YESict

Project co-funded by the European Union

Erasmus+

Report – Output 1

Existing programs analysis

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1. INTRODUCTION

In these days when Europe and its countries are facing both financial and social crisis, the concept 'entrepreneurship' rises up as an expectation that will improve the current situation. But what is behind this notion? And more importantly, how is entrepreneurship encouraged in those countries?

The report 'Output 1 Existing programs analysis' gathers all the information related to the scope of the YESict project. In fact, it is an analysis and definition of 'entrepreneurship' that takes as reference some dissertations and discussions related to this idea, as well as some existing programmes and methodologies that are used all over the world.

The report is divided in three sections that correspond to 1) preliminary; 2) comparative analysis of entrepreneurial educational programs and 3) conclusions and recommendations for the YESict educational methodology.

The first section describes the concept itself and draws attention to the importance of fostering entrepreneurship among young people. It also remarks how the TICs may have an important role in these activities.

In the second section some educational programmes and methodologies are analysed in order to understand how entrepreneurship is worked on in education and which the pursued skills are.

Finally, the last section concludes with a summary and some recommendations for the future outputs that are going to be defined by the members of this project.

2. PRELIMINARY

2. 1. Concept and definition of entrepreneurship

The term "entrepreneurship" is widely used and often it encompasses different concepts within various contexts. From a lexicographic perspective, entrepreneurship is derived from the French word entrepreneur (pioneer) and it is defined as the ability of a person to make an additional effort in order to achieve an objective or a goal; additionally, it is also described as an individual who organizes or operates in any field of business. In Gartner (1990), the definition of entrepreneurship is associated with an individual setting up innovative organizations that have the potential to create value, where value may refer to a profit or other forms of value. Stevenson and Jarillo (1990) argue that entrepreneurship could be defined as "a process by which individuals - either on their own or inside organizations - pursue opportunities without regard to the resources they currently control" (p. 23). Bruyat and Julien (2001) propose a constructivist artefact and their definition of entrepreneurship incorporates the entrepreneur, the new created value, the environment, the entrepreneurial process itself and the links between these constructs over time. Shane and Venkataraman (2007) argue that entrepreneurship does not necessarily imply the creation of new organizations, it can also occur in existing ones.

Based on these definitions, one may realise that the term could be used to denote two distinct levels of skills. First, we identify cognitive-related skills that include opportunity identification, assessing business ideas, business development, value creation, venture set up and strategies' growth. Secondly, non-cognitive entrepreneurial skills include personal development, creativity and ideation, self-reliance, thinking initiative, and translating ideas into actions.

During the latest years in which the economical dysfunctionalities have considerably increased in developed and developing countries, entrepreneurship is primarily identified as a way to foster economic and employment growth. As a result, many countries launch national initiatives for the development of entrepreneurship skills among young people. Parts of such initiatives are formal and non-formal educational programs.

2. 2. Education and entrepreneurship

Entrepreneurship Education and training on entrepreneurship is termed as "entrepreneurship education" in USA and "enterprise education" in UK; the variation in terminology also denotes different priorities in skills' development (Erkkilä, 2000). Entrepreneurship education focuses more on the cognitive skills that are required for setting up a venture and becoming self-employed (QAA, 2012) whereas enterprise education encompasses more broadly aspects like personal development, mind-set, skills and abilities (QAA, 2012), (Mahieu, 2006). Hannon (2005) proposes the inclusive term "enterprise and entrepreneurship education" and Erkkilä (2000) the term "entrepreneurial education" to denote a unified, integrated approach.

Sexton and Kasarda (1991) argue that the two goals of education programmes in entrepreneurship are to prepare people for career success and to increase their capacity

for future learning. Consideration is also attributed to the learner's personal fulfilment and its contribution to society.

From a formal educational perspective, all educational programmes aim to advance knowledge, skills and attitudes. Entrepreneurial training is possibly one of the few that exemplifies the integration and combination of all three. The following are the most commonly cited objectives of entrepreneurship education and training programmes:

- to acquire, apply and use knowledge pertinent to entrepreneurship;
- to develop and apply skills in the use of techniques, in the analysis of business situations, and in the synthesis of action plans;
- to identify and advance entrepreneurial drive, talent and skills;
- to overcome the risk-adverse bias of many analytical techniques;
- to develop empathy and support for all unique aspects of entrepreneurship;
- to develop attitudes towards change;
- to design, devise and evaluate new start-ups and other entrepreneurial ventures.

The multiplicity and divergence in the cited objectives have influenced a variety of programmes. In attempt to overview the followed approaches, we adopt the categorization proposed by a number of scholars (Heinonen & Hytti, 2010), (Johnson, 1988), (O'Connor, 2013) that identify three major categories, namely, education "about", "for" and "through" entrepreneurship (see Figure 1).

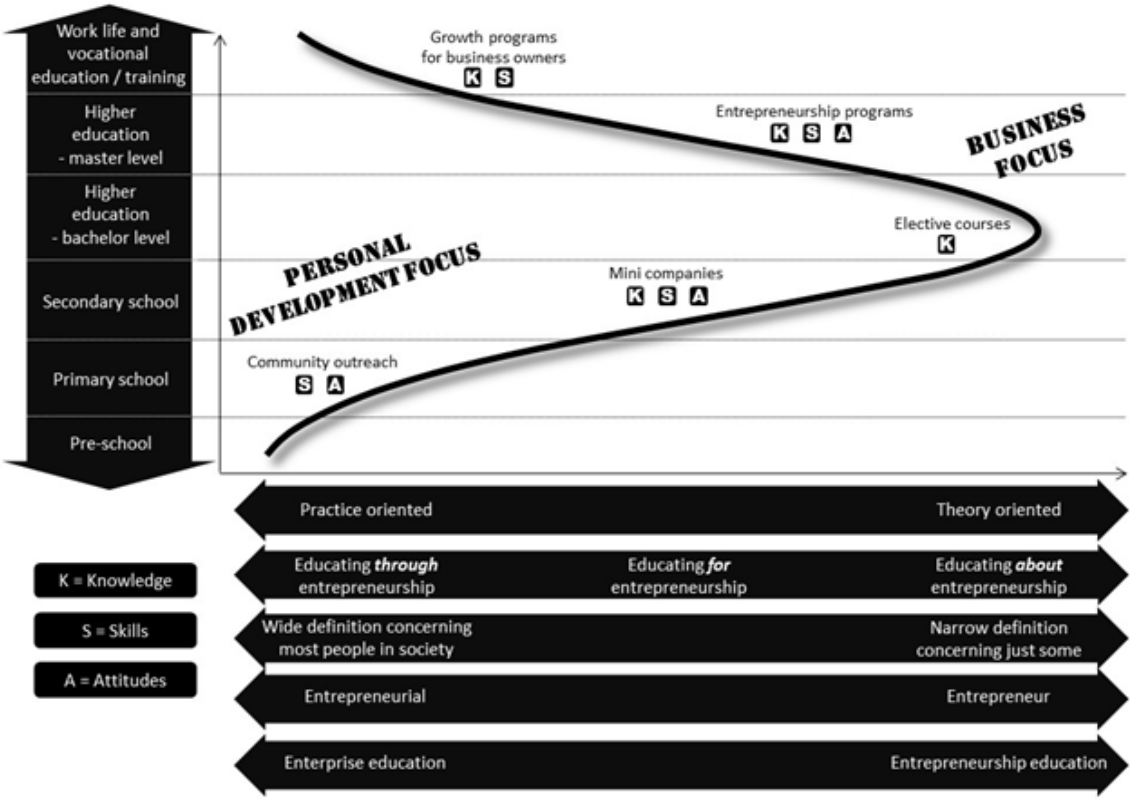


Figure 1. An overview of entrepreneurial educational approaches and their dynamics through different tiers of formal education and through curriculum development [from (Lackéus, 2015)]

The first category examines the phenomenon from a scientific perspective and it usually addresses to parts of undergraduate or (more commonly) postgraduate programmes (Mwasalwiba, 2010). The second one encompasses occupational-oriented activities that develop knowledge and skills and could be offered to secondary or tertiary educational settings. Finally, the educational activities set up an experiential learning process "through" which students acquire entrepreneurial cognitive or non-cognitive skills. Consequently, the third category can be relevant to all students and on all levels of education (Smith & Hannon, 2006), (Handscombe, Rodriguez-Falcon, & Patterson, 2008).

However, when trying to integrate entrepreneurship into education in the way previously described, some important challenges such as resource and time constraints, resistance from teachers, assessment challenges and cost implications have been identified (Smith & Hannon, 2006).

2. 3. The importance of entrepreneurship in Europe

Entrepreneurship is considered an important contributor to the growth of the economy. One of the ways of measuring entrepreneurship is the number of new entrepreneurial initiatives registered each year as well as the capitalization achieved by corporations that merely did not exist 20 years ago.

In Europe, the recent economic crisis and most remarkably the resulting high unemployment rate in many EU member states (see Table 1 and Table 2) have greatly contributed to the resurgence of interest in entrepreneurship and small business development. It is exactly due to entrepreneurship's potentials for advancing competitiveness, economic growth, job creation and ultimately prosperity (Wong, Ho, & Autio, 2005) that entrepreneurship is favourably viewed by policy makers.

Table 1. Unemployment rate. September 2014 or latest, % [from http://ec.europa.eu/eurostat]

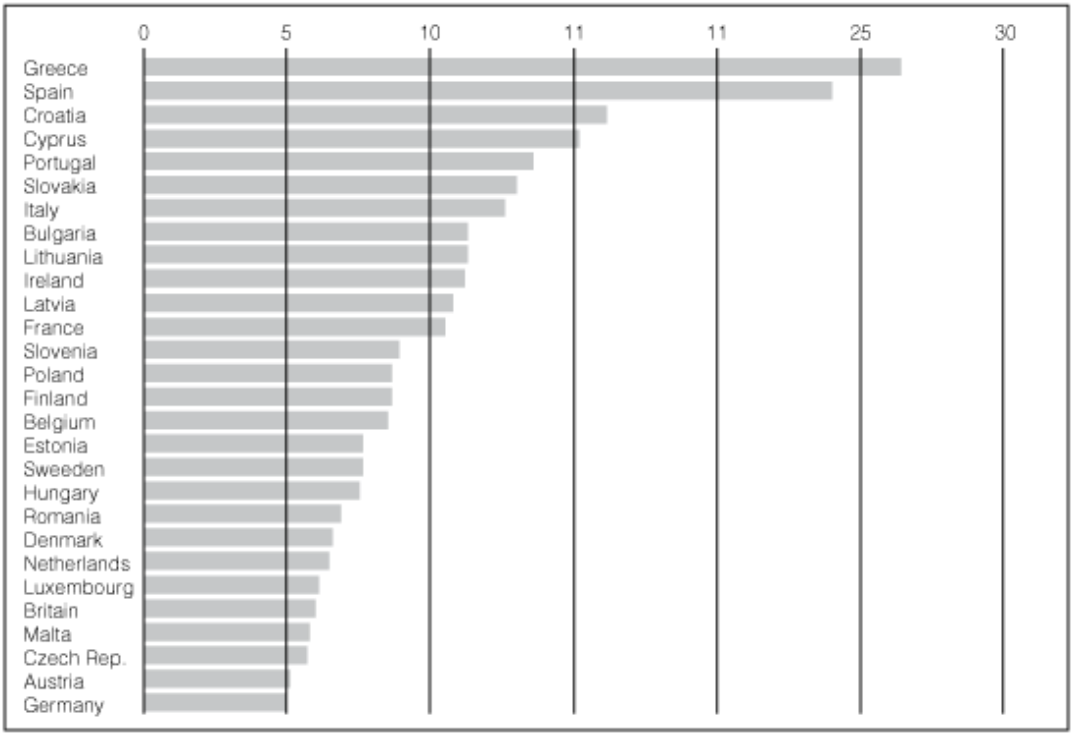
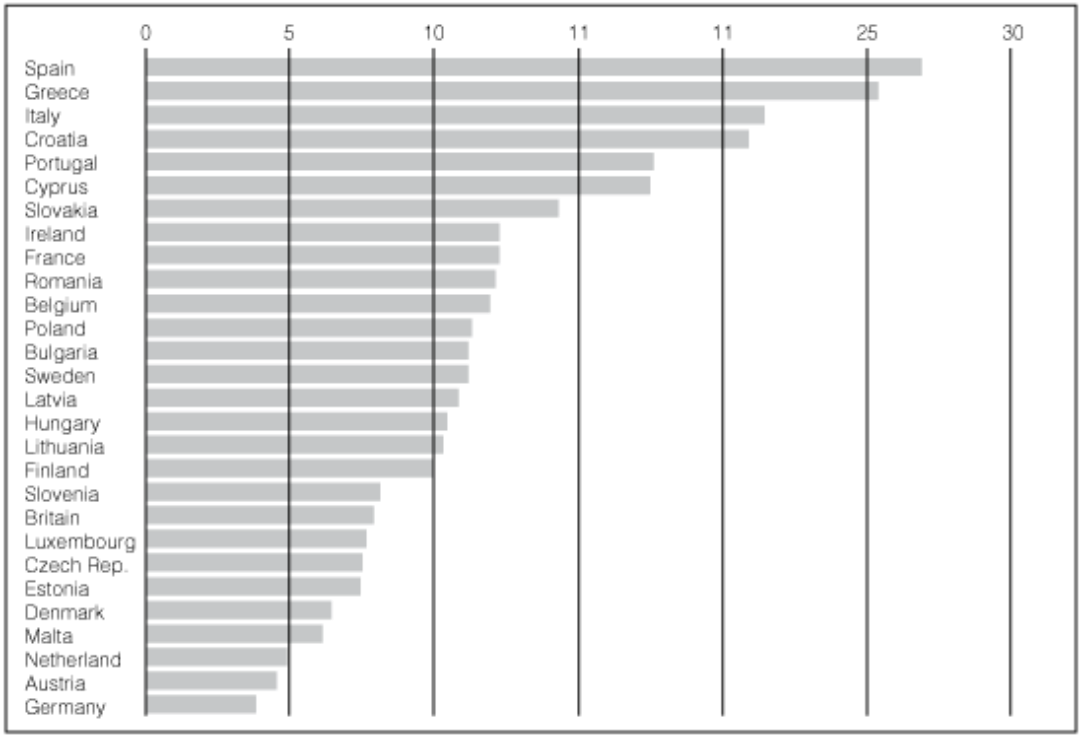


Table 2. Youth unemployment rate. September 2014 or latest, % [from http://ec.europa.eu/eurostat]



Despite numerous initiatives and programmes, Europe is still lagging behind these goals. According to the Global Entrepreneurship Monitor (http://www.gemconsortium.org/), which compiles comparable data across countries, in 2010 "early-stage" entrepreneurs made up just 5.8% of France's, 4.2% of Germany's and 2.3% of Italy's adult population alarmingly lower than America's 7.6%, let alone China's 14% and Brazil's 17%. Whereas some earlier studies focus on the mind-set and skills of young people (Commission, 2002) a study by Ernst and Young cited in (The Economist, 2012) showed that German, Italian and French entrepreneurs were far less confident about their country as a place for start-ups than those in America, Canada or Brazil.

Today, small businesses play an important role in the economy through their ability to adapt to a changing environment and because their structure allows them to conform to technical changes at a rate fast enough to survive. Many countries have already recognized this and are taking steps by supporting small businesses and entrepreneurship, and by encouraging innovative and entrepreneurial activities in order to achieve a more prosperous society. In fact, the most dynamic societies in the world are the ones that have more entrepreneurs, who simultaneously are motivated to undertake greater activities. This is due to the entrepreneurial energy, creativity and motivation that trigger in new products or services designed for satisfying needs that have not been fulfilled yet.

2. 4. The importance of entrepreneurship for youth

Nowadays, due to the high rates of unemployment particularly among youth and the difficulty in accessing and securing high quality employment prospects, entrepreneurship appears to be an appealing alternative. Its potentials for jobs creation and contributing to the economic growth (Wong, Ho, & Autio, 2005) render entrepreneurship in a prominent position. Beyond this view, entrepreneurship is also valued for developing knowledge skills and particularly attitudes that are highly sought in today's globalized and dynamic economic environment (Gibb, 2002).

Incorporating entrepreneurial activities in youth's education has been reported (Johannisson, 2010), (Lackéus, 2013), (Surlemont, 2007) to yield increased engagement and creativity among students. A number of researchers (Deuchar, 2007), (Surlemont, 2007), (Moberg, 2014) and (Nakkula, et al., 2004) have also identified that students perceive the taught topics as more relevant to them and their future development and that this increases their motivation and school engagement.

It must be noted, however, that not all educators or policymakers are positively predisposed towards entrepreneurial education; it has been documented (Johannisson, 2010, p. 92) that educators may oppose the fact that the "ugly face of capitalism" is now entering educational institutions. From empirical data, we also believe that this view is as well, widely adopted in other contexts.

Promoting entrepreneurship under a theme that is socially compliant may facilitate a wider acceptance of such initiatives. Some indicative examples of such approaches include social entrepreneurship (Spinosa, Flores, & Dreyfus, 1999), (Tracey & Phillips, 2007) and the promotion of the Digital Agenda (Digital Championship, 2015). Entrepreneurship is fundamentally promoted as an empowering mechanism for the young people that enables them to address social, environmental, or ICT issues that have contextual weight, promote deep learning and intertwine conceptual knowledge with applied skills. Due to strong corporate responsibility undertones, such initiatives may also attract support from corporations or sponsorships from other institutions.

2. 5. ICT in education: a chance to learn

Information and Communications Technology (ICT) used at different levels and in educational systems, in some particular subjects, can have a meaningful impact on the development of learning and strengthening student's life and working skills that encourage their integration into the knowledge society.

We live in a society that is immersed in the development of technology, where ICTs have changed our work conditions - as they provide real time access to an infinite amount of knowledge - and lifestyle. In the area of education, ICTs have proved to be a great support for both students and teachers, and they allow the development of new teaching resources and the creation of new methods for more efficient teaching.

In this way, we can draw up the list of types of ICT tools commonly used in educational systems (see Table 3 below).

Table 3. Analysed educational ICTs

CATEGORY	SERVICE/APP	DESCRIPTION
Resource management, databases and libraries	Repository	A storage location, often for safety or preservation
	Hypertext	A non-linear text that connects various elements through links
Communication and collaboration	Computer mediated	Any form of communication between two or more individual people who interact each other through the Internet or a network connection, via separated computers
	Groupware or collaborative software	A software that supports multiusers tasks' on the same platform
	Instant messaging and other forms of chat	Text-based real-time communication on the Internet
	Forums, network technologies	Holding discussions
	Videoconferencing	A set of interactive telecommunication technologies which allows two or more locations to interact via two-way video and audio transmissions simultaneously. In education, it is used for tele-teaching, e-tutoring, etc.
	Learning Management System (LMS) modules	Software systems that deliver courseware plus e-tutoring over the Internet
Micro worlds, Simulations, Experimentation and Games	Computer-based learning software	
	Micro worlds	Computer environments where the learner can explore and build
	Simulations	Computer environments where the learner can play with parameters of dynamic system
	Hypertext	
	Serious game,	Any kind of interactive application – for example a computer simulation of a micro world – that is designed and implemented according to gameplay principles; its main purpose are education and training
	gamification,	The use of game's thinking and mechanics in non-game contexts to engage users in solving problems and increase user's self-contributions
	simulation and gaming	A series of instructional designs that use elements and gaming; it is particularly popular in business education

CATEGORY	SERVICE/APP	DESCRIPTION
ICT as a subject	Development and programming tools	
	Programing Micro Worlds, as Logo	
Professional tools	Office tools (word processors, presentation tools, …)	Software tools that are used in a work context to produce some kind of contents and that have been mainly developed for this purpose. In education, and especially in the educative system, professional tools seem to be the most popular category of educational technologies
	Cognitive tools like concept maps	
	Computer-assisted design tools	
	Visualization tools	
	Internet communication tools, like e-mail	
	Writing tools	
	Internet publication tools like web-pages, CMSs and associated search technology	
Tutoring and exercising	Computer-based training software, sometimes also called courseware	A type of education in which the student learns by executing special training programs on a computer
	Multimedia	The use of several different media (e.g. text, audio, graphics, animation, video, and interactivity) to convey information
	Web-based training software	e-instruction core or e-learning systems
Integrated systems	Learning Management Systems / pedagogical or e-learning platform	A software system that delivers courseware plus e-tutoring over the Internet
	Personal Learning environments	Systems based on the integration of web services, in particular social software. It integrates lifelong learning, informal learning, learning styles, new approaches to assessment and cognitive tools
School and student administration		
Cognitive tools and social software	Cognitive tools	Learning with technology (as opposed to through technology); they empower the learners to think more meaningfully and to assume ownership of their knowledge, rather than reproducing teacher's.
	Social software	It enables people to rendezvous, connect or collaborate through computer-mediated communication and to form online communities

CATEGORY	SERVICE/APP	DESCRIPTION
Social computing		The use of social software, i.e. systems which support collective gathering, representation, processing and dissemination of information
Teaching tools and assessment	Course preparation tools	
	Presentation software (e.g. Power Point)	
	Videoconferencing	
	Quizzing tool	A software that delivers quizzes and tests
Environment for project-oriented learning	Portals such as C3 MS	
	Various groupware	
	Collaborative hypertexts such as Wikis	
	Learning environments like WISE, Knowledge Forum, etc.	

2. 6. Web 2.0 in education

During the last years the technologies have rapidly evolved, the students' needs in knowledge and skills development have changed and new teaching and learning strategies have appeared, revealing that the process of designing learning environments is of major importance. This is explained with the need of students to use the Web 2.0 technology tools and applications for their everyday communication, collaboration and sharing.

Web 2.0 tools, applications and services are of major importance for our everyday life activities, with Social Networking Technologies (SNT) and Applications having a tremendous growth of users with services such as Facebook, Twitter, Pinterest, Google+ and LinkedIn, just because they enable us to complement or replace our face–to–face communication. But can these technologies benefit education too?

The development of Web 2.0, the so called interactive web, brought users new ways of Contributing, Collaborating and Creating which are named as the 3C's, setting a new era of searching and processing information (Ala-Mutka, Punie, & Ferrari, 2009), (Hargadon, 2009), (Murugesan, 2009), (Richardson, 2009). Web 2.0 services and applications such as blogs, wikis, multimedia sharing services, content syndication, podcasting and content tagging service reveal the foundation of the Web 2.0 concept, and are already being widely used in the educational context. Specifically, these services operate using the building blocks of the technologies and open standards that support the Internet with most of the applications being in use for a number of years now (Eteokleous & Ktoridou, 2011).

Having in mind the opportunities provided through the Web 2.0, its tools and applications can be applied for teaching and learning purposes towards achieving educational objectives.

Various researchers claim that the Web 2.0 will dramatically change the education of the 21st century. Web 2.0 will change, the way students learn; educators' teaching and learning approach, and finally the student-to-student, student-to-teacher, teacher-to-student communication collaboration and sharing (Ala-Mutka, Punie, & Ferrari, 2009), (Hargadon, 2009), (Murugesan, 2009), (Richardson, 2009).

Several companies are providing Web 2.0 services and applications to the educational sector, Microsoft and Google being the pioneers offering independently customizable versions of several products under a custom domain name.

3. COMPARATIVE ANALYSIS OF ENTREPRENEURIAL EDUCATIONAL PROGRAMS

Worldwide, there are several programs for enhancing entrepreneurial skills of young people, but most are designed for people over 18. In addition, most people who become an entrepreneur, has an entrepreneur family member or has had the chance of confronting the experience of creating an activity. The brakes for entrepreneurship are often:

- the fear of taking risks,
- the lack of experience,
- the lack of share capital,
- the family members who discourage initiatives.

3. 1. Classification of the different methods

It has been carried out an analysis of existing methods that develop entrepreneurial skills in children. Different methods have been identified (see Figure 2).

Figure 2. Methods for developing entrepreneurial skills

- **School curriculum**: a program lasting a minimum of one semester that is integrated in general educational programs.
- **Competition**: the participants have a specific period of time –which can go from some days to some months- to deliver a particular work –video, presentation of an idea…- that answers to a problem related to business.
- **Course**: a teaching unit in which the participants develop some entrepreneurial skills in a period of one or two weeks.
- **Extracurricular activity**: a long-term course, proposed as a complementary activity after school, in which the participants develop entrepreneurial skills during the whole year.
- **Summer camp**: a supervised summer program organized for one or two weeks in order to develop entrepreneurial skills.
- **Products**: mostly video-game or CD support games that virtually create a business aiming to develop entrepreneurial skills
- **Workshops**; an isolated class that consists on one to three days in which "quick inputs" are given to develop entrepreneurial skills.
- **Web series**: series broadcasted on the internet as real stories that permit children to discover the different steps to create an activity, a business and understand some of the concepts related to them (funds rising, income and expenses…)
- **Financing:** a specific program which finances and gives the participants advice to make them run their own business.

- **Online platform**: a shared online page where kids, parents and the relatives can follow children's goals. They learn how to manage their income according to the defined goals.

These programs have been developed and implemented in different countries over the world, as it can be seen in the Figure 3.

Figure 3. Geographic location of the different analysed methods

We can notice that most of the analysed examples are school curriculums. Although it is also surprising how many competitions and summer camps based on entrepreneurship exist in the world, as well as courses and extracurricular activities. Regarding the location, we can underline that school curriculum are more present in the north of Europe rather than in the south.

3. 2. Analysis of the skills developed through the existing programs

The methods mentioned in the previous section have in common the skills they enhance in young people. Between those abilities stand out, for example, entrepreneurial attitude and thinking; creative and innovative spirit; development of personal skills such as authority and solidarity; development of technical concepts such as business property, marketing, advertising, finance, etc.; teamwork, financial education, setting goals, culture of innovation and entrepreneurship…

In order to more deeply understand the content and the objectives of these methods, the abilities that are enhanced have been classified according to the methods previously mentioned. In that way, the Table 4 shows which competences are more or less developed in the programs that correspond to those methods.

Table 4. Skills enhanced by the analysed methods and programs

Analysed programs	School curriculum	Competition	Course	Extracurricular activity	Summer camp	Products	Workshop	Web series	Financing	Online platform	TOTAL	% of application
	20	7	4	2	8	11	1	2	1	1	57	
Adapt	1	·	·	·	·	·	·	·	·	·	1	1,8
Advertising	1	·	·	·	·	·	·	·	·	·	1	1,8
Appreciation of individual skills and talents	1	1	1	·	1	1	·	·	·	·	5	8,8
Autonomy	1	1	·	·	1	1	·	·	·	·	4	7
Business planning	·	·	·	·	2	2	·	·	·	·	4	7
Collaboration	1	·	1	·	·	·	·	·	·	·	2	3.5
Communication	1	·	·	1	1	·	·	·	·	·	3	5.3
Competitive advantage	1	·	·	·	1	1	·	·	·	·	3	5.3
Confidence	1	1	·	·	1	1	·	·	·	·	4	7
Creativity skills	4	1	1	2	·	·	1	·	·	·	9	15,8
Critical thinking	2	·	·	·	·	·	·	·	·	·	2	3.5
Decision making	1	·	1	·	·	·	·	·	·	·	2	3.5
Emotional intelligence	2	·	·	·	·	·	·	·	·	·	2	3.5
Entrepreneurial attitude/thinking	14	5	3	1	5	6	1	2	1		38	66,7
Entrepreneurship thinking	2	1	·	·	·	·	·	·	·	·	3	5.3
Financial education	5	2	·	·	5	5	·	2	1	1	21	36,8
Innovative spirit/skill	3	·	·	1	2	·	·	·	1	·	7	12,3
Interest in entrepreneurship	1	·	·	·	1	·	·	·	·	·	2	3.5
Leadership	1	1	·	·	1	·	·	·	·	·	3	5.3
Marketing	2	·	·	·	2	3	·	·	1	·	8	14
Motivation	·	1	·	·	·	·	·	·	·	·	1	1,8
Ownership	2	·	·	·	1	·	·	·	·	·	3	5.3
Problem solving	1	·	·	·	2	·	·	·	·	·	3	5.3
Product development	2	·	·	·	1	·	·	·	·	·	3	5.3
Risk taking	1	·	1	·	·	·	·	·	·	·	2	3.5
Sales	1	·	·	·	·	1	·	·	1	·	3	5.3
Seek new opportunities	2	2	·	·	1	·	·	·	·	·	5	8,8
Self-confidence	1	·	·	·	·	·	·	·	·	·	1	1,8
Self-esteem	1	1	·	·	1	1	·	·	·	·	4	7
Setting goals	·	·	1	·	1	1	·	·	·	1	4	7
SME world introduction	·	·	·	·	·	2	·	·	·	·	2	3.5
Social responsibility	1	·	·	·	·	·	·	·	1	·	2	3.5
Solidarity	1	1	·	·	1	1	·	·	·	·	4	7
Strategic concepts	·	·	·	·	·	1	·	·	·	·	1	1,8
Strategies evaluation	·	·	·	·	·	1	·	·	·	·	1	1,8
Teamwork	2	·	1	·	1	·	·	·	·	·	4	7

Due to the fact that the "school curriculum" programs are the ones applied during the longest period, it is evident that this method permits to develop most of the listed skills. However, we can clearly observe that some skills seem to be more adapted to short-term methods. For example, workshops, web series, products or online platforms are dedicated to far fewer competencies than the others. It attests that children need long-term to demonstrate any progress in entrepreneurial skills development. Also, we can underline that products and Web Series are clearly oriented to financial education and "money" matters.

If we analyse closely the frequency of skills according to the methods/programs, four stand out: entrepreneurial attitude, creativity skills, innovative spirit, financial education and marketing.

In addition to this first analysis, we have completed the study by adding the reference of age. In that way, it has been seen that the skills or competences that are empowered in youth depend on their age. This can be observed in the Table 5, which includes all the skills that the analysed educational programs want to develop in young people, and what age are those skills targeted to.

Table 5. Skills developed on the analysed educational models and the age to which they are targeted

In the chart above it can be seen that nowadays, most educational programs whose aim is to develop young's entrepreneurial skills have been designed for children between ten and eleven years.

Also, in the analysis stand out several initiatives taken by JA Worldwide (Junior Achievement Worldwide), the largest international non-profit organization in the world in entrepreneurship education. Junior Achievement fosters youth's entrepreneurial spirit, preparing them for their incorporation into the working world. It also promotes financial literacy through experiential educational programs based on the methodology "Learning by Doing". Some examples of the initiatives taken by this organization are "It's my business" and "A business of your own".

The first program, "It's my business", has been carried out in Brussels and it focuses on students aged 13 to 15; it encourages students to use entrepreneurial thinking as they explore higher education and career choices. Students participate in funny and challenging activities such as an entrepreneurial quiz game, completing a blueprint for a teen club, participating in an auction of businesses and creating entrepreneur profile cards. In regard to the program "A business of your own", it has been developed in Canada and it targets students aged 5 to 11. Its aim is to engage elementary school students in activities to apply their knowledge and skills to a real life situation. From start to finish, students set up their retail sales stand, track profits and eventually distribute earnings.

Some skills are clearly worked whatever is children's age (see Table 5, top of the list: from "adapt" to "leadership") whereas others seem to be proposed to older people (from "identify business opportunities" to motivation". We can give two explanations to this observation. First, some skills required some basic knowledge to be fully developed and so, at young age, children won't have it (for example, we can mention "identify business opportunity" which means that a child understands the economic world, a business' functions…). Secondly, it is sometimes necessary to have a certain maturity to have the capacity of developing competencies. This maturity, except for children in specific conditions and environments, can't be acquired before a certain age. In this case, we can quote: motivation, business ethics or competition.

3. 3. Identification of the technologies used to develop entrepreneurial skills

According to the technologies used by the analysed examples, 49% of those educational programs incorporate technologies, both as a basis or as a support.

The technologies that are commonly used in educational programs have been reflected in a table depending on the age which are targeted to (see Table 6).

Table 6. Technologies used on the analysed educational models and age to which they are targeted

Most of the technologies are targeted to children between ten and eleven years old. This makes sense considering that this table is based on the previous one, the difference is on the fact that the older youth uses more advanced technologies compared to the younger ones.

Thus, logically the children's digital competencies are related to children's age and this influences the types of digital tools that can be used in the different programs, which are related to the targeted ages.

However, among those technologies the more widespread or used are apps, videos, webisodes and online games, but also computer simulation games, online platforms and videogames, among others.

Indeed, we can explain these results as following:

- Apps are easier to develop and above all, easier to personalize specific needs. From a financial point of view, they are also the most interesting for a structure. Moreover, they can be implemented in devices like smartphones or tablets. As we know, tablets are the more widespread devices in the educational system, so that is quite logic to use digital services directly linked to them.
- Online games, online platforms: online services are preferred because of their availability for everyone, from wherever. Schools just need an internet connexion.
- Online games, simulation games, and videogames: all the game-derivative are more and more used because they permit to approach the entrepreneurial skills and entrepreneurship from a funnier way. For such a subject (new and little known), it is always better to start via innovative tools.
- Videos, webisodes: videos are more and more present in the educational system; above all with the development of internet and the WebTV or YouTube channels. They are very useful to illustrate concretely some complex notions, especially the financial concepts. Not only have the children a better understanding, but often, the videos' actors are either children or young people from whom they feel closer.

To complete this analysis for the needs of YESict project, and later the pedagogical method, it seems appropriate to identify which entrepreneurial skills are worked thanks to ICT tools.

As it can be seen in the Table 7, five skills appear to be more frequently worked thanks to ICT: **creativity, entrepreneurial attitude/skill, financial education, innovative spirit/skill and teamwork.** In comparison with the first analysis (Methods and skills), "Teamwork" is a new entry.

In contrast with the conclusions obtained previously, we also can affirm that "personal skills", that is to say the ones related to personality or emotional intelligence (autonomy, leadership, self-esteem, confidence…), are almost absent.

In conclusion, we can underline that:

- some entrepreneurial skills are easily taught thanks to ICT and children can particularly benefit from digital tools to develop them;
- personal skills cannot be worked with ICT since they are typically skills developed thanks to social interaction;
- apps and online platforms completed by videos, which are developed according to a playful spirit, are the most common ICT tools used to develop entrepreneurial skills.

Table 7. Skills enhanced depending on the ICTs

Analysed ICTs	3D Printing	App	App Inventor	Business Simulation	CD / DVD	Computer / Laptop	Computer Simulation Game	Dynamic Exercises	eBook	Interactive Website	Interactive Web Tutorials	Lego Mindstorm	Lego Wedo	Mobile Phone	Movie Making Program	Multimedia Business Plan	Online Content	Online Community	Online Course	Online Games	Online Platform	Online Podcast	Online Role Playing Games	Scratch	Social Network	Social Media	Tablet	T-Tools	Videogame	Videos	Webisodes	TOTAL
	1	6	1	2	3	2	2	1	1	2	1	1	1	1	1	1	1	1	1	1	4	3	1	1	1	2	1	2	1	1	4	4	55
Adapt	·	·	·	·	·	·	·	·	·	·	1	·	·	·	·	·	·	·	·	·	·	·	1	·	·	·	·	·	·	·	1	1	4
Advertising	·	·	·	·	1	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	1
Appreciation of individual skills and talents	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	0
Autonomy	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	0
Business planning	·	1	·	·	1	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	2
Collaboration	·	·	·	·	·	1	·	·	·	·	·	·	·	1	·	·	·	·	·	·	·	·	·	·	·	1	·	·	·	·	·	·	3
Communication	·	·	·	·	·	1	·	·	·	·	·	·	·	1	·	·	·	·	·	·	·	·	·	·	·	1	·	·	·	·	·	·	3
Competitive advantage	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	0
Confidence	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	0
Creativity skills	1	1	1	·	·	1	·	1	·	1	·	1	1	·	1	1	·	·	·	·	·	·	·	1	·	·	1	·	·	1	·	·	13
Critical thinking	·	·	·	·	·	1	·	·	·	·	·	·	·	1	·	·	·	·	·	·	·	·	·	·	·	·	1	·	·	·	·	·	3
Decision making	·	1	·	·	·	1	1	·	·	·	·	·	1	·	·	·	·	·	·	·	·	·	·	·	·	·	1	·	·	·	·	·	5
Emotional intelligence	·	·	·	·	·	·	·	1	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	1	·	·	2
Entrepreneurial attitude/thinking	·	3	·	2	2	2	1	·	1	1	1	·	·	1	1	1	1	1	1	3	·	1	·	·	·	1	2	·	·	1	4	31
Entrepreneurship thinking	·	2	·	·	·	·	1	·	·	·	·	·	·	·	·	·	·	·	·	·	1	·	1	·	1	·	·	1	·	·	·	·	7
Financial education	·	2	·	2	1	·	·	·	·	1	·	·	·	·	·	·	1	1	2	1	·	·	·	1	1	·	·	·	1	3	17
Innovative spirit/skill	·	1	·	·	·	·	·	1	·	·	1	·	·	·	·	·	·	·	·	·	1	·	·	1	·	·	·	·	2	1	8
Interest in entrepreneurship	·	·	·	·	·	·	·	1	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	1	·	2
Leadership	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	0
Marketing	·	·	·	2	1	·	·	·	·	·	·	·	·	·	·	·	·	·	1	·	·	·	·	·	·	·	·	·	·	·	4
Motivation	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	0
Ownership	·	·	·	·	1	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	1
Problem solving	·	·	·	·	·	·	·	·	·	1	·	·	·	·	·	·	·	·	·	·	1	·	·	·	·	·	·	·	1	1	4
Product development	·	·	·	·	1	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	1
Risk taking	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	1	1	1	·	·	·	·	1	·	·	·	·	·	·	4
Sales	·	·	·	·	1	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	1
Seek new opportunities	·	·	·	·	·	·	·	·	·	·	·	·	·	·	1	·	1	1	1	·	·	·	·	1	·	·	·	·	·	·	5
Self-confidence	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	0
Self-esteem	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	0
Setting goals	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	0
SME world introduction	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	1	·	·	·	·	·	·	·	·	1	·	·	2
Social responsibility	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	0
Solidarity	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	0
Strategic concepts	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	0
Strategies evaluation	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	0
Teamwork	·	·	1	·	·	·	·	·	·	·	1	1	·	·	·	·	1	1	1	·	·	·	1	·	1	·	·	·	·	·	8

4. CONCLUSIONS AND RECOMMENDATIONS FOR THE YESict EDUCATIONAL METHODOLOGY

This analysis has been led according to different criteria:

- Type of programs that develop entrepreneurial skills
- Type of entrepreneurial skills
- Children's age
- Type of ICT tools

The objective is to find if there exists any correlation between the different criteria and to obtain relevant conclusions to support the design of "Output 3 - Entrepreneurship curricula".

Type of program:

We first have seen that most of entrepreneurship programs targets 10-11 year-old children, maybe because, before this age they are two young and lack of certain knowledge to fully develop entrepreneurial skills. Whatever the reason, it seems justified to propose this kind of program to 10-year-old children at least.

Regarding the type of methods, **school curriculum** evidently offers more possibilities considering the number of competencies it can cover, as well as the potential results. Indeed, all the skills need a certain time of application for any method to be actually developed. Therefore, it is logic to guide the choice of type of method for the output 3 towards a school curriculum, which will be at the same time more efficient and more adaptable.

Type of competencies:

The definitive list of entrepreneurial skills that should be developed through the method will be drawn up thanks to the study in output 2. However, the analysis done during this first work may already give some indications.

Firstly, the YESict project opted for a pedagogy that develops entrepreneurial skills thanks to ICT. In this analysis, we have seen that personal competencies are not preferential skills to be worked thanks to ICT, more the contrary. The personal skills (such as autonomy, self-confidence, leadership, self-esteem…) may be part of the final version of the output 3 (if seen as essential with output 2) but will be either worked thanks to non-ICT tools or, by the very application conditions of the method. For instance, collaboration and communication will be developed by organizing teamwork and/or presentation of the obtained results by children's team to their peers.

Secondly, some skills have clearly been underlined: **creativity, entrepreneurial attitude, financial education, innovative spirit and teamwork.** However, JA programs (which inspire most of the other analysed methods programs) lead to develop entrepreneurial skills, "through" entrepreneurship (cf. pp. 3-4) by the creation of micro-business. However, some researchers agree to say that it is not so convenient to teach at

such a young age the notion of profitability. (Pepin, 2011) It is far more important to nurture creativity skills and innovative spirit, that they are very likely to be lost than profitability, which will always be considered and at stake in any moment of any child's future professional life.

Children must develop first and well their capacity of being original and their will to change things, even the world.

Type of ICT tools:

Finally, considering the digital tools, we have seen that some seem more suitable to the development of entrepreneurial skills: video, as illustration for complex notion, online platform and games.

If we exclude "financial education" from the definitive list of skills (cf. above), we can opt for online platform, as the best ICT tool. Indeed, this offers:

- accessibility (available with Internet connexion and from everywhere)
- adaptability, as it is easy enhanced by apps
- easy appropriation

On one hand, if we refer to page 9, web 2.0 tools are very familiar for nowadays' children and an online platform will be completely adopted by them if they are to use it.

On another hand, if we take in account the fact that we want to propose a model which any school can integrate and implement (from either financial or technical point of view), **Web 2.0 technologies, and especially pre-existing free web 2.0 platform**, seem highly recommended.

5. BIBLIOGRAPHY

Ala-Mutka, K., Punie, Y., & Ferrari, A. (2009). Review of Learning in Online Networks and Communities. In U. Cress, V. Dimitrova, & M. Specht, *Learning in the Synergy of Multiple Disciplines: 4th European Conference on Technology Enhanced Learning, EC-TEL 2009 Nice, France, September 29--October 2, 2009 Proceedings* (pp. 350-364). Berlin, Heidelberg: Springer Berlin Heidelberg.

Bruyat, C., & Julien, P.-A. (2001). Defining the field of research in entrepreneurship. *Journal of Business Venturing, 16*, 165-180.

Commission, E. (2002). *Final Report of the Expert Group "Best Procedure", Projet on Education and Training for Entrepreneurship.* Brussels: European Commission.

Deuchar, R. (2007). *Citizenship, Enterprise and Learning: Harmonising Competing Educational Agendas.* London: Trentham Books.

Digital Championship. (2015). Retrieved November 25, 2015, from http://web.cut.ac.cy/digitalchampion/en/

Erkkilä, K. (2000). *Entrepreneurial education: mapping the debates in the United States, the United Kingdom and Finland.* New York: Garland Pub.

Eteokleous, N., & Ktoridou, D. (2011, July 7-9). Higher Education: A Web 2.0 World of communication, collaboration, participation and sharing. *Proceedings of ICICTE-International Conference on ICT in Education*, (pp. 1-10). Rhodes, Greece.

Eteokleous, N., & Ktoridou, D. (2012, April 17-20). Cultivating Entrepreneurial Skills through Case-Based Learning for MIS Courses. *IEEE Xplore proceedings of the IEEE EDUCON 2012 - IEEE Global Engineering Education Conference*, (pp. 11-15). Marrakesh, Morocco.

Gartner, W. B. (1990). What are we talking about when we talk about entrepreneurship? *Journal of Business Venturing, 5*, 15-28.

Gibb, A. (2002). In pursuit of a new 'enterprise' and 'entrepreneurship' paradigm for learning: creative destruction, new values, new ways of doing things and new combinations of knowledge. *International Journal of Management Reviews, 4*, 233-269.

Gibb, A. (2008). Entrepreneurship and enterprise education in schools and colleges: insights from UK practice. *International Journal of Entrepreneurship Education, 6*, 48.

Handscombe, R. D., Rodriguez-Falcon, E., & Patterson, E. (2008). Embedding enterprise in science and engineering departments. *Education + Training, 50*, 615-625.

Hannon, P. D. (2005, May). Philosophies of Enterprise and Entrepreneurship Education and the Challenges for Higher Education in the UK. *International Journal of Entrepreneurship and Innovation, 6* (2), 105-114.

Hargadon, S. (2009). *Elluminate.* Retrieved from Educational Networking: The important role Web 2.0 will play in education.

Heinonen, J., & Hytti, U. (2010). Back to basics: the role of teaching in developing the entrepreneurial university. *The International Journal of Entrepreneurship and Innovation, 11*, 283-292.

Johannisson, B. (2010). The agony of the Swedish school when confronted by entrepreneurship. In K. Skogen, & J. (. Sjovoll, *Creativity and Innovation. Preconditions for entrepreneurial education.* Trondheim: Tapir Academic Press.

Johnson, C. (1988). Enterprise education and training. *Brittish Journal of Education and Work, 2*, 61-65.

Lackéus, M. (2013). *Developing Entrepreneurial Competencies - An Action-Based Approach and Classification in Education.* Licentiate Thesis, Chalmers University of Technology.

Lackéus, M. (2015). *Entrepreneurship in Education: What, Why, When, How.* LEED, OECD.

Mahieu, R. (2006). *Agents of Change and Policies of Scale. A policy study of Entrepreneurship and Enterprise in Education.* Umeå, Sweden: Umeå University.

Moberg, K. (2014). *Assessing the Impact of Entrepreneurship Education - From ABC to PhD.* PhD Thesis, Copenhagen Business School.

Murugesan, S. (2009). *Social Issues and Web 2.0: A closer Look at Culture in E-Learning. Handbook of Research on Web 2.0, 3.0, and X.0: Technologies, Business, and Social Applications.*

Mwasalwiba, E. S. (2010). Entrepreneurship education: a review of its objectives, teaching methods, and impact indicators. *Education + Training, 52*, 20-47.

Nakkula, M., Lutyens, M., Pineda, C., Dray, A., Gaytan, F., & Hugulay, J. (2004). *Initiating, Leading, and Feeling in Control of One's Fate: Findings from the 2002-2003 Study of NFTE in Six Boston Public High Schools.* Harvard University Graduate School of Education.

O'Connor, A. (2013). A conceptual framework for entrepreneurship education policy: Meeting government and economic purposes. *Journal of Business Venturing, 28*, 546-563.

Pepin, M. (2011). L'entrepreneuriat en milieu scolaire : de quoi s'agit-il? *McGill Journal of Education / Revue des sciences de l'éducation de McGill, 46* (2), 303-326.

QAA. (2012). *Enterprise and entrepreneurship education: Guidance for UK higher education providers.* Gloucester, UK: The Quality Assurance Agency for Higer Education.

Richardson, W. (2009). Becoming Internet Wise: Schools can do a far better job of preparing students for their connected futures online. *Educational Leadership*, 26-31.

Sexton, D. L., & Kasarda, J. D. (1991). *The State of the Art of Entrepreneurship.* Boston, MA: P. W. Kent Publishing Co.

Shane, S. A. (2003). *A general theory of entrepreneurship: The individual-opportunity nexus.* Edward Elgar Pub.

Shane, S., & Venkataraman, S. (2007, January). The Promise of Entrepreneurship as a Field of Research. *The Academy of Management Review, 25* (1), 217-226.

Smith, A. J., & Hannon, P. D. (2006). Embedding new entrepreneurship programmes in UK higher education institutions: challenges and considerations. *Education + Training, 48*, 555-567.

Spinosa, C., Flores, F., & Dreyfus, H. L. (1999). *Disclosing new worlds: Entrepreneurship, democratic action and the cultivation of solidarity.* Cambridge, MA: MIT Press.

Stevenson, H. H., & Jarillo, J. C. (1990). A paradigm of entrepreneurship: entrepreneurial management. *Strategic management journal, 11*, 17-27.

Surlemont, B. (2007). Promoting enterprising: a strategic move to get schools' cooperation in the promotion of entrepreneurship. In A. Fayolle, & (ed.), *Handbook of Research in Entrepreneurship Education: Contextual perspectives.* Cheltenham, UK: Edward Elgar.

The Economist. (2012, Jully 28). Retrieved November 29, 2015, from European entrepreneurs - Les misérables: http://www.economist.com/node/21559618

Tracey, P., & Phillips, N. (2007). The distinctive challenge of educating social entrepreneurs: A postscrip and rejoinder to the special issue on entrepreneurship education. *Academy of Management Learning & Education, 6*, 264-271.

Wong, P. K., Ho, Y. P., & Autio, E. (2005). Entrepreneurship, innovation and economic growth: Evidence from GEM data. *Small Business Economics, 24*, 335-350.