

GUIDELINES TO SET UP ENTREPRENEURSHIP EDUCATION CENTRES IN COLLEGES, UNIVERSITIES AND INSTITUTES OF HIGHER EDUCATION

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TABLE OF CONTENTS

INTRODUCTION

The importance of education for entrepreneurship

Objectives and methodology

An overview of the current situation

ABOUT PROGRAMMES AND ACTIVITIES

What is entrepreneurship in Higher Education?

What to teach?

How to teach?

About educators, and the role of business practitioners in the teaching

Cooperation and mobility between Higher Education Institutions and Enterprises

Supporting students' business ideas

Criteria for good practice in delivering entrepreneurship education

OBSTACLES AND FACTORS OF SUCCESS

HOW TO MOVE FORWARD: A STRATEGY FOR ENTREPRENEURSHIP EDUCATION

Evaluating quality, effectiveness and impact

Evaluating the impact

Levels of responsibility: designing a coherent strategy

THE ROLE OF POLICY

The role of higher education institutions, and of educators

The role of other players, particularly businesses

Concluding Remarks

FINAL RECOMMENDATIONS FOR ACTION

EXECUTIVE SUMMARY

INDIA needs to stimulate the entrepreneurial mindsets of young people, encourage innovative business start-ups, and foster a culture that is friendlier to entrepreneurship and to the growth of Small and Medium-sized Enterprises (SMEs). The important role of education in promoting more entrepreneurial attitudes and behaviours is now widely recognised. However, the benefits of entrepreneurship education are not limited to start-ups, innovative ventures and new jobs. Entrepreneurship refers to an individual's ability to turn ideas into action and is therefore a key competence for all, helping young people to be more creative and self-confident in whatever they undertake.

The process can have a positive effect on the way entrepreneurial knowledge is spread. I.N.D.I.A. TRUST recommends such measures as the recognition of non-formal learning, the development of flexible curricula to accommodate student and staff mobility, and enhanced university-employer collaboration in innovation and knowledge transfer. At higher education level, the primary purpose of entrepreneurship education should be to develop entrepreneurial capacities and mindsets. In this context, entrepreneurship education programmes can have different objectives, such as:

- a) developing entrepreneurial drive among students (raising awareness and motivation);
- b) training students in the skills they need to set up a business and manage its growth;
- c) developing the entrepreneurial ability to identify and exploit opportunities.

Graduates' start-up is one of a range of possible outcomes.

Currently the teaching of entrepreneurship is not yet sufficiently integrated in higher education institutions' curricula. Available data show that the majority of entrepreneurship courses are offered in business and economic studies. The diffusion of entrepreneurship is particularly weak among science students.

However, it is questionable whether Business Schools are the most appropriate place to teach entrepreneurship: innovative and viable business ideas are more likely to arise from technical, scientific and creative studies. So the real challenge is to build inter-disciplinary approaches, making entrepreneurship education accessible to all students, 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.

The demand for learning about entrepreneurship is increasing. However, 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.

There are currently too few professors of entrepreneurship. There is a need to graduate enough PhD students in entrepreneurship who can become teachers. Moreover, there is very little in terms of incentives to motivate and reward teachers for getting involved in entrepreneurial teaching and interaction with students. It is currently difficult to build a career in entrepreneurship, as research remains the main promotion criterion.

Developing and delivering entrepreneurship is significantly affected by the internal organisational structure of an institution. Faculties and departments tend to work quite separately, with 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 inter-disciplinary approaches.

In terms of specific contents, 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 best way to encourage entrepreneurship among students is by giving examples from the relevant technical area.

As regards current teaching methods, there are a wide range of techniques to supplement lectures as the most basic teaching tool. However, there seems to be a gap between the methods actually used and those that are viewed as the most effective and appropriate. Using experience-based teaching methods is crucial to developing entrepreneurial skills and abilities. Traditional educational methods (like lectures) do not correlate well with the development of entrepreneurial thinking.

There is a need for more interactive learning approaches, where the teacher becomes more of a moderator than a lecturer. Crossing boundaries between disciplines, and multidisciplinary collaboration, are essential elements in building enterprising abilities. Getting real entrepreneurs involved in the teaching can make up for the current lack of practical experience among professors. 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 come to give short presentations to students (e.g. as personal testimonials or guest lecturer) or as judges in competitions. Higher education institutions are not sufficiently involved and effective in working with alumni who have been successful in their entrepreneurial endeavours, and who could bring back knowledge and funds.

Also, mobility of teachers and researchers between higher education institutions and business is in general very low, and this practice is not actively encouraged. There are in many cases few or no incentives, and in some cases outright disincentives. For instance, lecturers may be banned from engaging in external commercial activities. The strength that gives higher education institutions an innovative capacity, and hence entrepreneurial potential, is their autonomy. While diversity is richness, institutions and educators will gain from exchanges and mutual

learning, open sources of information, examples of good practice across our country. Coordination is needed at a policy level to ensure that all higher education institutions are given the necessary incentives and opportunities to take on this challenge.

This Report does not aim to prescribe a single strategy, which would be unrealistic. Its goal is rather to highlight key issues, to identify existing obstacles and to propose a range of solutions, taking into account the different levels of responsibility (public policy, institutions and educators, relevant stakeholders).

For instance, it is proposed that Authorities might:

- set up a task force (including the Ministry of Education and other ministerial departments: Economy; Employment; Science and Research) to determine how entrepreneurship can be integrated into primary, secondary, and higher education;
- adopt legislation supporting relations between private business and universities, including allowing professors to work part-time with business;
- help develop an accreditation system to validate non-formal learning and practical activities that favour entrepreneurship development;
- establish awards for entrepreneurial universities, teachers and students, and promote positive examples of academic spin-offs.

At their level of responsibility, higher education institutions could:

- set up a strategy and an action plan for teaching and research in entrepreneurship, embedding practice-based activities, and for new venture start-ups and spin-offs;
- create an entrepreneurship education department, which would serve as an entrepreneurial hub within the institution and spread the teaching of entrepreneurship across all other departments;
- offer an introduction to entrepreneurship and self-employment to all undergraduate students during their first year. In addition, give all students the opportunity to attend seminars and lectures in this subject;
- set up incentive systems to motivate and reward faculty staff in supporting students interested in entrepreneurship, and acknowledge the academic value of research and activities in the entrepreneurial field;
- develop clear institutional rules about intellectual property;
- award academic credits for practical work on enterprise projects outside the established courses.

Finally, as regards other actors who need to be involved:

- Business associations could help to get their members more involved in teaching entrepreneurship at educational establishments.
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INTRODUCTION

The importance of education for entrepreneurship:

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 provides a foundation for entrepreneurs establishing a social or commercial activity.

If it is to make a success of the strategy for growth and employment, INDIA needs to stimulate the entrepreneurial mindsets of young people, encourage innovative business start-ups, and foster a culture that is friendlier to entrepreneurship and to the growth of small and medium-sized businesses. The important role of education in promoting more entrepreneurial attitudes and behaviours, starting even at primary school, is now widely recognised.

I.N.D.I.A. TRUST underlines the need for an overall positive entrepreneurial climate and for framework conditions that facilitate and encourage entrepreneurship, and invited Member Institutions to introduce stronger measures, including entrepreneurship education.

Entrepreneurship education should not be confused with general business and economic studies; its goal is to promote creativity, innovation and self-employment, and may include the following elements:

- developing personal attributes and skills that form the basis of an entrepreneurial mindset and behaviour (creativity, sense of initiative, risk-taking, autonomy, self-confidence, leadership, team spirit, etc.);
- raising the awareness of students about self-employment and entrepreneurship as possible career options;
- working on concrete enterprise projects and activities;
- providing specific business skills and knowledge of how to start a company and run it successfully.

Entrepreneurial programmes and modules offer students the tools to think creatively, be an effective problem solver, analyse a business idea objectively, and communicate, network, lead, and evaluate any given project. Students feel more confident about setting up their own business as they can now test their own business ideas in an educational, supportive environment.

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

We recommend Key Competencies for Lifelong Learning. This identifies the “sense of initiative and entrepreneurship” as one of eight key competences that should be put across at all stages of education and training.

Previous analysis carried out by us — in cooperation with national authorities — shows that although numerous initiatives on entrepreneurship education are under way at all levels across our country, most of them are neither integrated into the curriculum nor form part of a coherent framework, and that as a result most students — at school and university — have no possibility as yet of taking part in entrepreneurship courses and programmes.

Higher education is not isolated from previous levels of educations. It should reflect what is done at school. Entrepreneurship is a combination of mindsets, knowledge and skills. As mindsets take shape at an early age, entrepreneurship is something that should be fostered already at school.

Higher education is normally highly decentralised, but there are examples of public policy driving entrepreneurship, for instance based on cooperation between public administrations and universities. Universities and technical institutions (e.g. polytechnics) should integrate entrepreneurship as an important part of the curriculum, spread across different subjects, and require or encourage students to take entrepreneurship courses.

Special attention should be paid to systematically integrating entrepreneurship training into scientific and technical studies and within technical institutions, to facilitate spin-offs and innovative start-ups, and to help researchers acquire entrepreneurial skills. There needs to be more focus on developing the skills necessary for fully exploiting innovation and knowledge transfer activities in combination with the commercialisation of new technologies.

Academic spin-offs are increasingly seen as important means of enhancing local economic development. However, in their new roles, scientists and universities must build business and managerial competencies.

More generally, students in all fields, including Humanities, Arts and Creative studies, may greatly benefit from learning about — and gaining experience of — entrepreneurship. In fact, entrepreneurial mindsets, knowledge and abilities will be of benefit to young people in all walks of life and in a variety of jobs.

At higher education level, the primary purpose of entrepreneurship education should be to develop entrepreneurial capacities and mindsets. The way to success is to teach students about new sources of self-employment and convince them that being a businessman or woman is one way of entering the labour market. Start-up is therefore one of a range of possible outcomes. Historically, entrepreneurship has been associated with small businesses and hence viewed as a less attractive career option for dynamic university graduates. A shift in attitudes among students can be fostered by introducing and promoting the dynamic, innovative and ambitious face of entrepreneurship.

Our educational technology can have a positive effect on the way entrepreneurial knowledge is spread; the result is that it is possible to compare the content of training and it becomes more straight forward for training to be recognised throughout nation. It is much easier for students and professors to travel and to forge national contacts. The system makes it possible for young citizens to study or to make use of their qualifications, in particular those skills they have acquired during their entrepreneurship training, as employees or entrepreneurs in their career without restriction.

I.N.D.I.A. TRUST urges higher education institutions to develop partnerships and cooperation with employers in the ongoing process of curriculum innovation based on learning outcomes. They also recommended such measures as the recognition of non-formal learning, the development of flexible curricula to accommodate student and staff mobility, and enhanced university-employer collaboration in innovation and knowledge transfer.

Our universities do not enjoy equal degrees of autonomy; the framework conditions therefore vary. It is for higher education institutions to determine the best ways forward, in the light of their degrees of autonomy, missions and contexts. It is not realistic to prescribe a unique strategy. On the other hand, guidelines and indications of good practice may be very helpful.

OBJECTIVES AND METHODOLOGY

I.N.D.I.A. TRUST looked at programmes and activities aimed at fostering entrepreneurial mindsets, attitudes and skills among young people and available to higher education students at different levels, i.e. undergraduate, graduate and postgraduate, and in all fields of study.

Other possible targets of entrepreneurship training programmes (entrepreneurs, company executives, secondary school teachers, etc.) are not considered. More specifically, the main objectives of this project were:

- to identify strengths and weaknesses in Indian higher education institutions, as regards offering entrepreneurship teaching;
- to investigate the most common teaching methods currently in use, and identify best practice in delivering entrepreneurship education at this level;
- to explore in depth issues related to the teaching of entrepreneurship in different fields of study;
- to evaluate how entrepreneurship education could best contribute to new start-ups and to the exploitation of business ideas;
- to gather information on existing good practice and provide concrete examples;
- to identify factors of success and main obstacles;
- to promote the exchange of experiences;

- to highlight the role of public policies and identify relevant support measures;
- to draw main conclusions and recommendations for policy action.

The tasks at hand are: to bring together the necessary expertise; to provide information and data on existing programmes; to ensure cooperation with and the active involvement of the national administrations in the participating universities, colleges in higher education institutions, both in quantitative terms (e.g. number of courses, professors and students, etc.) and in qualitative terms (teaching tools used). This survey will address entrepreneurship teaching in all types of institutions and courses (in both business and non business studies)

AN OVERVIEW OF THE CURRENT SITUATION

In many colleges entrepreneurship in non-business studies is a very new issue. In general terms, entrepreneurship is not yet sufficiently integrated into the curriculum of higher education institutions. The situation seems to be more positive in only few colleges.

Some Observations:

Generally speaking, there is a lack of entrepreneurship courses and teaching for non-business students in higher education. Entrepreneurship is still mostly taught within economic studies, and to some extent engineering studies. A notable initiative is an introductory course on entrepreneurship, which is organised by some universities and aims to raise awareness of entrepreneurship and self-employment. It is addressed to graduate students from all sections (business and non-business) and to researchers. The initiative has met with mild interest. Many deans of “hard-science faculties” have not included it in their programmes.

There is no generally accepted system of entrepreneurship teaching. Education in entrepreneurship is running at some universities, more or less on the basis of individual approaches. Entrepreneurship teaching within technical studies is mostly limited to selected courses generally related to economics or business. In some cases the technology transfer offices of large universities are offering selected practice-oriented courses on entrepreneurship to young researchers interested in marketing their knowledge.

Entrepreneurship learning initiatives have been growing in demand and popularity in recent years in some states, and many higher education institutions are now delivering specific modules in entrepreneurship and other innovative enterprise subjects, such as new venture creation and enterprise development. These programmes are not only being delivered to business faculties, but more recently there has been an increase in the demand for and interest in entrepreneurship from faculties such as Engineering, Science, and Arts. Incorporated into many of these modules are the practical elements of new venture creation, offering students the opportunity to create business plans and work in conjunction with prominent entrepreneurs, both national and international.

Suggestions:

Any overview of the situation needs to consider separately the two key components of higher education in our country. At university, the situation is changing for the better in scientific higher education, but things are moving more slowly in other non-economic disciplines. Two specific initiatives can be quoted: The creation of Entrepreneurship development schools within universities with entrepreneurial teaching; and the “house of entrepreneurs” in a few universities, offering entrepreneurial courses to students. As regards professors, initiatives have to be taken to develop exchange, training and research activities.

Pedagogical experiences and tools in entrepreneurship are collected and disseminated through a national database. The government should currently work on new initiatives to develop entrepreneurship values and initiatives within the student community.

ABOUT PROGRAMMES AND ACTIVITIES

What is entrepreneurship in Higher Education?

A general definition of entrepreneurship education is provided. In higher education the primary purpose should be to develop entrepreneurial capacities and mindsets.

Entrepreneurship education programmes can have different objectives, such as:

- developing entrepreneurial drive among students (raising awareness and motivation);
- training students in what is needed to set up a business, and to manage its growth;
- developing the entrepreneurial abilities needed to identify and exploit business opportunities.

The purpose of the course/programme should be precisely defined, as should its expected outcome(s). While the creation of graduate start-ups is therefore a desirable outcome, it should not be forgotten that entrepreneurship is also (and equally) about successfully managing innovation and growth. In existing business and entrepreneurship programmes very often only the start-up aspect is considered, while the skills and knowledge needed to manage the growth phase of a small business are neglected. In this sense, there is in general terms a need for a shift in the focus of entrepreneurship education programmes and courses.

A perceived lack of relevant experience and a lack of self-confidence are two often cited reasons for new graduates not engaging in entrepreneurship soon after graduation. The university experience should be capable of addressing both these needs. The learning experience needs to build depth and breadth in awareness, understanding and capacity. Although not applicable in all cases, the general approach would be to provide broad exposure and positive and motivational experiences during the early stages of university life.

This then provides a platform from which to build depth and capability in preparation for an entrepreneurial career at the point of exit. The important point here is one of progression, not only through university, but also through the whole education system at all levels.

Integration of entrepreneurship into the curriculum needs to be the vision for a higher education institution as part of its wider mission. Provision should be accessible for Arts and Humanities students as it is for Business/Social Science and Science/Engineering students.

Educators should be comfortable and skilled in addressing a diversity of student groups, from different cultural backgrounds, by providing examples and role models that relate to their contexts. Business ideas may be more likely to originate from technical, scientific and creative studies. 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.

There has been a focus on three aspects of entrepreneurship education:

- **Entrepreneurial motivation:** the question of what motivates individuals; the social and economic importance of commercialising science and technology; the fun aspects of it; through role models, examples and class discussions.
- **Opportunity recognition:** this is a very important aspect of entrepreneurship education as so much is predicated on whether or not people are able to “see” an opportunity that motivates them to pursue it. This is taught through “action learning” methods.
- **Commercialisation:** through a variety of situations and a number of ways to different levels of depth. Lectures from practitioners; business plan competitions; short pieces of course work; small group supervisions etc.

Higher education institutions should offer a range of courses, rather than settling on a particular model of delivery. Especially in the early stages of promoting entrepreneurship education, it is better to have a diverse range of provision: options that students can take, extra-curricular activities, business plan competitions and other activities that have the added advantage of bringing the local business community into the educational environment. ‘Near’ graduates and postgraduates are more likely to be in a position to exploit opportunities for entrepreneurship, whereas new undergraduates may be seeking greater awareness/understanding, ideas, opportunities, motivation, confidence to act and new social networks. The awareness raising could and should target all students, while a selected group will be interested in acquiring those specific skills needed for managing and growing a business.

Therefore within a variety of courses that higher education institutions can offer, including some inter-disciplinary ones, the following main aspects should be covered:

a) generating ideas and recognising opportunities,

b) creating a new venture/organisation,

c) growing a young venture. Certain other aspects can be very important, such as: innovation management; corporate entrepreneurship and *intrapreneurship*; entrepreneurial management; entrepreneurial marketing and finance; corporate succession.

With lifelong learning, it can no longer be taken for granted that students study full-time, or that Master's students are necessarily older than undergraduates, or that Master's courses include content which is not found at other levels. It follows that content and teaching methods should grow out of the needs of specific student groups, rather than follow a prescribed curriculum.

WHAT TO TEACH?

The views of members of the I.N.D.I.A. TRUST Working Group diverged to some extent as to whether the content of teaching should be different for students in business and in non-business studies. Some argue that the content will be similar, but the way of delivering it will be different. There is a general perception that engineering and science students will appreciate a more practical approach, and it is commonly agreed that these students will also need some basic elements of economics, marketing and management techniques. The fact is that the majority of students in non-business studies do not have an extensive knowledge of business subjects.

In dealing with economic subjects and entrepreneurship, the best way of motivating students from other fields is by presenting examples from the relevant technical area. The focus should be on the essential connections and practical aspects, having regard to the particular target group of students.

Non-business students are very good technically, and frequently have very strong product ideas. However, they are weak in the area of commercialisation and marketing. Students from this background therefore require tailored lectures on Intellectual Property, Commercialisation Process, Marketing and Venture Capital. The goal should be that whatever the graduates from technical faculties are working on, they always keep an eye on the entrepreneurial aspects. In fact, most non-business students tend to be product-oriented in their approach to business, and do not understand that no matter how innovative the product, if the market does not demand it there is no sustainable business. This should help to avoid one major mistake of young technical entrepreneurs, to develop the product first and only then look at the market potential.

On the other hand, teaching entrepreneurship for students in the economic and business fields has a much narrower focus, as the other business competence studies are offered separately (marketing, management, etc.). So

entrepreneurship education will stress the startup phase and the growth of an SME. The pedagogy itself should contain entrepreneurial and enterprising experiences and opportunities. Just knowing about entrepreneurship is not an adequate basis for enhancing entrepreneurial behaviours, and for influencing the intentions of young people. What is needed is not just the content or pedagogy, but the whole learning environment.

Most of the Experts agree that objectives, contents and methods of teaching may differ according to the level of education. While with undergraduates the most important thing will be to work generally on students' mindsets and to stimulate interest in self-employment and business creation (awareness and motivation elements), graduate and post-graduate students will need practical tools (such as business plan competitions) and concrete support for their business ideas.

A brief overview of common elements of entrepreneurship education, and of the diverse needs of the different target groups, is provided below. These descriptions, and particularly the typically relevant topics for some specific target groups, should not be considered as in any way exhaustive. The aim is to give a general idea of the contents of entrepreneurship education, given that different types of students may have different needs, while some general features will be the same for everyone.

Some main elements of entrepreneurship education (in different fields of study):

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.

Courses and activities on/about entrepreneurship for all categories of students, in any field of study, provide basic business skills and raise awareness of entrepreneurship as a potential career option. This does not relate only to start-ups, but also includes intrapreneurship and encouraging enterprising individuals across all walks of life.

Most of the possible contents of entrepreneurship courses are relevant for students from all fields of studies. However, in order for the teaching to be tailored to the specific needs of different categories, more emphasis is placed on one aspect or another, for instance:

Entrepreneurship within business schools and economics studies focuses on business start-up and new venture creation, and on the management and growth of SMEs. Students of economics learn to work with students from different fields (engineering, scientific studies, etc). Entrepreneurship within science and technology studies is especially concerned with exploiting intellectual property, creating spin-off companies and venturing, and offers courses on issues such as:

- management techniques;
- marketing, commercialising and selling of technology based ideas;
- patenting and protecting technology based ideas;
- financing and internationalising high-tech ventures.

For students in humanities, the focus will be on self-management and on social entrepreneurship, which is an emerging area of growth and provides opportunities to make a difference to social and community contexts. Entrepreneurship for the creative arts and design focuses on opportunities emerging through creativity and creative working, preparing graduates to work as freelancers or self-employed people, or creating small enterprises and ventures. It follows that in humanities and in creative studies alike, the following topics are particularly relevant:

- **social entrepreneurship;**
- **self-management;**
- **user-driven innovation;**
- **part-time and freelance entrepreneurship.**

HOW TO TEACH?

It is important that the purpose of the course/programme is precisely defined, and that it is geared to the expected outcomes. In other words, defining precise objectives for the course, programme or activity will influence the choice of appropriate teaching methods and tools, and will make it easier to measure the outcomes in relation to the objectives.

I.N.D.I.A. TRUST has produced a template with the objective of linking the desired entrepreneurial behaviours and skills to be acquired by students (outcomes of education) to the appropriate pedagogies to be used in order to

reach the expected result. This template matches 11 skills (and behaviours), with 31 different pedagogies, showing the possible relations between them.

Across higher education institutions a wide range of methodologies exist, supplementing lectures as the most basic tool of teaching. However, there seems to be some gap between methods applied and those that are viewed as the most effective and appropriate. In particular, there should be stronger involvement of businesses and entrepreneurs, and a broader application of methods based on case studies and on concrete projects.

Innovation and effectiveness stem primarily from action-oriented and student-inclusive teaching forms, teaching students “how to” so that they can understand the more theoretical aspects more easily, involving students heavily and actively in the learning process, and involving “outsiders” in the learning process. The people doing the teaching should be to some extent entrepreneurs themselves, building their input on real-life experience. Crossing the boundary of the university and the world outside is one of the reasons why such teaching is often experienced by the students as very different from the traditional teaching experience in higher education.

Experts were asked to highlight which teaching tools/methods, according to their own knowledge and experience, educators find most appropriate or effective in delivering entrepreneurship programmes and courses, in particular to non-business students. The results of this enquiry indicate a clear preference for methods based on “group and team techniques for creating new business ideas” and for the use of “case studies”. Following these two main categories, other tools highlighted as particularly effective were “business planning workshops” (which partly overlap with the first category proposed, confirming the preference for group and brainstorming techniques and for breeding new ideas), “inviting guest speakers” (namely entrepreneurs) and “business simulations”.

Also, methods based on undertaking some practical entrepreneurial activity and creativity exercises leading to the development of ideas were among other tools whose effectiveness was underlined. Experts emphasised the importance of crossing boundaries between disciplines, and of working in teams. Whatever the level of students, a powerful way of teaching entrepreneurship is to mix business and non-business students. This is always valued by the participants, who consider that they learn from each other and discover new ways of thinking.

Business plan activities should be based on real business ideas. Case studies to be used should be “live”, e.g. they refer to existing companies, and should be also local. Selected case studies should preferably provide students with role models they can easily identify with. Interestingly, traditional lectures were hardly mentioned by the experts as effective tools for entrepreneurship education.

An important conclusion is that traditional educational methods do not correlate well with the development of entrepreneurial traits and attributes, and that multi-disciplinary collaboration is an essential element of building enterprising abilities.

There is a need for greater flexibility in course design. Work placements, alternation between full- and part-time study, organisation of intensive courses, and accreditation of informal and non-formal learning all have a role to play: Network many stakeholder institutions to help students develop self-employment opportunities as an alternative to traditional work placements.

Students should be asked to present their business ideas to a panel. **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.** Each student is to be supported by a mixture of finance for business related activities and professional services.

The institution shall also provide additional resources in the form of incubation facilities and skills training. In particular for students in scientific and technical fields, a strong practical component should always accompany the theoretical aspect. Since any initiative undertaken by the students would probably be in their own fields of study, it is important for training to be provided by someone who is well versed in both their specific field of study and in entrepreneurship. This makes entrepreneurship seem a logical continuation of the study, rather than an annex running parallel to it.

Subject knowledge needs to be better balanced with process understanding, i.e. **the 'how-to'** and importantly the **'know-who'**, as many students lack the relevant social networks for achieving their entrepreneurial aspirations.

Finally, training in action-oriented and creative competences should take place in many areas other than entrepreneurship. It is a question of how to teach rather than what to teach.

Traditional lecturing, 'feeding' passive students, is largely inappropriate in this field and, more generally, an inefficient way of learning. There is a need to shift to more interactive learning approaches, where the teacher becomes more a moderator than a lecturer.

ABOUT EDUCATORS, AND THE ROLE OF BUSINESS PRACTITIONERS IN TEACHING

The use of experience-based teaching methods is crucial to develop entrepreneurial skills and abilities. Therefore in order to integrate entrepreneurship across the curriculum, the use of action-oriented pedagogies should be favoured in all disciplines. This kind of methodology is labour intensive and costly, and requires specific training. So, more educators need to be trained in this field.

Professors should have a background in academia, and recent experience in business, such as in consulting for, or initiating, entrepreneurial initiatives. Ideally they should maintain strong personal links with the business sector. The best professors are teachers who have the required teaching competences as well as real professional

experience in the private sector. For those with no experience in the private sector, specific teaching modules should be integrated into the curriculum of future professors, such as “How to devise and teach a case study”. Education authorities and higher education institutions should place emphasis on the training of educators.

Moreover, existing training schemes for teachers very often lack a global, trans-national dimension. However, there is very little in terms of incentives to motivate teachers and reward them for getting involved in entrepreneurial teaching and activities with students. For instance, research and getting published remain the main criteria for promotion, while practice-based projects do not receive the necessary consideration.

Not all educators are university professors. The fact that educators come in many forms should be recognised. Those with experience in the entrepreneurial field should be set alongside professors in a synergy relationship. Most teachers have little or no practical experience of being entrepreneurs themselves. So the participation of real entrepreneurs in the teaching can make up for the existing lack of practical experience of professors. Especially within working groups and business planning seminars, outside coaches should play an important role, as students perceive them as having more credibility as regards entrepreneurship than traditional teachers.

Particularly at universities it is very difficult to include practical business people in the permanent staff, due to research criteria. Universities attempt to overcome this problem by two, often combined, approaches: hiring external, part-time lecturers with business experience, and collaborating with the world of business outside universities.

Presentations by entrepreneurs in lessons are not only important because they impart knowledge, but also because they provide an example which can be followed by students. It is therefore very important that as many student entrepreneurs as possible (or at least those who started their enterprise as students) report on their successes at higher education institutions. It is harder for some students to imagine becoming the next famous entrepreneur. However, it is much easier for students to imagine that they can also do that which other students succeeded in doing several years ago.

Unfortunately, Indian higher education institutions are not sufficiently involved and effective in working with alumni. The best universities build and maintain very good networks with their alumni, who can bring back knowledge and funds.

As regards the current state of play in Indian higher education, Experts believe that entrepreneurs and business practitioners are in general involved in the teaching, but their presence needs to be increased. Also, 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 lecturers) or as judges in competitions. There are exceptions, though, and the landscape is changing.

Ideally, entrepreneurs should receive some training on how to address students. One suggestion is to identify and train an "Academy" of high profile Entrepreneurs who are prepared to give of their time and can be relied upon in the classroom.

Also, it should be taken into account that entrepreneurs are more motivated to come back to their previous school/university. This also reinforces the identification of students to their case and experience. For the same reason, visiting entrepreneurs should preferably have the same educational background as the students.

COOPERATION AND MOBILITY BETWEEN HIGHER EDUCATION INSTITUTIONS AND ENTERPRISES

Effective cooperation between higher education institutions and enterprises requires a win win situation for both parties. Students and teachers have something to contribute to enterprises, mainly based on theoretical knowledge, and enterprises have something to contribute to educational institutions, mainly based on practical knowledge. In order for higher educational institutions to benefit, the collaboration should be long-term oriented, e.g. involving entrepreneurs and businesses leaders as mentors and advisers in building student business hatcheries and incubators, or in developing new entrepreneurship courses and study programmes, including internship programmes. For enterprises there should be short-term benefits too, e.g. through involving student groups in innovation activities, particularly helping firms formulate and develop radical innovation ideas, and through linkage to research activities. Taking these basic rules into consideration, close collaboration can be established between SMEs and higher education institutions.

Mobility of teachers and researchers between higher education institutions and business is in general very low, and the practice is not encouraged. There are in many cases little or no incentives, or even disincentives. For instance, lecturers may not be allowed to participate in external commercial activities. Also, there are few individuals capable of, and keen on, mobility across these two communities/environments.

In practice only few experienced entrepreneurs succeed in shifting to colleges/universities. They usually have to accept a lower income, and the route to a permanent position is long at universities. In general terms, there is very little in the way of incentives. Higher education institutions have yet to openly accept entrepreneurial experience as a valid basis for senior teaching positions, especially at professorial level. The other way round, only few experienced teachers and researchers succeed in making a complete shift of career to the world of business.

Teachers moving into business are likely to do so because of the inability or inappropriateness of institutions to meet individuals' aspirations. One route forward here would be to increase the number of part-time positions, such as external lecturer and assistant professor positions. Another is to create a new category of positions at universities/colleges for well-educated academic staff with substantial entrepreneurial and business experience and limited research experience.

Both communities could do more to increase mobility, but some incentive to do so is likely to be required to stimulate action. Higher education institutions can offer dedicated sabbaticals and secondments in enterprises and/or for entrepreneurial development, and appoint professors based on entrepreneurial experience rather than research achievement. Equally, businesses can offer senior positions for academics on their boards as non-executive directors or within their management team as an adviser/consultant.

SUPPORTING STUDENTS' BUSINESS IDEAS

A distinction needs to be made between awareness raising and education, and actual business support. This Report focuses primarily on building awareness and on offering education programmes, courses and activities. The emphasis is on creating the entrepreneurial mindsets and capacity.

Support for university spin-offs is a vast and complex issue, for which a specific Expert Group would need to be created. Moreover, the concept of innovative spin-offs is not particularly relevant for businesses started by students, who do not have formal links with the university. It seems therefore more appropriate to speak of innovative, knowledge-based businesses launched by students and university graduates. Such students would benefit from dedicated advisory and support programmes.

The issue of building mindsets and abilities cannot be viewed in isolation from the overall context.

Entrepreneurship courses and activities should be part of a wider entrepreneurial programme within the institution. A high visibility of the “entrepreneurial commitment” of an institution is achieved through the presence of dedicated spaces, such as “hatcheries” or incubators, and through support for students’ start-up plans.

Certain ideas are therefore proposed here on existing or desirable support mechanisms and services that will help students in developing a viable business. Educators were asked whether entrepreneurship courses and activities in their respective institutions are normally conceived as part of a wider entrepreneurial programme, with support mechanisms and services to support students’ business ideas and new company start-ups; and whether such mechanisms and services are available for students at all levels. Their answers suggest a rather uneven picture with a more or less equal split between “yes” and “no”. Where support services exist, they seem to be available in most cases to students of all levels (undergraduate, graduate, post-graduate), while in fewer cases they address mainly post-graduates and staff of the institutions.

However, experts highlight the fact that business incubators exist in many cases outside university, and are available to all business 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.

A challenge lies in integrating start-up activities into degree studies, as they are currently mostly outside the curriculum and sporadic in nature. Experts were also asked whether the education systems in their respective institutions support higher education institutions in promoting the commercialisation of new technology. An ambiguous answer was given in most cases, though not in all.

Desirable measures and tools — both in the overall environment (framework conditions) and at the institution level — to encourage innovative start-ups by students and researchers are as follows:

- **a policy to promote entrepreneurship in scientific labs;**
- **a good institutional policy in terms of intellectual property rights;**
- **dedicated and supportive incubators, or easy access to external incubators;**
- **favourable business environment: this means that incubators should create strong links with the business and financial community;**
- **financial grants to support the entrepreneur, and/or access to other financial resources.**

CRITERIA FOR GOOD PRACTICE IN DELIVERING ENTREPRENEURSHIP EDUCATION

On the question of how the teaching of entrepreneurship can best be applied in concrete terms, the members of the I.N.D.I.A. TRUST Expert Group were asked to identify a set of key features for effectiveness and success in implementing these programmes. These are proposed as general indicators for good practice.

Following precise directions from the Experts, the good practice factors cover the way entrepreneurship teaching should be delivered (“how to teach”), and not the specific content of the teaching. This list does not take into account elements related to external framework conditions, i.e. to the overall environment in which programmes and activities take place, such as support from public authorities.

Good Practice Criteria In Delivering Entrepreneurship Education:

1. The purpose of the course/programme should be 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 has a balance between the theoretical and practical aspects. Teaching should make 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 to be 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 must be 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 should be 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 to be 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 must be a 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 to be sought and promoted, to encourage mutual learning and to give an international perspective to programmes, courses and activities.

OBSTACLES AND FACTORS OF SUCCESS

The members of the I.N.D.I.A. TRUST Expert Group were asked to identify existing obstacles, or negative factors that might hinder the dissemination of entrepreneurship courses, programmes and activities in higher education, and/or the effectiveness of this type of education.

A basic principle is that entrepreneurship should be spread horizontally in the curriculum, across different fields of study. In this respect, one main structural problem is the division of higher education institutions into faculties and schools. This may work against the kind of cross-cutting that favours multidisciplinary teams and projects.

Faculties and departments are very often working quite separately, with many obstacles for students who want to move and for teachers interested in establishing cross-disciplinary courses. The curriculum structure is often an impediment: money follows credits, so a structure can almost naturally be against inter-disciplinarity.

There is a problem of awareness and motivation within the institutions, when entrepreneurship is a priority neither for administration nor for faculties. In most cases, research publications are seen as being far more important. Therefore entrepreneurship within an institution is very much dependent on the willingness and vision of certain leaders. This is not an organisational problem, but rather a strategic one. Entrepreneurship programmes should be evaluated like other aspects of academic excellence. Practice-oriented modules and exercises should not be seen as non-academic *per se* — which is often the case at universities today. On the contrary, the basic point of view should be that achieving a high academic standard is not only about the ability to reflect, imagine and analyse based on established knowledge, but also about applying knowledge to practical purposes.

Resources (human and financial) are another issue. There is clearly a need for more entrepreneurship education — the demand from students is increasing — but it is not possible to meet this demand fully with the current staff involved in entrepreneurship studies or business studies in general. The use of action-oriented teaching methods is crucial for developing entrepreneurial abilities, but this is labour intensive and costly, and requires specific training.

Funding is in clear mismatch to the demand for entrepreneurship studies. Institutions often have insufficient resources to train students from the other departments. And the non-business faculties cannot increase their own supply of entrepreneurship studies for the same reason.

Therefore, a main priority is to organise specific funding for this type of education, embedded in the institution's core financial resources. The fact is that the termination of short-term project funding, or the continuous changing of funding mechanisms, creates fragility and runs counter to sustainable provision.

There are currently too few professors of entrepreneurship, and many of them have not been trained from the start in that field. As a consequence, they may be unaware of the right approach to entrepreneurship teaching. Teachers should have a better understanding of entrepreneurship education, and of the range of aims, methods and contents. There is a need for more teacher training, seminars and workshops. There is also a need to graduate enough PhD students in entrepreneurship, to build up teaching resources. However, it is currently difficult to build a career in entrepreneurship, as research remains the main criterion for promotion.

The lack of relevant skills and experience to teach entrepreneurship is very severe. This can be overcome, or at least alleviated, by:

- **establishing professional networks for the regular sharing of teaching practices and methodologies;**
- **short-term exchanges of entrepreneurship teachers between the institutions of higher education in order to disseminate best practice and teaching methods;**
- **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. From the perspective of involving entrepreneurs in education, there are also certain obstacles:

- their own business activities are time consuming, so it is almost impossible to count on them on a regular basis;
- often, universities are not able to pay them their proper "hourly market price".

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;
- 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.

FACTORS OF SUCCESS

Experts were also asked to identify factors of success (or necessary framework conditions) for integrating entrepreneurship into higher education, and ensuring that entrepreneurship is spread across the curriculum and reaches students in different fields of study.

While public policies and the overall outside environment can play an important role in ensuring that the teaching of entrepreneurship can be spread effectively (external framework conditions), at the level of higher education institutions an important success factor is the extent to which traditional lecturing in the field has been substituted by a more balanced pedagogy with a substantial element of active self-learning. The ultimate success factor is

transformation into an “entrepreneurial university”, characterised by a diffused entrepreneurial culture. Many universities and colleges are clearly moving in that direction, but are still far from this end goal.

In the following list, factors of success are divided into a number of broad categories, showing at which level favourable conditions should be created or enhanced:

- There are national and nongovernmental frameworks of support, helping institutions to develop and expand their entrepreneurship mission and activities.
- The mobility of teachers and researchers across national borders, and between academia and the business world, is supported by institutions and at the policy level.
- Support programmes for entrepreneurship educators are in place.
- There are back-up infrastructure of venture capital and bodies that can support entrepreneurship.
- Networks and programmes are in place for sharing information, practices and teaching material, at national level

Level of institutions:

- Entrepreneurship teaching and training is seen as a strategic goal; there is an explicit mission, and it is possible to assess how this mission is fulfilled.
- There is a common understanding of the need for cultural change, from a bureaucratic culture to an entrepreneurial culture, and there is institutional progression towards an entrepreneurial university model.
- The impact of entrepreneurship education is clear.
- Programmes are valued by the institution.
- Entrepreneurship is disseminated into technical/natural science departments and humanities departments.
- Institutions are able to provide students with a diversity of learning experiences;
- Reward mechanisms are in place in the institution, and there is recognition of entrepreneurship-related activities undertaken by teachers and students.
- The field of entrepreneurship is given academic esteem: there are good research programmes and PhD programmes to educate the teachers.
- Quality assurance procedures are generally in place.
- Universities are properly integrated in their territorial, economic and social environment and interact with all stakeholder groups.
- The institution has a clear intellectual property policy, which encourages entrepreneurial endeavour.

Evaluating quality, effectiveness and impact:

Learning outcomes should be established at the programme design phase, and outcomes should essentially be measured against these. Tools such as tracer studies and student questionnaires can be particularly useful here. Entrepreneurship programmes can have different objectives: developing entrepreneurial motivation among students, training students to set up a business (planning, networking, selling, finding resources, etc.), developing the entrepreneurial skills needed to identify and exploit opportunities.

Evaluation must therefore be adapted to the objective and to the entrepreneurial competencies to be developed. The quality of the programme needs to be assessed according to the objectives fixed. Ideally, planning the evaluation work is a process that starts with programme design.

If the objective is to develop the entrepreneurial intention, the programme quality can be assessed through a questionnaire assigned to students to understand their perceptions of entrepreneurship, their self confidence to engage in an entrepreneurial activity and their perceptions of their capacity to detect opportunities and to exploit them.

- **Quality assurance, and the evaluation of programmes, courses and activities on offer, should form part of the general internal and external quality assessment frameworks of an institution;**
- **Relationship between teaching and research;**
- **Development of explicit learning outcomes;**
- **Specific needs of different modes of delivery (e.g. full-time, part-time, distance learning, e-learning) and types of higher education (e.g. academic, vocational, professional);**
- **Availability of learning resources;**
- **Monitoring of the progress and achievements of students;**
- **Regular feedback from employers, labour market representatives and other relevant organisations;**
- **Participation of students in quality assurance activities.**

If the objective is to learn how to engage in start-up activities, the evaluation can be based on students' performance in developing and presenting a business plan and their capacity to sell their project.

However if the objective is to develop soft entrepreneurial skills it will be more difficult to assess the quality of the programme, as little is known about the required entrepreneurial competencies and how to measure them. In this case, the assessment of the programme quality should be related to the pedagogies and the methods used.

There are quantitative and qualitative strategies to address this issue. Quantitative strategies refer to measuring the number of actions, students involved, and more generally measuring formal programme approval procedures by a body other than that teaching the number of students who want to take the course.

Qualitative strategies refer to:

- measuring ex-post the participants' degree of satisfaction;
- measuring the entrepreneurial intent of students ex-ante and ex-post.

This is a way of evaluating the potential impact of specific actions on participants' "mindset".

The evaluation should cover students' experiences and outside assessment. Of primary importance is the feedback from students who participated in the entrepreneurship programmes. Methods will include collecting qualitative feedback from students (evaluation forms), and running surveys beforehand and afterwards.

The difficulty in finding proper solutions is shared, so such solutions should preferably be developed together. The use of indicators that are widely applied in different studies and in specific programmes would facilitate comparison across programmes.

Some possible indicators suggested by the experts are:

- number of students who want to take the course, and/or rate of increase in the number of participants;
- diversity of participants (from different departments and fields of study);
- percentage of former students who would recommend the course;
- percentage of students taking the course who believe that it has made a significant difference in the way that they think about entrepreneurship (change of attitudes);
- perception of students of their own confidence and ability to start a company (before the course, and afterwards);
- number of business plans written (which should take into account the rate of success, e.g. the rate of companies started)

Evaluating the impact:

In theory, the most effective way of assessing the impact of entrepreneurship education on society and on the economy should be the extent to which participants get involved in entrepreneurial activities after the programme (i.e. starting up a new business, or taking over an existing one). However, graduates' start-up is only one among possible outcomes of entrepreneurship education. In fact, qualities like creativity, innovation and entrepreneurial initiative can be applied to a much broader context, contributing to young people's personal and professional development in any field, including as employees in a company or in the social sector. This makes it of course extremely difficult to measure the impact of such programmes at all levels.

As regards assessing impact based on students' new start-ups, one practical problem is the time lag between the programme and the realisation of the entrepreneurial activity. Moreover, not all higher education institutions engage in effective alumni tracking, without which it is difficult to get an overview and to measure the long-term impact.

To cope with that situation, I.N.D.I.A. TRUST is considering equipping each participant in an entrepreneurship programme with a dedicated e-mail account, to make it possible to trace students, keep contact with them, identify whether they get involved in some entrepreneurial activity, and build a community for entrepreneurship.

A basic starting point might be the number and quality of the start-ups from universities or universities of applied sciences, although the various types of institutions should be differentiated (e.g. business school vs. technical university). A further criterion is the number and quality of new workplaces originating in start-ups from universities and colleges. However, a global measurement of business creation by students is very difficult to manage.

What is easier to measure is new business creation through incubators or dedicated programmes. More generally, an indicator that could take into account the complexity and the different objectives of entrepreneurship education is the level and quality of employment of students who have taken entrepreneurship modules, not restricting the analysis to graduates' start-ups only, but considering any route of professional development.

Finally, changes in the entrepreneurial culture in a region or in a society cannot be measured reliably on a short-term basis, but only in a longitudinal perspective (long-term study), based on a sound, scientific methodology. The following indicators are among those proposed by the members of the Expert Group as effective means of measuring the impact of entrepreneurship courses, programmes and activities. This list should not be considered as exhaustive. Also, in concrete terms it may be very difficult to use some of these indicators, due to the non-availability of comprehensive data.

- 1) Number of start-ups created by students who have taken entrepreneurship modules (within 5 years)
- 2) Number of jobs created by the above new start-ups
- 3) Number of new patents issued as an outcome of entrepreneurial modules
- 4) Level and quality of employment of students who have taken entrepreneurship modules (after 5 years)
- 5) Number of new companies founded by the overall population of university graduates
- 6) Progress in entrepreneurial attitudes, perceptions and intentions of:
 - *students taking entrepreneurship modules (before and after the programme, and compared to other target groups of students);*
 - *the general population of higher education students.*

THE ROLE OF POLICY

Entrepreneurial thinking should be fostered as early as school and through all levels of education. The Ministry of Education, in cooperation with other departments (Economy; Employment; Science and Research), should establish a task force to determine how entrepreneurship can be integrated into the education system across primary, secondary, and higher education. The task force would also need to get the viewpoints of other relevant organisations. This should lead each educational institution to develop a coherent national strategy for entrepreneurship education, clearly linked to an agreed framework of desired outcomes.

National observatories could be established to track change, trends and impacts of entrepreneurship education in each institution. As part of this National strategy, governments should adopt legislation supporting relations between private business and universities. This would include, where necessary, creating a legal framework to allow professors to work part-time with business, or removing existing obstacles.

However, legislation alone will not be sufficient. For many institutions, practice-based methods that are effective in teaching entrepreneurship are too expensive to be sustained within normal internal budget systems. So the role of public authorities might also be to create funding mechanisms to support institutions in developing action learning programmes, leading in turn to new venture creation. Different departments of the public administration could set up a joint programme to underpin the above legislation and add a financial budget to it, also involving business organizations.

The demand for learning about entrepreneurship is increasing, but there is a shortage of human resources and funding. A priority is therefore to organise specific funding for this type of education. This would also include seed funds for students' start-ups. Also, there is in general a shortage of educators with the specific competences needed to teach entrepreneurship effectively. More training is needed, and scholarships could be granted for PhD theses on entrepreneurship, in order to encourage a new generation of professors in this field.

Increased funding from the government can enforce change within the universities from the outside. One main obstacle within institutions is decision makers' lack of interest and backing. Policy-level changes to funding — for instance a resource allocation influenced by performance in entrepreneurship education activities — would have an immediate effect on institutions' behaviour and on the internal allocation of resources. The evaluation of institutions, departments and staff should be based not only on publications, but also on entrepreneurial teaching and activities as well as, for technical and scientific departments, on patents produced. There is a need for pressure from within (interested students and teachers) combined with political pressure from the Government.

Within institutions, a real challenge is to create inter-disciplinary approaches. Therefore decisions at the policy level should take this need into account, and promote merit transfer across institutions' internal and external

boundaries, making it easier for them to accept cross disciplinary initiatives and courses. This is important as funding of departments and faculties today often follows the students and depends on exams passed in the department/faculty.

There may therefore be a disincentive in encouraging students to follow courses organized by other units, and this possible obstacle needs to be counteracted. In this respect, many Rectors will also appreciate a greater degree of autonomy, which will allow funding to be transferred between faculties.

In entrepreneurship education, an important role is played by the spontaneous initiative of students and student associations, and a large part of activities take place outside curricular courses (for instance, a recent survey carried out shows that 64% of provision of enterprise and entrepreneurship activity in higher education is extra-curricular). While the autonomous initiative of students — individually or within associations — should of course be preserved and encouraged, education authorities could help to 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.

A coherent strategy could also include supporting business plan competitions among students, followed by regional, national awards for celebrating and sharing successes. In order to promote and value good practices, and to raise the profile of such initiatives within society as a whole, awards for the most entrepreneurial universities, teachers and students could be established, and positive examples of academic spin-offs highlighted.

More specific promotional campaigns should target the Science, Engineering and Technology community with a view to informing and convincing Deans of non-business faculties of the relevance of entrepreneurship education.

Higher education institutions should have a strategy or action plan for teaching and research in entrepreneurship, and for new venture creation and spin-offs. This calls for the development of an “Entrepreneurial University”, a major change in the culture of higher education institutions, which will be evident in:

- the study programmes (multi-disciplinary programmes);
- working and learning methods (team work, initiative with the student);
- research strategies;
- personnel policy (recruitment practices, incentives & rewards, training);
- industry co-operation.

These requirements mean that rectors and senior managers must ensure that the appropriate institutional infrastructure is in place. Entrepreneurship education makes particular demands on quality assurance, human resource management, student support, knowledge transfer, management information, and governance systems.

An entrepreneurial university is one where entrepreneurship is a systematic approach, and where people feel committed to this goal. There is a need for opinion leaders who would push the change from the inside the institution. As a first step a member of the governing body could be identified as the person in charge, as only a decision maker can decide on the outcomes.

- a campus-wide approach, embedded in all faculties/schools;
- a faculty-driven central unit servicing other faculties (the Business School, or a Centre for Entrepreneurship);
- the use of a non-university provision that is partially owned by the university.

A Centre for Entrepreneurship (or other focal point) would have the aim of spreading entrepreneurship throughout the institution. It is essential for it to have powers to liaise with all other departments and faculties within the institution. It should essentially have two roles:

1. offer entrepreneurship training in the form of single credits , modules and entire courses, if necessary in collaboration with the economics/management departments/faculties within the institution;
2. work together with all departments and faculties (both students and academics) to help them realise and exploit any entrepreneurial potential their programmes may offer.

Typical services might include:

- helping researchers to explore the commercial options of their research;
- working with staff and students on developing their ideas, projects, etc.;
- identifying, protecting and exploiting intellectual property;
- licensing IP to multinationals, SMEs and start-ups;
- advising start-ups on their business development;
- assisting inventors in commercialising their ideas;
- providing incubation space;
- getting actively involved in campus company development;
- developing SME linkages with the university;
- giving access to networks;
- matching ideas and inventions with experienced entrepreneurs (and vice versa).

These services should be available to students of all courses, in order to foster their entrepreneurial spirit. Setting up enterprise/entrepreneurship centres that service all faculties sends out a message to all stakeholders within the academic community that such work is not faculty-specific.

Obligatory introductory activities or modules should be offered for all undergraduate students during their 1st year, influencing their mindset right from the beginning and creating awareness of the alternative career option as an entrepreneur. In addition, all students should be given the opportunity to attend seminars and lectures on this subject. **Optional courses** which are open to students from different faculties and disciplines, and involve these students in team based project work, are a useful means of spreading entrepreneurship across faculties and departments. Students who find the field interesting and attractive and who seek to get involved in voluntary entrepreneurship initiatives should be backed by the institution or facilitating organisations. All students should be exposed to the opportunity of acquiring entrepreneurship-related teaching and experiences.

Entrepreneurship education modules are offered as compulsory or optional classes in all relevant undergraduate courses. In addition, there is a specially designed Master's course called "Start Up, Innovation and Economic Development". Teaching is always highly problem-oriented, student-centred and interdisciplinary. The approach to start-up promotion takes the form of a value chain. As in a funnel, students will become acquainted with entrepreneurship issues in a diversified but not particularly profound way during their first semesters. Later on, more specific modules will follow which incorporate the perspectives of various subjects on entrepreneurship issues. The course is on the one hand designed for students of Economics and on the other hand — in a separate module — for students of other departments such as Engineering, Natural Sciences, Architecture and Design. Both groups will meet in specialised classes such as business plan seminars and case study training.

THE ROLE OF HIGHER EDUCATION INSTITUTIONS AND AND OF EDUCATORS

Learning about entrepreneurship assumes a student-centred form of teaching, in which learning outcomes are clearly specified. It also assumes that, beyond the introductory modules, students will themselves select which road to follow. This will require flexible course structures, a problem-solving approach supported by qualified academic staff, extensive learning resources, opportunities for work placements, and access to funding.

For teachers who are interested in the field, more training, in terms of theory and of innovative pedagogy and didactics, is needed and new teaching tools/methods tailored to the specific field of study will have to be developed. Some options for enhancing educator capability include: staff sabbaticals in enterprises, and for entrepreneurial development; curricula development funds; exposure to role models and examples; incentives, rewards and recognition; international educator exchanges; bursaries and support for personal development through educational programmes.

Institutions should have incentive systems for motivating and rewarding faculty staff, researchers and teachers in supporting students interested in exploiting business opportunities. Staff promotions should be also linked to entrepreneurship, among other criteria. Reward mechanisms should be set up, based on achievements in furthering entrepreneurship and innovation, such as: companies started by students, number of patents, number of industrial projects, etc. The rewards might take the form of academic promotion and of pay, based on financial

resources obtained from projects. In general terms, the academic value of research and activities in the entrepreneurial field should be acknowledged, and the working time that professors devote to support students' initiatives recognized.

From the perspective of educators, the teaching should balance theoretical and practical aspects, making use of: inter-active and pragmatic methods; active self-learning; action oriented pedagogies; group work; learning through projects; student-centred methods; learning by direct experience; methods for self-development and self-assessment.

Crossing the boundaries between different fields of study and different faculties/departments is a key to spreading entrepreneurship. One possible way is to create inter-disciplinary "laboratories", in which students of business help put into practice business ideas of their partner students from faculties of technical and/or natural sciences. Where appropriate (for instance at Master's level), exams — or even the thesis — could be replaced with work on projects, like a start-up project. Some students may be more motivated and better at working on concrete activities rather than writing.

Business representatives and entrepreneurs should be involved, and events organised where entrepreneurs present their experience. Ideally, they should come from the faculty / school where the event is organised. To boost awareness and motivation of students, it is fundamental to use the power of examples (alumni, successful entrepreneurs, etc.). There is a need for local champions. For instance, students in the field of science and technology will be attracted by cases of "technology entrepreneurship", and not by entrepreneurship in general.

Entrepreneurship teaching should be part of a broader entrepreneurial environment within the institution, with services to support students' business ideas. High visibility is achieved through dedicated spaces, support for student activities and awards/rewards for success. Institutions should set up pre-incubators ("hatcheries") for undergraduate and graduate students, and provide access to on-campus or external incubators for graduates, postgraduates and researchers. There should be a focal point ('one-stop shop') within academic institutions that is well known to everyone (students and staff alike) and which acts as a central source of advice and information on business start-ups.

With the help of additional funding from the government or from industry, easy access to financial grants and seed/venture capital should be available for students who want to develop a viable business idea, either within an on-campus incubator or as a follow-up to a business plan competition.

A useful measure would be to ensure access to "entrepreneurship tutors" for all students. These would complement the main tutor on a master's or doctoral thesis, and offer advice as to whether there is a business perspective to the work, and if so, how to capitalise on it.

Institutions should encourage the spontaneous initiative of students; encourage and support the foundation of student mini-companies or junior enterprises; award academic credits for activities carried out within student associations and for practical work on enterprise projects.

Universities should engage more consistently in dialogue with entrepreneurs, provide better information on the skills and learning outcomes of their graduates and put in place systems to track graduate employment. There is a need for long-term studies to identify students who have set up companies of their own after being involved in entrepreneurship modules. This knowledge would help in evaluating programmes and in assessing their impact, providing policy makers with useful evidence.

THE ROLE OF OTHER PLAYERS, PARTICULARLY BUSINESSES

Promoting entrepreneurship education in the community should be part of a common and coordinated effort. Regional development agencies and university associations should provide clear directions about what contribution institutions could make to regional social and economic development strategies. Universities should be considered as instruments of regional development.

There needs to be an increasing awareness that cooperation between higher education institutions and enterprises can generate a win-win situation for both parties. Teachers and students have something to contribute to enterprises, in terms of theoretical knowledge and also through the involvement of students in innovation ideas.

A few possible elements of motivation for enterprises in embarking on cooperation and joint projects with universities are:

While diversity is richness, higher education institutions and educators will benefit from exchanges and mutual learning, open sources of information, and examples of good practice. Coordination should be applied at a policy level to ensure that all higher education institutions are given the necessary incentives and opportunities to take on this challenge.

Entrepreneurial teaching should be highly valued in an institution, within the curricula of the different faculties, with reward mechanisms in place, qualified educators and a wealth of inter-actions with the outside world, in particular with businesses and entrepreneurs. In this respect, the development and delivery of entrepreneurship is significantly affected by the internal organisational structure of the institution. Irrespective of the individual objectives of a university or college, having more effective internal organisation structures is to be recommended.

Not all higher education institutions have the governance structures which would allow them to involve social partners, chambers of commerce and other external players in the design and delivery of enterprise programmes. However, in very general terms even current structures can accommodate entrepreneurship education activities.

The main problem is one of lack of personal commitment, when there is not enough interest and backing from decision makers in the institutions. In this sense, promotional campaigns could raise the awareness of Deans of non-business faculties: that is also one of the objectives of this Report. An entrepreneurial university is one where staffs at all levels are committed, and students of all disciplines are encouraged to think and act in an entrepreneurial way.

We are not aiming to prescribe a single strategy, which would be unrealistic. Its goal is rather to highlight some key issues, to identify existing obstacles and to propose a range of solutions, taking into account the different levels of responsibility (public policy, institutions and educators, relevant stakeholder)

CONCLUDING REMARKS

- In general, there is a shortage of entrepreneurship studies within non business institutions and disciplines: entrepreneurship is not yet sufficiently integrated into different subjects of the curriculum.
- Available data from some universities show that the majority of entrepreneurship courses are offered in business and management studies.
- 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.
- Higher education institutions should become sufficiently involved and effective in working with alumni, who can bring back knowledge and also funds.

FINAL RECOMMENDATIONS FOR ACTION

Public authorities (framework conditions):

- 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.

- 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.
- 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.
- Establish awards for entrepreneurial universities, teachers and students. Promote positive examples of academic spin-offs.
- Create Regional Centres responsible for coordinating, organising and promoting entrepreneurship action. 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:

- 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.
- 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.
- 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.
- 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.
- 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.

- Encourage the spontaneous initiative of students. Existing students' organizations 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.
- 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:

- 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 National level:

- The government should support programmes for training entrepreneurship teachers within the national dimension, and should back the creation of networks and Industry Institute Interface Programmes for educators. This would include encouraging the mobility of teachers across the country 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.
- The government should also conduct a regular and comprehensive benchmarking of public policies in this area. Institutions should define an action plan, with results measured.

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