

Directions in entrepreneurship education in Europe

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An extraordinary proliferation of entrepreneurship courses and programs was and still is underway in colleges and universities worldwide. In Europe this phenomenon has been further stimulated by the focus on Entrepreneurship as key objective for the implementation of the Europe2020 strategy (EC, 2010).

This paper provides a systematized overview of patterns and directions in EE in Europe in recent years. We conduct a review of the published research of the theme with an European focus in an attempt to organize the literature along precise lines. When possible we use empirical findings to sustain our arguments. Systematizing the existing literature is a necessary step in developing the field. For researchers, this overview will be constructive in providing an analysis of the directions of published research and in setting up a research agenda for the future. It also raises awareness with regard to entrepreneurship, and in particular, to its potential contribution to the individuals and to the competitiveness of economies. The empirical analysis adds to our knowledge about the current situation of EE in practice in Europe.

Keywords: Entrepreneurship and educational institutions, entrepreneurship education, review, Europe.

JEL classification: A200, I210, I290

1 Introduction

Not surprisingly, the issues related to entrepreneurship education are under increasing attention. In recent years, entrepreneurship education has been enjoying a clear interest, apparent in the ‘boom’ in published research on the matter. As a result, from its initial contributions in the 1970s, entrepreneurship education (EE hereafter) has developed into a major theme. A major issue that needs to be addressed is how to organize the literature along new, precise lines. Systematizing and organizing the existing literature is a necessary step in developing the field and bringing the value of entrepreneurship education to a wider public (Matlay, 2006). Regarding the European region, there is also a lack of comparative studies at European-wide level, which probably is a reflection of the lack of internationally comparable data about entrepreneurship education.

This paper provides a systematized overview of patterns and directions in EE in Europe in recent years. We conduct a review of the published research of the theme with an European focus in an attempt to organize the literature along precise lines. When possible we conduct an empirical analysis focused on a number of European economies with the aim of identifying the trends and directions of EE in Europe. The analysis is based mainly on data from the EU Flash 2009 Eurobarometer Entrepreneurship Survey (European Commission, 2009), and from the European Commission (2008) report on Entrepreneurship in Higher Education Institutions, and from results from the survey by the Global Entrepreneurship Monitor (2008).

The contribution is twofold. A survey of the academic literature is conducted, in order to identify trends and to categorize the literature on several levels, thought to be useful for both academics and practitioners. For researchers, this systematic overview of the literature is useful not only by providing an analysis of the directions of published research but also in setting up a research agenda for the future. For practitioners (e.g. educators), the study provides a clear outline of the main developments in this area, both at the level of methods and techniques recognized as being more effective to teach entrepreneurship, as well as about the experience on courses and programs already developed and their results/outputs. This helps them to synthesize the existent knowledge and to engage more completely in their activity. It is also a means to raising awareness with regard to entrepreneurship.

The paper is structured as follows. Section 2 describes the methodology. Section 3 discusses the results and Section 4 conducts a detailed analysis of the content material of the literature using text analysis and data related to EE for European countries and Economies. Section 5 concludes and points out directions for future research.

2 Methodology

The exercise developed clearly aimed to conduct a comprehensive assessment of existing academic research on entrepreneurship education, through which we could identify the main characteristics of the work developed and the knowledge created in this field. The review is based on a bibliometric study carried out through an electronic search on the ISI Web of Science platform and SCOPUS. Quantitative and qualitative aspects of the articles identified are discussed, a method frequently suggested in the literature.

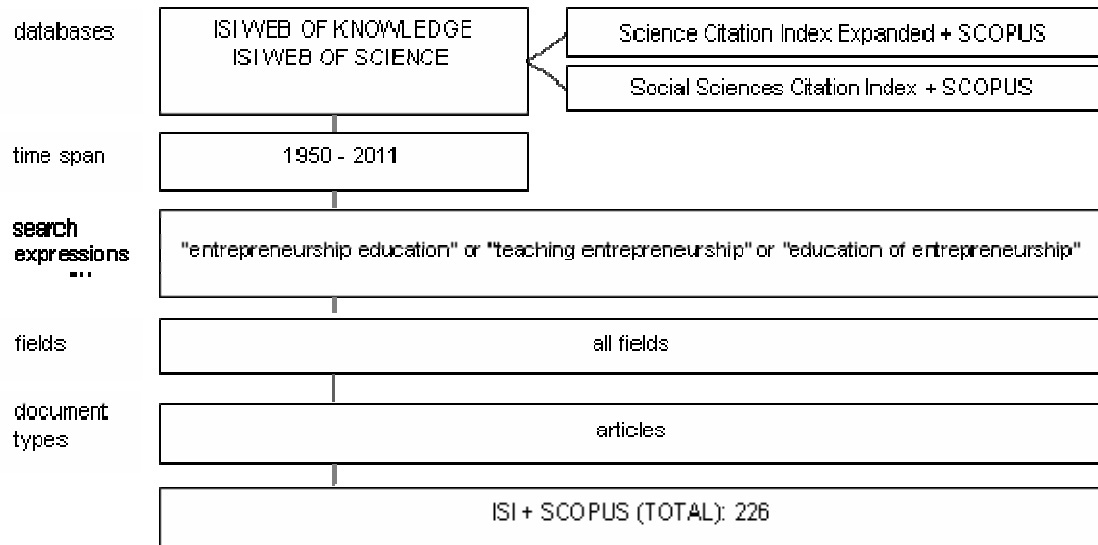
The electronic searches drew on three major databases: the Science Citation Index Expanded (SCI) and the Social Sciences Citation Index (SSCI) and SCOPUS. These databases offer high coverage of all scientific research fields, contain information about citations and the institutional addresses of all the authors of a given article, thus providing the necessary conditions to perform a deeper analysis. Furthermore, since the criterion for including a journal is the number of citations it receives, there are some guarantees as to the scientific relevance of the potential outputs.

The period covered was the widest permitted by the platforms, going from 1900 to 2011. The research was performed in March 2011. Three different key search terms were used: “entrepreneurship education” or “teaching entrepreneurship” or “education of entrepreneurship”. In spite of the diversity of the terminology in the literature, these are the most commonly used expressions in research in the field. This option implied running the risk of excluding from the quantitative analysis articles which did not include these expressions in the title, subject or abstract. The search was also restricted to scientific articles published in several subject categories. Therefore, book reviews, letters, notes, meeting abstracts, etc. were all excluded.

In a first step, a quantitative analysis was conducted, considering publication years, source titles and authors. Was also recorded the number of citations for the articles.

In a second step, a qualitative review of each document was performed in order to identify the articles on EE which provide empirical results for any European country. This final set contained 46 documents. Surveying the academic literature on the theme is not an easy task, but it was believed that the sample is sufficiently representative, so as to identify the directions taken in published academic research, and the directions in EE in Europe. It is expected that this effort to review a representative sample of published articles may comprise a relevant step towards a rigorous account of the paths taken by EE research and practice in Europe in the last few decades. The methodological steps taken are presented in Figure 1.

Figure 1. Methodological steps carried out in the identification of the literature

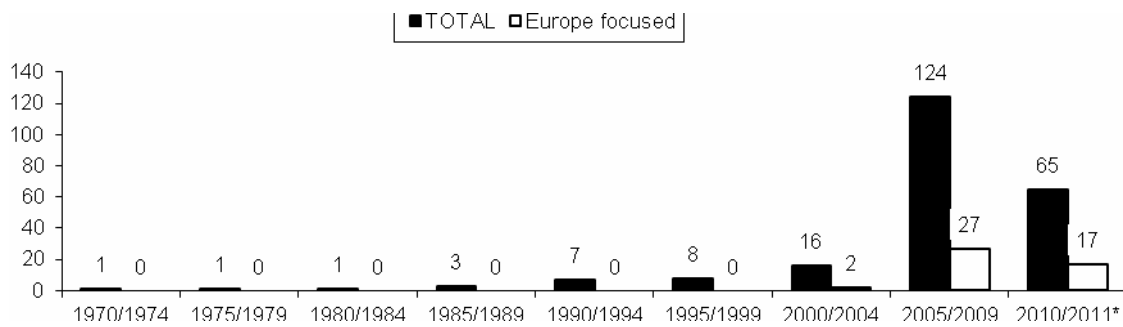


For each article, a range of indicators was collected to create a series of cross-tabulations. These indicators were organized through the categories proposed by the European Commission (2011, forthcoming) inputs, activities, outcomes and impact: “In outlining the shape of an entrepreneurship education ecosystem the potential range of metrics and indicators begin to be discerned” (European commission, 2011, forthcoming). These indicators may range from inputs to outcomes and impacts; across the range of activities that comprise the ecosystem; at levels from the individual to the system as a whole; and, be both quantitative and qualitative in nature”. The qualitative analysis of the abstracts was conducted bearing in mind the following aspects: Country under focus, and Content.

3 Entrepreneurship education research – History of publication

An extraordinary proliferation of entrepreneurship courses and programs was and still is underway in colleges and universities worldwide.

Figure 2. Number of articles published on EE over time

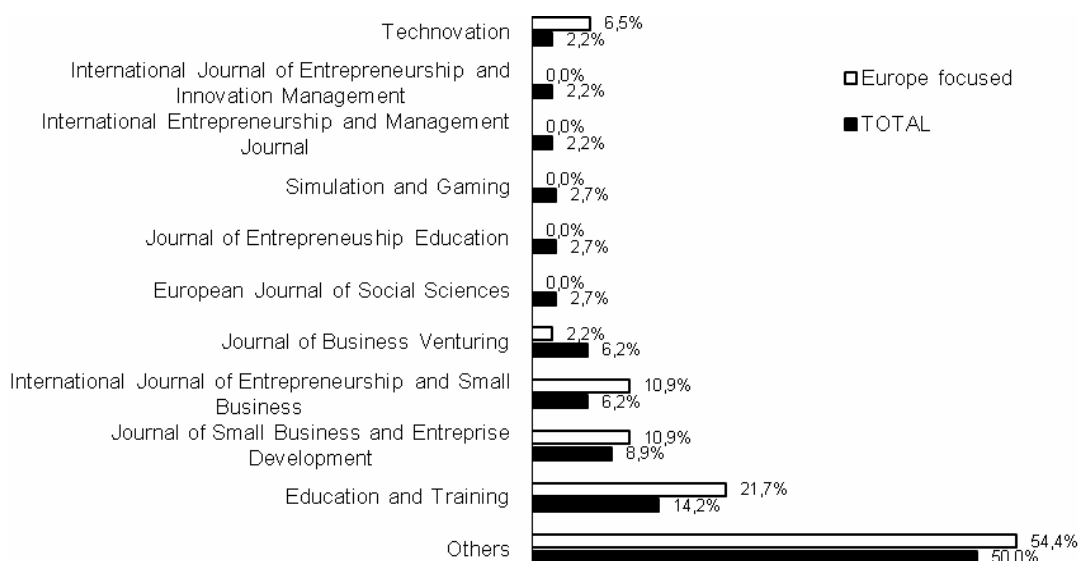


In Europe this phenomenon has been further stimulated by the focus on Entrepreneurship as key objective for the implementation of the Europe2020 strategy (EC, 2010). It has been suggested that entrepreneurship education is also now enjoying a high popularity. The present study corroborates this fact.

A number of articles on the theme have been published in the last century. The results show that articles focused on Europe represent 32.3 percent of the total number of articles published in the period (73 articles out of 226). However, it was only from the middle-2000s that the number of articles published per year registered considerable growth. Looking at the distribution of the articles published over a time series of five years, this growth is evident. Recall that the growth has been significantly lower for papers focused in Europe. Hence, it is evident that the other regions apart from Europe are also diverting increasing attention to EE. Overall, the year of 2010 registered the higher number of publications (55 articles overall, 15 of which with information about European countries).

Overall, articles on EE were published in 96 different publications, out of which 41 are indexed by ISI, and 76 are in SCOPUS (21 Journals are indexed in both indexes). Articles addressing Europe or European countries were published in 38 Journals.

Figure 3. Articles Published by Journal (%)

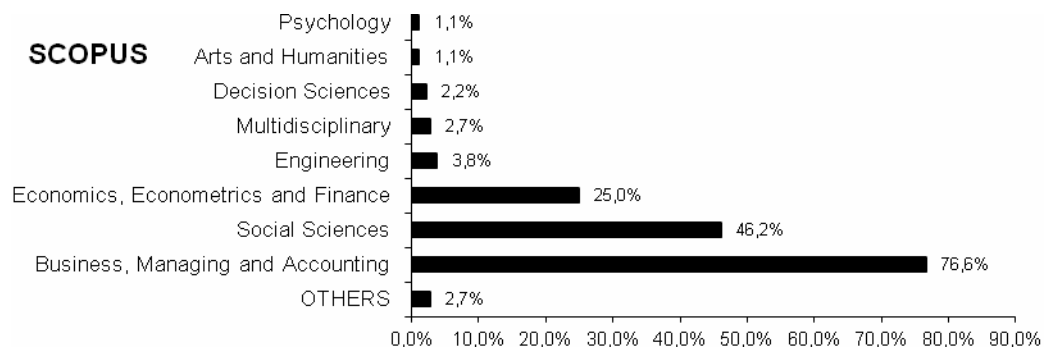
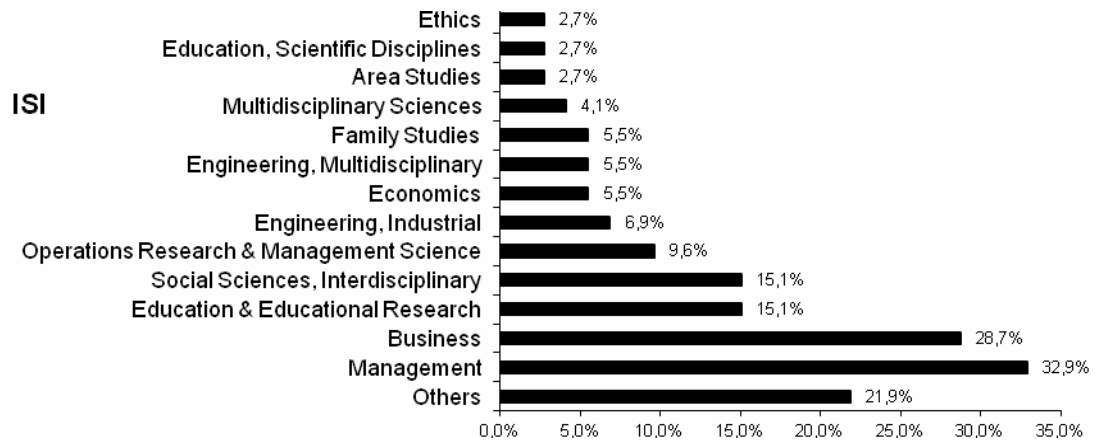


Ten Journals published over 50% of the articles. The Journal Education and Training is the journal with more published articles in this field (32 articles). Another nine journals published at least five scientific articles on the matter: *Journal of Small business and Enterprise Development* (20 articles), *International Journal of Entrepreneurship and Small Business* (14 articles), *Journal of Business Venturing* (14 articles), *European Journal of Social Sciences* (6 articles), and *Journal of Entrepreneurship Education* (6 articles), *Simulation and Gaming* (6 articles), *International Entrepreneurship and Management Journal*, *International Journal of Entrepreneurship and Innovation Management* and *Technovation* (5 articles).

The TOP 4 journals overall along with *Technovation* are also the ones that have published more research on EE focused on Europe.

Most of the articles analysed were published in management and business journals (over 62 percent of articles either when considering ISI or SCOPUS indexed Journals).

Figure 4. Articles Published by Field (%)



Matlay, Rae, Henry, and Cheung are the authors with the highest number of articles (3 each). Matlay and Seikkula-leino (3 articles) are the authors with more articles in what concerns European focused studies. Taking in consideration the ISI citations, Robinson from 1994 is the article more cited, followed by the article from Katz (2003) and Baron (2006) (Table 1).

Table 1. Top cited articles and corresponding author (based only the ISI articles)

Author	Articles	Times Cited	Journal	Average citations per year
Robinson, P. B. (1994)	The effect of education and experience on self-employment success	44	Journal of Business Venturing	2,44
Katz J. A. (2003)	The chronology and intellectual trajectory of American entrepreneurship education 1876-1999	36	Journal of Business Venturing	4
Baron R. A. (2006)	Opportunity recognition as pattern recognition: How entrepreneurs “connect the dots” to identify new business opportunities	31	Academy of Management Perspectives	5,17
Vesper K. H. (1997)	Measuring progress in entrepreneurship education	25	Journal of Business Venturing	1,67

Peterman N. E. (2003)	Enterprise education: Influencing students' perceptions of entrepreneurship	20	Entrepreneurship Theory and Practice	2,5
Souitaris V. (2007)	Do entrepreneurship programmes raise entrepreneurial intention of science and engineering students? The effect of learning, inspiration and resources	17	Journal of Business Venturing	3,4
Wilhelm P. G. (2002)	Perceptions Index: Implications for business ethics and entrepreneurship education	17	Journal of Business Venturing	1,7

The growth in literature on entrepreneurship education continues. However, unlike the US, where “state-of-the-nation” reviews of enterprise education have been undertaken for decades, in Europe reviews of activity in supporting enterprise and entrepreneurship development within Europe are few.). Hence the review conducted in the next section aims to contribute to reduce this gap.

4 Direction in EE in Europe: qualitative results from research

The articles somehow addressing the European context cover in one way or another 23 countries. UK (13 articles) and Germany (7 articles) are the countries more frequently debated in these literature, followed by Netherlands (6 articles), Finland (6 articles) and France (6 articles). Most of the articles (35 articles) have focus in one country only, which makes difficult to make European-wide comparisons or generalizations.

Table 2. Number of Articles by Subject of the content

Subject Content	N° articles
Input	14
Activity	31
Outcome and impact	34

Few studies cover data collected in 3 or more different European economies (e.g. Johansen, 2010; Carey and Matlay, 2010; Komulainen et al., 2009; Kraaijenbrink et al., 2010; Pavey, 2006), while some refer to Europe in general (e.g. Cuevas and Alcalde, 2005).

The articles may be related to inputs to EE, or to specific characteristics of EE activity in practice, or to the outcomes and impact of EE in students or in society. Overall, 14 articles address specifically inputs for EE, 31 articles provide results regarding activity of EE in practice in Europe, and 34 articles concern outcomes and impact from EE.. The main findings and key messages from the literature review are presented in the next section, following this structure

input, activity, outcome and impact. The section presents also data from the EU Flash Eurobarometer Entrepreneurship Survey (2009) and from the European Commission report (2008) “Entrepreneurship in Higher Education Institutions”.

4.1 Input related issues of EE in Europe

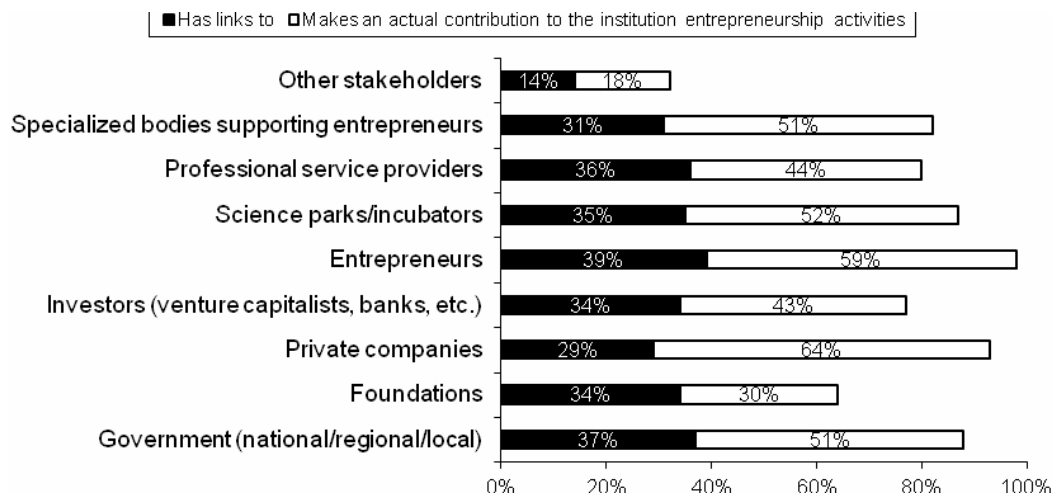
The literature about entrepreneurship education highlights the increased interest of European and national policy agendas for this topic. Overall, governments in Europe are broadly supporting the embedding of enterprise and entrepreneurship capacities across education and through society more generally. Some economies seem to have embarked on this process earlier on in time, such is the case of UK and Finland (e.g. Gibb, 2002; Hannon, 2007; European Commission, 2007b),

At the level of inputs dedicated to EE, the studies analysed shed light on the recurrent following questions: The degree and type of stakeholders involved in EE; and, why EE should not be exclusively taught in Business Schools but included in Higher Education programs. These two aspects are discussed below.

4.1.1 The stakeholders involved in EE

A survey on entrepreneurship in higher education in 31 European Countries (European Commission, 2008) reveals the degree of involvement of different stakeholders on EE programmes (Figure 5). The results reveal that overall there is high involvement from entrepreneurs and private companies on the programmes analysed. However, when considering insights and evidences from individual countries one may realise how realities differ. In Finland, EE has been developed as part of the 2004 curriculum reform supported by an action plan. This action plan has extended EE to all school levels (Korhonen, Komulainen and Rätty, 2011).

Figure 5. Entrepreneurship Education in Europe: links with externals, percent, N=180 (EC, 2008)



Source: Own elaboration based on data from the European Commission (2008)

According to Sekkula-Leino (2011) the implementation of EE in Finland has been a success and the estimates of its future implementation are still very positive. Nevertheless, the responsibility of this development by teachers has been haltingly. Underlining this “paradox”, the author demonstrates that an EE strategy (focus on subjects, pedagogy, learning cultures, etc.) is not sufficient to reach the objectives of change and that a more specified design of the reform and of the monitoring based on the co-operation of all the responsible partners is required. Matlay (2006, 2008, 2009) also underlines the necessity to involve stakeholders in the implementation of EE. More specifically, the author worked on the involvement of stakeholders in EE in the United-Kingdom. He shows that the involvement of students and faculty members in EE is perceived as being of primary importance whereas the involvement of parents, alumni, employers and entrepreneurs is low. Matlay (2009) sheds light on the difficulty to measure the level of involvement of UK government and related agencies and their impact on EE but he demonstrates that their main support is focused on start-ups and growth-oriented SMEs at local, regional and national levels. About this, he deplores an overall lack of clarity and transparency related to financial support for EE and an increasing credibility gap between higher education funding realities and government discourse on EE in particular.

In the EU, unlike the US, there is a high dependency upon public resources at the European, state and sub-regional levels (see for instance the case of UK, Hannon, 2007). Hynes and Richardson (2007) call for the need to engage external stakeholders in programme design, commitment by educational institutions, and for educators to change their knowledge and teaching perspective. They highlight the importance of linking educational institutions and

industry, especially the small firm sector, by a number of methods of collaboration which mutually benefit a number of stakeholders.

4.1.2 *EE: beyond business schools*

An overwhelming number of articles focus on where EE should be delivered. From the literature it emerges the consensus that entrepreneurship should not be exclusively taught in business school, but, instead, that it should be included in educational programs, from college to University, in business or non-business related courses (e.g. Gibb, 2002).

The rationality for this positioning is clearly understood when one takes the broader definition of entrepreneurship: “Sense of initiative and 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 individuals, not only in their everyday lives at home and in society, but also in the workplace in being aware of the context of their work and being able to seize opportunities, and is a foundation for more specific skills and knowledge needed by those establishing or contributing to social or commercial activity. This should include awareness of ethical values and promote good governance” (European Commission, 2007a, p. 11).

This definition mirrors Seikkula-Leino (2011) arguments that EE covers “enterprising”, which refers to general education and learning processes, and “entrepreneurial”, which refers to the business context. Hence, there is a shift of pedagogy: from the focus on business orientation towards the focus on the development of the enterprising person.

Enterprise education, on the one hand, supports young students to acquire more responsibility, to try to reach their objectives, to be creative, to seize opportunities. Along these lines, Enterprise education spurs youngsters active role in job markets and aware them to consider entrepreneurship as a career choice. On the other hand, enterprising education is the process which supports such behaviour.

On this regard, Greene and Saridakis (2008), Hynes and Richardson (2007), and von Graevenitz, Harhoff and Weber (2010) consider that is necessary to equip all graduates for a changing working market, including those graduates who have not studied entrepreneurship. EE should not be limited to business students but has to be extended to higher education students in order to allow them to know their own competencies and inform them about career options (meaning by allowing them to be able to assess which career is more suitable).

Schwarz and colleagues (2009) argue even that ‘developing entrepreneurial skills as crucial life capacity should be the main target of all university faculties’.

These literature also highlights the eventual problems that may arise on the implementation of EE by universities. The question of whether or not universities should make the effort to try to embed new learning and teaching methods is broached and the conclusion is that it is unlikely that any such programs could be adopted in any substantial way at Universities due to resource limitations; lack of training in synergistic methods; keeping the freshness alive; finding suitable entrepreneurs to take part in the academic assessment processes appear to evaluate and test knowledge and skills rather than behaviour (Papayannakis, et al., 2008;Toledano and Urbano, 2008; Varblane and Mets 2010).

4.2 Activity related issues of EE in Europe

Regarding the activities of EE in practice in Europe, from the papers reviewed, it is possible to realise that there are significant definitional as well as conceptual differences affecting the design of EE programmes, across Europe and within countries in specific, as well as a variety of questions regarding the learning and teaching activities and the importance of teacher training. These three aspects are detailed below.

4.2.1 Definitional and conceptual differences regarding entrepreneurship when it comes to implement an EE curriculum

From the papers reviewed it is possible to realise that there are significant definitional as well as conceptual differences affecting the design of EE programmes, across Europe and within countries in specific (e.g. Matlay, 2006), as well as the delivery of the chosen curriculum. Most of the papers addressing this aspect address the EE in higher education. On the papers reviewed, EE covers two different terms: “enterprising” which refers to general education and learning processes, and “entrepreneurial” which refers to the business context (Seikkula-Leino, 2011). Thus, Seikkula-Leino, Ruskovaara, Ikavalko, Mattila and Ritkola (2010) differentiate between internal entrepreneurship in education (about learning to become entrepreneurial) and external entrepreneurship in education (about understanding entrepreneurship and becoming an entrepreneur)

Bridge, Hegarty and Porter (2010) also develop this idea, showing that entrepreneurship education programs can aim at learning to understand entrepreneurship (“enterprise for life”) or at helping students to become entrepreneurs (“enterprise for new venture creation”). The author suggests that “enterprise for life” approach is more adapted and fit well into the life perspectives of students. Ruda, Martin and Danko (2009) adopt the same approach and explain that entrepreneurship education is not only the “foundation sensitization” but imparts general entrepreneurial competences. According to Guenther and Wagner (2008) because of the

increasing third mission of universities - related to more economic activities – the role of the “entrepreneurial university” is now to support entrepreneurial activities through infrastructures and EE. This is also the thesis of McKeown and colleagues (2006). These authors defend that adopting the “enterprise for life” approach does not imply to reject the “business start-up approach”. Instead, Universities and other training institutions should support and implement both approaches.

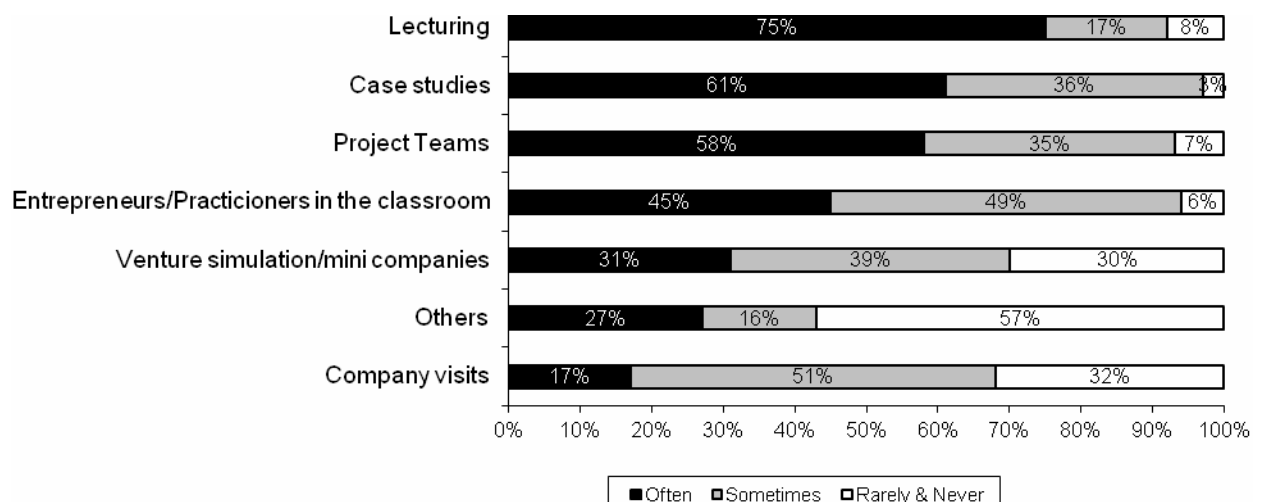
Regarding those programmes following a “business start-up approach” there is a need for improvement. Practitioners highlight that programmes should emphasize recognizing opportunities, preparing business plans, gathering resources and networking, managing growing businesses, developing communication skills, and recognizing entrepreneurial skills (e.g. Kierulff, 2005). The study from Matlay (2008) based on 64 graduate entrepreneurs from eight high education institutions in the UK indicates that graduate needs for entrepreneurship education do not match actual outcomes in terms of entrepreneurial skills, knowledge and attitudes. This mismatch influences an entrepreneur’s perceptions of actual and future educational needs. Most of the graduate entrepreneurs, however, seem to be satisfied with the outcomes of their entrepreneurship education, both in relative and in absolute terms.

4.2.2 Learning and teaching activities to support EE

The programmes and activities related to EE can rely on different teaching methods. The survey from the European Commission (2008) provides data on the methods more commonly used. Lecturing is still a method more frequently used (Figure 6), but the practice in Europe seems to be moving in line with a “shift of pedagogy” proposed by Gibb (2002).

Beyond the results from the questionnaire, the literature reveals an increasing awareness and use of learning by doing activities (Rasmussen and Sorheim, 2006), competence-based learning activities (Nab, Pilot, Brinkkemper and Berge, 2010), and student-centred learning (Harkema and Schout, 2008). Klapper and Tegtmeier (2010) also underline the use of interdisciplinary learning, while Guenther and Wagner (2008) discuss the complementary between technology transfer activities and EE. Others such as Elernurm (2008) and Lucas et al. (2009) shed light on the importance of action learning experience in teams and of industry placement in order to support student authentic experience.

Figure 6. Use of teaching methods in EE in Europe: Percent answering often, sometimes, rarely, never, N=186 (EC, 2008)



Source: Own elaboration based on data from the European Commission (2008)

4.2.3 *The importance of teacher training*

The literature review highlights also that often the teachers lack the competences regarding EE. Indeed there is further and further discussion upon the need for advanced and specialised training on the matters of entrepreneurship (Gibb, 2002; Smith, Collins and Hannon, 2006). Seikkula-Leino and colleagues (2010) argue that this training should be a component of educators' education and of their in-service training. In the same line, Achtenhagen and Knyphausen-Aufsess (2008) argue that despite a growing interest in entrepreneurship there are few doctoral programs solely dedicated to it. Doctoral education is a crucial element to develop qualified scholars in the field, especially in countries without a strong tradition in entrepreneurship education.

4.3 *Outcomes and impact of EE*

The literature on this regard contributes to our knowledge regarding the outcomes from EE in terms of its contribution to the development of core entrepreneurship competences and skills; to enhancing self-confidence and self-motivation, to more positive attitudes to risk taking, and more potential entrepreneurs.

From the review we may raise a few conclusions about the outcome of EE in Europe. First, EE outcome can be evaluated regarding its impact in terms of contribution to the development of students' skills and competences, to their self-confidence and self-motivation, to the development of attitudes towards risk taking, and intention. Overall, the results show that the programs changed attitudes and the overall entrepreneurial intention, but also that

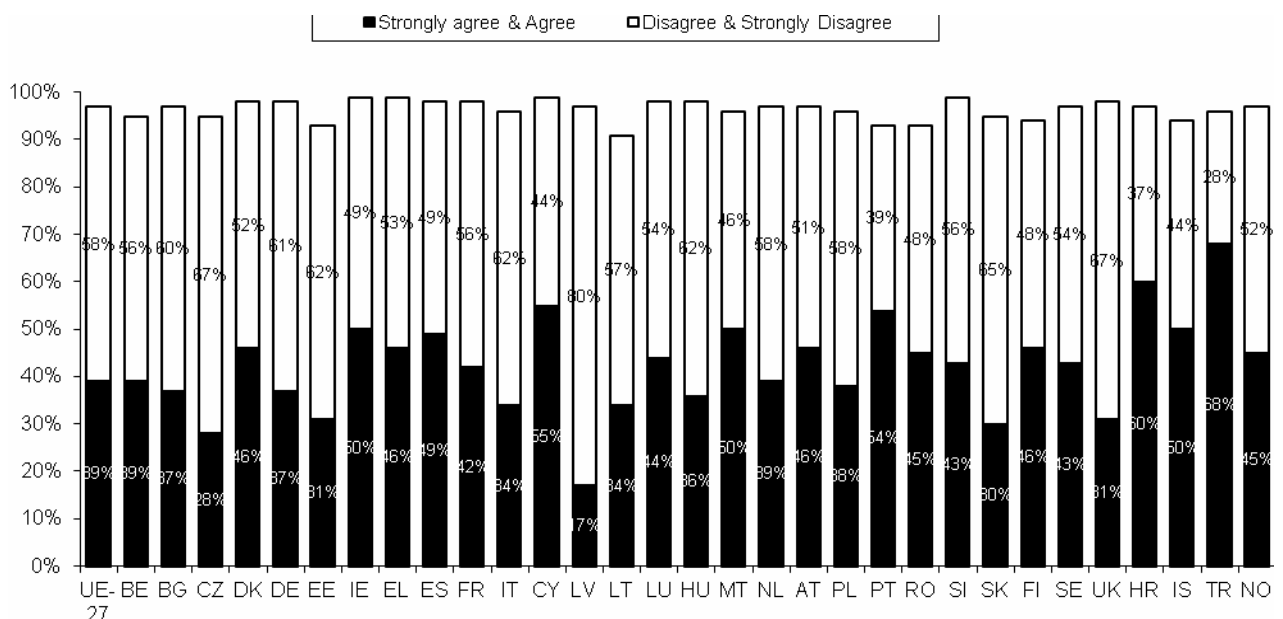
'inspiration' has been the programs' most influential benefit. Second, a number of moderation variables affect the outcomes from EE and mediate the effectiveness of enterprise education.

4.3.1 The effect of education upon entrepreneurship

Although EE research seems to acknowledge the importance of more comprehensive approaches to EE, the outcomes and antecedents of entrepreneurial behaviour in EE that are being studied are often operationalised in a classical way: intentions to start up a business are regarded as the ultimate outcome and economic performance (i.e. growth or sales of the starting firm) as the ultimate long term achievement of EE (Lans et al., 2010).

Indeed, the first question that must be raised is at which point education provided at schools or in specific EE programmes gives students entrepreneurial competences and skills.

Figure 7. My school education gave me skills and know-how that enable me to run a business' (EU Flash Eurobarometer, Entrepreneurship Survey, 2009)



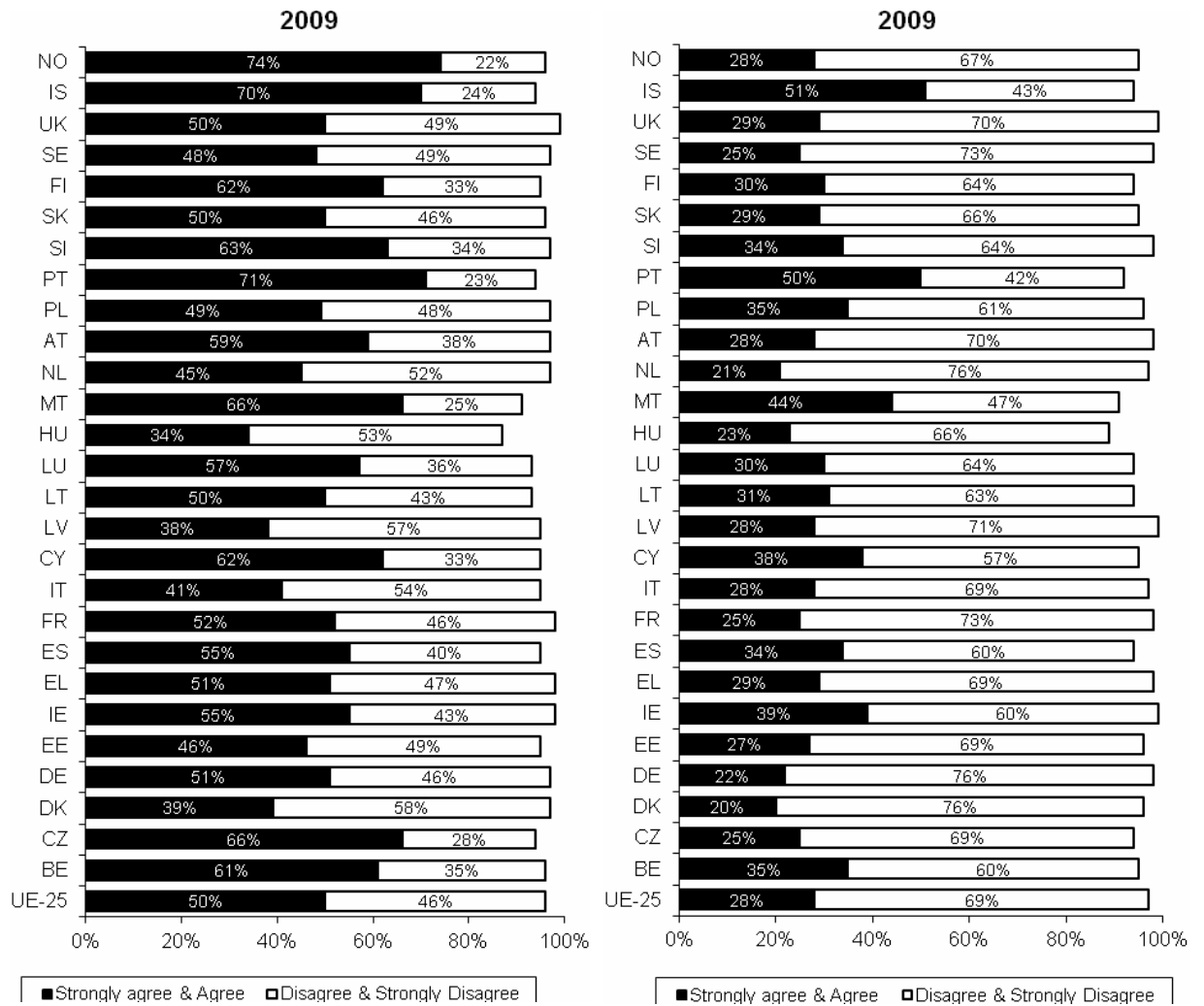
Source: Own elaboration based on data from the European Commission (2009)

Regarding the educational system as a whole, in the last Eurobarometer Survey on entrepreneurship (see Figure 7), between the EU Member States, only interviewees of Cyprus (55%) and Portugal (54%) agreed that their school education gave them the requisite skills to run a business. In Latvia, on the other hand, about one in six (17%) respondents agreed that their school education helped them develop the skills needed to be able to run a business. Other

countries with a low level of agreement were the Czech Republic (28%), Slovakia (30%), Estonia and the UK (31%). More than a third of respondents in the UK and Latvia strongly disagreed with this statement (34%-35%); the corresponding proportions were lower in Slovakia (17%), Estonia (24%) and the Czech Republic (26%). Hungarians were as likely at Latvian and British respondents to express their strong disagreement (34%).

Figure 8. My school education helps me to develop my sense of initiative – a sort of entrepreneurial attitude’ (EU Flash Eurobarometer, Entrepreneurship Survey, 2009)

Figure 9. My school education made me interested to become an entrepreneur. (EU Flash Eurobarometer, Entrepreneurship Survey, 2009)



Source: Own elaboration based on data from the European Commission (2009)

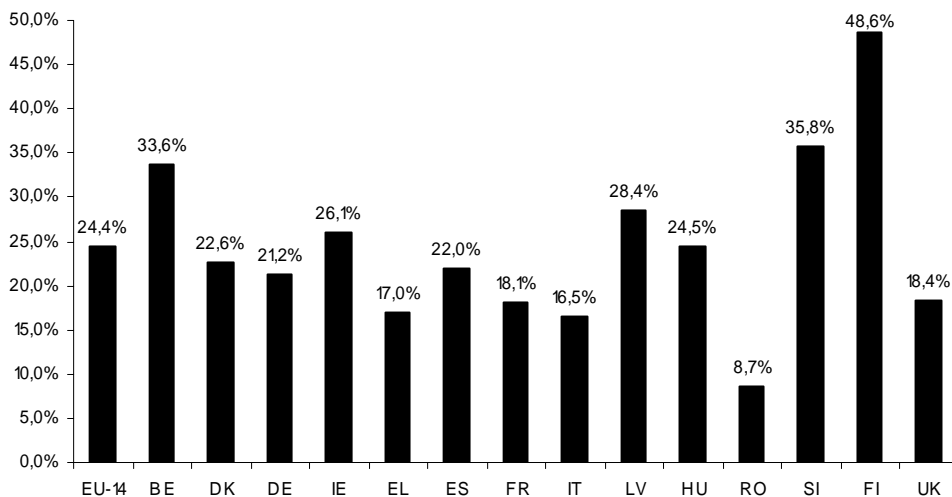
The results on perceptions about the role of school education (see figure 8) about its help to develop a sense of initiative and an entrepreneurial attitude is the highest in Czech Republic , Malta, Portugal, Iceland and Norway.

About the role of the school education in developing an interest in becoming an entrepreneur, while Latvia and Lithuania rank lowest in the EU in terms of raising interest in entrepreneurship during one’s educational career, Portugal remains at the top (See Figure 9).

4.3.2 The outcome of EE programmes

The European Commission survey on Higher Education Institutions (2008) also reveals that over 87% of the institutions had some type of activities that could be considered entrepreneurship education. It also found that of about 22%, 27% and 21% of undergraduates, graduates and postgraduate students of those institutions were enrolled in entrepreneurship courses. Based on a questionnaire survey conducted by the GEM there are indications that there is already a share of population with training on starting a business. Notwithstanding there are high asymmetries across the European countries for which data is available (see Figure 10).

Figure 10. Population aged 18-64 with training in starting a business - EU Countries for which data is available, Average for the 14 European countries in the sample (GEM, 2008)



Source: Own elaboration based on data from the Global Entrepreneurship Monitor (2008)

In what concerns the effect of specific EE courses, there is substantial evidence for the effectiveness of such programmes (e.g. Smith et al. 2006, Mataly 2008, Nab et al. 2010;

Souitaris et al. 2007). However there is an on-going discussion about whether the courses indeed impact upon skills and competences (learning), or upon inspiration, or attitudes.

The results from Jarna Heinonen and Sari-Anne Poikkijoki (2006) show that students considered entrepreneurial behaviour to be useful in their current studies regardless of the subject, as it is considered a useful way of working in any context. Nab et al. (2010) analyze an EE course and its outcomes in terms of its effects in starting enterprises, learning effects, and perception of the course by students. The relevance of the course, as perceived by the respondents (67% of 57 participants), was high (4.21 on a five-point Likert scale). 90% of the attending student successfully finished the course, meaning they met the competences. In the course of 2005-2006, 9 out of 17 companies had plans to enter the market, and continued in an incubator facility that was offered after the course. However, other studies refute the significant learning effects of EE. On this regard, Souitaris et al. (2007) studied a group of 20 students (23 years old on average) having attended in January 2004 an elective course of entrepreneurship in a French engineering school. The results showed that: 1) Students in the 'program' group increased their subjective norm and intention towards self-employment, whereas students in the control group did not. Therefore, the program raised entrepreneurial attitudes and intention; 2) Intention towards self-employment was not related to create a business at the end of the program (probably due to the time lag between intention and action, especially in the case of young students). Longitudinal studies are the only way to test the intention-action link; 3) Inspiration (and not learning or resource-utilization) was the program's benefit related to the increase of subjective norm and intention towards self-employment.

One the short term, there was a strong, measurable impact on the entrepreneurial intention of the students, while it had a positive, but not very significant, impact on their perceived behaviour. In their study, Harkema and Schout (2008) conclude that EE programs mainly address entrepreneurial intentions, instead of actual entrepreneurial behaviour.

Oosterbeek et al. (2010) analyse the impact of entrepreneurship education program on college students' entrepreneurship skills and motivation. The results show that the program does not have the intended effects: the effect on students' self-assessed entrepreneurial skills is insignificant and the effect on the intention to become an entrepreneur is even negative. The results can possibly be related to the fact that students have obtained more realistic perspectives both on themselves as well as on what it takes to be an entrepreneur. A more realistic self-perception may have caused the (insignificant) decreases in the traits measures among students in the treatment group relative to the control group. In the same vein, changes in self-perception might have caused the slight decreases in the entrepreneurial skill levels of program participants relative to non-participants as these are of the same order of magnitude as the changes in traits scores.

Packham et al. (2010) research on the impact of enterprise education on entrepreneurial attitude within European higher education institutions (HEIs) in France, Germany and Poland suggests that entrepreneurial attitude among European students can be influenced by exposure to enterprise education. Enterprise education influences students' perceptions of, and motivations towards, entrepreneurship as a viable career option.

Recently, von Graevenitz et al. (2010) study on the outcome from EE concludes that the results can be read as confirmation for educational policies that view entrepreneurship training as a way of informing students about career options, and of creating learning opportunities for calibrating and refining their assessments of which career is most suitable. Students update their beliefs about their entrepreneurial aptitude.

On the study conducted by Vij and Ball (2010), students agreed that the entrepreneurship module has boosted mostly their self-confidence, determination, self-belief, drive to succeed by hard work and the acceptance of possible failures. The majority had a positive experience of creating business plans for their proposed enterprises. Only a few decided that they would rather be in employment. All agreed that the entrepreneurial skills gained from this module are transferable to any future working environment.

Hence, EE needs to both focus on how to equip students with entrepreneurial skills, as well as create awareness that there is an alternative route to working other than being in employment.

4.3.2.1 The effect of the teaching methods used

The methods used in entrepreneurship education are diverse and include e.g. lecturing, mentoring and company visits. Entrepreneurship education can also occur through extra-curricular activities, from business plan competitions (the most common), to attendance of seminars and mentoring schemes. It is common to have external stakeholders making actual contributions to the institutions entrepreneurship education (see Figure 5 above).

Jarna Heinonen and Sari-Anne Poikkijoki (2006) analysed a specific EE program where students were asked to reflect on how well the objectives had been achieved. Their results suggest the need for a shift from teaching to learning in an environment as close to real life as possible. Concrete experience gained through the active participation of students should be part of the curriculum as it has been shown section 4.2.2. The same results are supported from Nab et al. (2010). Also authentic tasks in an authentic context are essential for the acquisition of all sorts of knowledge, including tacit knowledge. However, learning takes place not just from the experience, but only if there is reflection over the experience. Reflection has a key role in making the knowledge from experience explicit to the learner. However, entrepreneurs often fail to reflect because of time pressure and changing and pressing circumstances. They show a

preference for fast information gathering to solve a problem. To build in reflection as an authentic activity of education, a design principle on reflection in an entrepreneurial context and following research at this principles' effects is needed.

4.3.2.2 *Country specificities*

A) Cultural and industrial heritage can moderate the impact of enterprise education.

Packham et al. (2010) study suggests that entrepreneurial attitude among European students can be influenced by exposure to enterprise education. But, the results also indicate that cultural and industrial heritage can moderate the impact of enterprise education. On their study enterprise education had a positive impact on entrepreneurial attitude of French and Polish students.

Regarding the influence of culture and industrial heritage, when interviewing and discussing with French students the reason for this lack of interest, Carayannis et al. (2003) identified the view that society has of the entrepreneur. Society sees the entrepreneur as greedy and individualist. His or her motivation is to make money at the expense of others. Rather than seeing start-up activities as beneficial to the society. Hence, they deducted that a French student might suggest that you are taking the clients and sales of existing companies by starting a new company. Another reason that was given was that it is too risky. In France, someone who fails at entrepreneurship is stereotyped as a failure for the rest of his/her life. Another idea about entrepreneurship is that it is for those who have failed to have a "real" job. Young business students also believe that entrepreneurship is for those who already have a great experience in business and not for someone who is just starting in business. Apparently, students also believed that it is too difficult to raise start-up funds for a new venture. One of the most common reasons given for not being interested in entrepreneurship is that the taxes are too important and the risk of bankruptcy is too great. They conclude that in order to see more interest among France's young people in creation activities in a collectivist society, they must be taught positive entrepreneurial values. By contrast, the study by Birdthistle (2010) indicates that even at a young age, Irish people are creative in their thinking and also see self-employment as a career option.

Hence, results from different economies highlight that citizens have different positioning and thoughts towards entrepreneurship and this may affect the degree of success of EE programmes.

B) Level of income

More recently, Levie and Autio (2008) call attention to other environmental factors. Specifically, Levie and Autio (2008) find that in high-income countries,

opportunity perception mediates fully the relationship between the level of post-secondary entrepreneurship education and training in a country and its rate of new business activity, including high-growth expectation new business activity.

4.3.2.3 Individual characteristics

There are several demographic factors which have been studied in relation to entrepreneurial intentions, either as control variables or as indirect variables, that may moderate the effect of EE. Among the most popular are gender, family experience of entrepreneurship and prior experience. Mgaya and Magembe (2007) show how intrinsic inclination, support seeking, fame seeking, self doubt and income stability affect the attitudes of University students towards entrepreneurship. They argue that the differences in attitudes might have a bearing on entrepreneurship education and promotion of entrepreneurship.

The study from Packham et al. (2010) suggests that gender may also moderate the effect of EE programmes. On their study enterprise education had a negative impact on male German students. It was also found that while female students are more likely to perceive a greater benefit from the learning experience the impact of EE on entrepreneurial attitude is more significant for male. There is also the case that the effect of gender does not hold for all types of entrepreneurial intentions, as revealed by Lans et al. (2010): men are only more inclined to start-up a business, while they do not differ from female students in their intentions towards taking over a (family) business (alternative intention) or becoming intrapreneurial. Schwartz et al (2009) also found significant differences in entrepreneurial intent regarding age, gender and field of study.

4.3.2.4 Students' intentions

The study by Harkema and Schout (2008) shows that students have a wide range of entrepreneurial intentions when entering an EE programme. However, overall, their main intention is directed to becoming an enterpreneurial individual, and not at starting up a firm of their own, while this is often the main focus of EE programs. Increasing enterpreneurial skills or competencies and attitudes fruitful for a much broader professional career than merely for starting up a firm. Certainly in the current dynamic knowledge society, people who display proactive, innovative behaviour and see opportunities, or people who are willing and able to be a good networker or have an enterpreneurial mindset are valuable for all different kinds of employers, jobs or careers. In line with arguments from, for example, Gibb (2002) and Fayolle, Gailly and Lassas-Clerc (2006), this calls for EE programmes that not only focus on the

microeconomic side of entrepreneurship, but certainly should take students' entrepreneurial intentions seriously and offer them a broad range of possibilities to develop themselves as enterprising individuals. EE programs should create triggers that lead to translating the high entrepreneurial intentions of students into actual enterprising activities. If EE programs can succeed in this challenge, they might have a huge impact on these students' future careers. There not however much results on this regard.

5 Conclusion and discussion

The literature about entrepreneurship education highlights the increased interest of European and national policy agendas for this topic. Overall, governments in Europe are broadly supporting the embedding of enterprise and entrepreneurship capacities across education and through society more generally. In the EU, unlike the US, there is a high dependency upon public resources at the European, state and sub-regional levels. In the current economic climate it is uncertain how and from where this agenda will continue to be supported.

The literature review raises issues about the significant structural problems of delivery of entrepreneurship programs that employ new pedagogic methodology. The question of whether or not universities should make the effort to try to embed new learning and teaching methods is broached and the conclusion is that it is unlikely that any such programs could be adopted in any substantial way at Universities due to resource limitations; lack of training in synergistic methods; keeping the freshness alive; finding suitable entrepreneurs to take part in the academic assessment processes appear to evaluate and test knowledge and skills rather than behaviour. Widening the assessment process to accommodate behaviour would therefore represent a real challenge for academic institutions.

Although the success of programs at later stages shows that education can improve the likelihood of business success, the fact that few highly educated persons are interested in entrepreneurship needs to be addressed. Is it possible to change this perception of entrepreneurship in some cultures?

While entrepreneurship education has been introduced and promoted in many countries and at many institutions of tertiary education, little is known at this point about the effect of these courses. In particular, it is largely unknown how the courses impact students' willingness to engage in entrepreneurial activity and what kind of learning processes are responsible for these effects. Instead, the literature has focused on a simplified "up and down" analysis which studies outcomes, but does not consider the causes or the path of learning. Heinonen and Poikkijoki (2006) argue that learning about entrepreneurship and learning to become entrepreneurial represent individual decisions that are always more or less subjective, and a qualitative approach is needed to assess programmes (Hytti et al., 2010).

Regarding the studies addressing the outcome from EE, the results show that the programs raise some attitudes and the overall entrepreneurial intention and that inspiration (a construct with an emotional element) is the programs' most influential benefit (Souitaris et al., 2007). The implication for program developers is that whereas knowledge and resources might increase the likelihood of success for those who are going to start a new venture, it is the inspiration that raises attitudes and intention and increases the chances that students will actually attempt an entrepreneurial career at some point in their lives. Therefore, if the target is to increase the number of entrepreneurs in the student population, then the inspirational part of the programs has to be designed purposefully and instructors should be trained not only to teach the entrepreneurship curriculum, but also to change 'hearts and minds'.

Although the success of programs at later stages shows that education can improve the likelihood of business success, the fact that few highly educated persons are interested in entrepreneurship needs to be addressed. Is it possible to change this perception of entrepreneurship in some cultures?

In the context of funding of entrepreneurial ventures it has been argued that subsidizing finance for new entrepreneurs could be socially wasteful. By analogy, one might expect that entrepreneurship education could have negative effects if it succeeded in convincing those not suited to entrepreneurship that they should become entrepreneurs. Alternatively, and more positively, it could be that such education actually informs students and allows them to discover their specific abilities. In this case, even a decline in entrepreneurial intentions could be socially valuable, since it may indicate that subsequent matches in the labour market will be improved.

Finally, a three-stage approach must be taken to evaluating EE. first, it is important to evaluate the immediate impact of the events upon participants. Second, it is important to take a longer-term view of the impact of the program on participants' behaviour. The final stage of the evaluation is if indeed students create new ventures and success in the long run.

There is clearly a need for studies on the intermediate impacts of EE, namely regarding the impact on greater active citizenship, on more creative and adaptable workforce or on more potential entrepreneurs. A precise evaluation of EE depends also on its global impact in terms of enhanced social cohesion, more productive and innovative businesses, and increased rates of business start-up and survival and greater employment opportunities in SMEs. Future research should place more emphasis on interaction between personal and environmental factors. Besides, students social networks (family and friends) should be included in the analysis of entrepreneurial career decision. Practical implications (Schwartz, et al., 2009)

Finally, future research should move on to more quantitative and larger studies, preferably with international comparable data.

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