Federal Regulations

a. State and federal regulations should be focused above all on helping students, not protecting the interests of existing institutions.

b. States should relax existing rules to make it easier to start charter colleges, including community colleges. Like charter schools in the K-12 sector, charter colleges would be given great flexibility in exchange for improving student outcomes.

c. Rules governing federal loans and grants can be used much more effectively to influence policy outcomes. Pell grants for low-income students should be staggered, providing fewer dollars up front and more as students advance toward degree completion. Colleges’ and universities’ eligibility for enrolling students who receive federal loans should be tied to bringing down costs. The government also should leverage its role as a lender to inform students about the seriousness of taking on loan obligations.

4. Improving Incentives to Boost Academic Productivity

a. Research universities should revisit the common breakdown of faculty time, rethinking the research/teaching/service balance on a case-by-case basis. Professors whose time would be more productively spent in the classroom than conducting research could be given financial incentives to teach extra courses.

b. More efforts should be made to share journals and other library resources across institutions. This will require an acceleration of the initiatives that already have been launched by university libraries and others to create consortia that share research resources and to bring all academic journals online.

c. Universities should continue to explore new pedagogies driven by technology. In some cases, these permit teaching and learning to take place at a scale where low marginal costs could dramatically drive down tuition. In others, innovative instructional models should be pursued simply because of the promise they hold to improve how, and how much, students learn.

5. Filling Information Gaps about Student-Learning and JobMarket Outcomes

a. Better metrics to measure the effectiveness of colleges and universities are vital. Prospective students need to know more about which institutions do a better job teaching their students and preparing them for the job market. Policymakers don’t know very much about which colleges and universities offer the best

value to the taxpayers who typically support most of their operations. All states should immediately provide information on labor-market outcomes by creating “unit record” data that links information on individual students’ college experience to how they fare in the job market.

b. Before starting college, students should be required to sign a “truth in enrollment” form, akin to the truth-in-lending statements required for home purchases, stipulating that they have received information about the institution’s costs, completion rates, graduates’ employment rates, and graduates’ salary information by major.

c. While precise measures of student learning outcomes remain a work in progress, all states should require colleges and universities to assess student learning and release the information publicly. In time, this will give institutions an incentive to develop more effective learning measures, which in turn will provide the information needed to gauge the relatively pedagogical success of different colleges and universities.

6. Overcoming Barriers to Taking Innovative Models to Scale

a. The transparency measures called for in previous sections will be essential for spreading the most promising new ventures and practices. Clear and easily accessible information about prices and student outcomes, both in the classroom and in the labor market, will introduce greater competition in the higher education sector. More competition, in turn, should create more opportunities for new entrants to introduce new models and take the most successful ones to scale.

b. With more such measures available, public dollars at the state and federal levels should be allocated on the basis of outcomes rather than through the use of formulas that rely heavily on input measures such as classroom enrollment.

c. The U.S. Department of Education should create a new “innovation demonstration program” that allows a designated group of new postsecondary providers to award certificates and degrees even if those institutions are not already accredited. (***College 2.0: An Entrepreneurial Approach to Reforming Higher Education: Overcoming Barriers and Fostering Innovation, pg. 4***)

This report provides a set of recommendations that Education Institutions could take into account in order to improve and develop the provision of entrepreneurship education and training.

- Creating a policy on entrepreneurship education is a must when Education Institutions want to shift to entrepreneurial institutions.
- Every EIs which focus on being entrepreneurial should find the resources to create an entrepreneurship department and appoint change agents that can act as spokesmen/advocates at the management level.
- Encourage staff members to get involved in the entrepreneurial activities by offering incentives and create value for students through the activities provided.
- For a better quality of the entrepreneurship provision, the academic staff should have more possibilities to improve their skills and competence in the field of entrepreneurship education and training.
- Lecturers/academic staff should be offered incentives for their accomplishments in the field of entrepreneurship since there is a huge need that people get involved and stay motivated.
- EIs should focus on exchange programmes for entrepreneurship lecturers across Europe, so they can develop their competences and acquire best practices.

- Entrepreneurship degree constitutes an important tool for entrepreneurial institutions. Where the degree is not offered it should be taken into account and act towards offering one.
- Increasing the number of entrepreneurship courses in the curriculum should be taken in consideration.
- Entrepreneurship courses credited to students' degrees should increase so the recognition becomes much easier.
- Explore the possibilities of offering more degree programmes in entrepreneurship in a way that students are offered continuity.
- Every EIs should focus on embedding the entrepreneurship education across all study discipline.
- In order to increase the number of start-ups, students should have access to more incubator facilities and guidance from mentors so that they can start an entrepreneurial career.
- The creation of a real connection between the courses/activities to the business environment
- The real effect of the entrepreneurship education will be perceived when the creation of new business will increase or the existing business will grow through the use of newly trained entrepreneurs.

(Survey of Entrepreneurship in Education in Europe, pg. 42)

Recommendation 1: The need for continuation of support to the development of information and data on entrepreneurship education given even greater international and EU policy emphasis on entrepreneurship as a driver of economic growth and social cohesion;

Recommendation 2: The need for coordination to identify a common cross-national monitoring framework for entrepreneurship education given that substantial gaps in both information and data remain at EU level – and despite a surge in entrepreneurial education activity amongst Member States;

Recommendation 3: That DG Education and Culture and DG Enterprise and Industry continue their fruitful joint activity on entrepreneurship education by seeking to establish an EU platform for Member States and experts in the field to take forward the development of a common cross-national monitoring framework on entrepreneurship education;

Recommendation 4: That work to develop a common monitoring framework should take note of:

- The need for a distinct EU approach to indicator and framework definition (notwithstanding any international developments) given the EU position that understands entrepreneurship as a key competence for everyone (whether that be in their lives at home, in the workplace or in society);
- That whilst no comprehensive monitoring framework is evident within EU, that a skeleton framework may be discerned through a common set of indicators utilised by Member States and as set out initially in this Report;
- That systematic data collection in Member States is very limited on indicators of inputs and operations / activities of entrepreneurship education;
- That monitoring of entrepreneurship as a key competence will require both 'hard' and 'soft' outcomes to be measured;
- That international surveys already in situ – namely Global Entrepreneurship Monitor (GEM) and EU Flash Barometer – and national labour force statistics provide a strong basis as robust, comprehensive data sources for a number of the highest level and most credible common outcome and impact indicators; and,
- That thought be given to the potential to incorporate a longitudinal dimension within any developments of a cross-national monitoring framework as the basis for developing greater

understanding of the individual and societal outcomes and impacts of entrepreneurship education.

(Order 121 - Study on Support to Indicators on Entrepreneurship Education, pg. 52)

Embedding entrepreneurship into the formal educational system at all levels requires a strong commitment from the government in terms of policy and resources, since most schools, universities and training programmes are overseen by the government. It is never too early to start exposing students to business and entrepreneurship. Perceptions and attitudes about entrepreneurship start at a young age. By the time students reach secondary and higher education it can be “too late”, particularly if they do not pursue further education or if they have developed some negative perceptions about entrepreneurship. Entrepreneurial learning should be integrated into the curriculum, rather than only being offered as standalone courses, in order to change the mindset among students. For example, in 2007, Nigeria included entrepreneurial skills in the new basic education curriculum for its primary and secondary schools. **(Entrepreneurship education, innovation and capacity-building in developing countries, pg. 8)**

More effective measurement and evaluation of the long-term impact of entrepreneurship education programmes on economic growth and job creation is needed. These should be based on a broadly defined set of outcomes, not only on narrow measures such as the number of start-ups created. For comparable data across countries, there needs to be agreement on the definition of entrepreneurial education and on the scope of what should be measured, and agreement on the process of data collection and on coordinating mechanisms.

Reinforcing the role of STI in entrepreneurship education is only part of the task. Assessing students' learning habits and using real-world case references that are relevant to their immediate environment could help to improve the understanding and application of any acquired knowledge. Academic learning may be complemented by practical training outside schools. Productive cooperation between schools and firms and their business associations, with the positive policy support of government, greatly enhances the potential for success in reinforcing STI in primary and secondary education curriculums.

STI human capacity development policy needs to fully embrace a lifelong learning philosophy. This is an imperative in today's fast-paced economy, which is subject to a swift rate of technological change and requires continuous foresight and enhancement of human capital. However, in order to develop a lifelong learning ability, investment is needed in the development of skills such as learning to learn, advanced literacy, mathematics and ICTs. This would not only require adapting curriculums, but also evolving teaching and learning skills so that they become self-sustaining even after formal education and training.

Enabling legislation, and in particular incentives and other instruments that promote greater interaction and mobility between public and private academic and R&D institutions, and between those and the productive sectors, can help increase coherence between the activities of the education and research base and national development needs. Demand driven education models can develop strategic collaboration between educators and employers to produce human capital that is relevant to growing sectors and trade opportunities. Private sector involvement should extend to funding joint/partnership activities promoting scientific and technology curriculums in education and training.

Government should play a leading role in developing reforms in STI education that need to feed back into curriculum development, including through the better use of information technologies. Educational institutions that adopt a systems approach to reforming their STI faculties should have priority in STI funding.

As scientific and R&D institutions in developing countries are facing growing competition from developed countries, policies aimed at improving linkages, both locally and globally, are needed to improve human capital retention. Interactions between universities, research centres and private sector firms can be supported by increasing the mobility of researchers and academics between universities and firms, and encouraging greater involvement by firms in the development of STI education strategies and planning for STI human capacity development.

Developing-country firms and entrepreneurs need to be aware that the ability to absorb technologies, and use to these to their competitive advantage, will determine their commercial success and mark their contribution to national economic development. Therefore, STI policy needs to review the effectiveness of incentives for acquiring scientific and technological knowledge. Access to technology and knowledge in the public domain or under public licence needs to be addressed as a singular issue. (***Entrepreneurship education, innovation and capacity-building in developing countries, pg. 20***)