Lappeenranta
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ENTREPRENEURSHIP EDUCATION IN BASIC AND UPPER SECONDARY EDUCATION – MEASUREMENT AND EMPIRICAL EVIDENCE

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ABSTRACT

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The starting point of this study is to direct more attention to the teacher and those entrepreneurship education practices taking place in formal school to find out solutions for more effective promotion of entrepreneurship education. For this objective, the strategy-level aims of entrepreneurship education need to be operationalised into measurable and understandable teacher-level practices. Furthermore, to enable the effective development of entrepreneurship education in basic and upper secondary level education, more knowledge is needed of the state of affairs of entrepreneurship education in teaching. The purpose of the study is to increase the level of understanding of teachers' entrepreneurship education practices, and through this to develop entrepreneurship education.

This study builds on the literature on entrepreneurship education and especially those elements referring to the aims, resources, benefits, methods, and practises of entrepreneurship education. The study comprises five articles highlighting teachers' role in entrepreneurship education. In the first article the concept of entrepreneurship and the teachers role in reflection upon his/hers approaches to entrepreneurship education are considered. The second article provides a detailed analysis of the process of developing a measurement tool to depict the teachers' activities in entrepreneurship education. The next three articles highlight the teachers' role in directing the entrepreneurship education in basic and upper secondary level education. Furthermore, they analyse the relationship between the entrepreneurship education practises and the teachers' background characteristics.

The results of the study suggest a wide range of conclusions and implications. First, in spite of many outspoken aims connected to entrepreneurship education, teachers have not set any aims for themselves. Additionally, aims and results seem to mix. However, it is possible to develop teachers' target orientation by supporting their reflection skills, and through measurement and evaluation increase their understanding of their own practices. Second, applying a participatory action process it is possible to operationalise teachers'

entrepreneurship education practices. It is central to include the practitioners' perspective in the development of measures to make sure that the concepts and aims of entrepreneurship education are understood. Third, teachers' demographic or tenure-related background characteristics do not affect their entrepreneurship education practices, but their training related to entrepreneurship education, participation in different school-level or regional planning, and their own capabilities support entrepreneurship education. Fourth, a large number of methods are applied to entrepreneurship education, and the most often used methods were different kinds of discussions, which seem to be an easy, low-threshold way for teachers to include entrepreneurship education regularly in their teaching. Field trips to business enterprises or inviting entrepreneurs to present their work in schools are used fairly seldom. Interestingly, visits outside the school are more common than visitors invited to the school. In line, most of the entrepreneurship education practices take place in a classroom. Therefore it seems to be useful to create and encourage teachers towards more in-depth cooperation with companies (e.g. via joint projects) and to network systematically. Finally, there are plenty of resources available for entrepreneurship education, such as ready-made materials, external stakeholders, support organisations, and learning games, but teachers have utilized them only marginally.

Keywords: entrepreneurship education, basic and upper secondary education, teacher's role, methods of entrepreneurship education, contents of entrepreneurship education, empirical evidence, measuring

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PART II: PUBLICATIONS

1. Seikkula-Leino, J., Ruskovaara, E., Ikävalko, M., Kolhinen, J. & Rytkölä, T. (2013). **Teachers' reflections on entrepreneurship education: their understanding and practices.** Published as a book chapter in: *Conceptual Richness and Methodological Diversity in Entrepreneurship Research*, edited by A. Fayolle, P. Kyrö, T. Mets, and U. Venesaar, Cheltenham: Edward Elgar, 146-171. (This article is an extended version of an article by Seikkula-Leino, J., Ruskovaara, E., Ikävalko, M., Mattila, J. & Rytkölä, T. (2010). "Promoting entrepreneurship education: the role of the teacher?", published in Education + Training, 52(2), 117-127.)

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3. Ruskovaara, E. & Pihkala, T. (2013). **Teachers implementing entrepreneurship education – classroom practices**, *Education + Training* 55(2), 204-216.

4. Ruskovaara, E. & Pihkala, T. (in press). **Entrepreneurship Education in Schools – Empirical Evidence on the Teacher's Role,** *The Journal of Educational Research*. DOI: 10.1080/00220671.2013.878301.

5. Ruskovaara, E., Pihkala, T., Seikkula-Leino, J. & Järvinen M.R. (2014). **Broadening the Resource-Base for Entrepreneurship Education through Teachers' Networking Activity**, presented in 3E conference, Turku, Finland, April 10-11, 2014.

The contribution of Elena Ruskovaara to the articles 1 - 5:

1. Making the research plan, setting up the theoretical framework, and conducting the data collection were a joint effort with the co-authors. Interpretation of the empirical results and the writing of the article was also a joint effort.
2. Coordinated the writing of the article. Made the research plan and developed the theoretical framework together with the co-authors. As a project manager of the Measurement Tool for Entrepreneurship Education project, different steps during the research and building processes were managed by her. She had a central role in developing the article, based on the book reviewers' comments.
3. Coordinated the writing of the article, made the research plan, and conducted the data gathering. The theoretical framework, methodological solutions, interpretation of the empirical results, and finalising of the article were a joint effort with the co-authors. After the reviewers' comments, the article was developed by her.
4. As the main author, set up and redefined the theoretical framework, coordinated the writing of the article, and conducted data gathering. The research plan was made and methodological solutions were tested together with the co-author. She had a central role in developing the article, based on the journal reviewer's comments. The analysis, discussion, and conclusions from the findings were a joint effort with the co-authors.
5. As the main author, coordinated the writing of the article and conducted the data gathering. The theoretical framework was set up by her. The research plan and interpretation of the empirical results were joint efforts together with the co-authors, as was the finalising of the article.

1. INTRODUCTION

"The goals of the "Participatory citizenship and Entrepreneurship" cross-curricular theme are to help the [basic education] pupil perceive society from the viewpoints of different players, to develop the capabilities needed for civic involvement, and to create a foundation for entrepreneurial methods. The school's methods and culture of learning must support the pupils' development as independent, initiative-taking, goal-conscious, cooperative, engaged citizens, and help the pupils form a realistic picture of their own possibilities for influence." (Finnish National Board of Education, 2004, 38)

"Cross-curricula themes represent central emphases of the educational and teaching work. Their objectives and contents are incorporated into numerous subjects; they integrate the education and instruction. Through them, the educational challenges of the time are also met." (Finnish National Board of Education, 2004, 36)

This study builds on the discussion concerning the promotion of entrepreneurship and the research field of entrepreneurship education, and especially focuses on teachers' actions in basic and upper secondary education[1].

Different stakeholders, starting from European Community, government, national, and local decision-makers and ending as individual teachers and students, have a great variety of aims for entrepreneurship education. In addition, stakeholders seem to realise the phenomenon itself fairly differently. Therefore, in this study, there are different aims for entrepreneurship education of interest.

As the aims of entrepreneurship education are somewhat vague, it is no wonder that knowledge concerning what entrepreneurship education practices are the most used and most suitable, and to what extent, is scarce. Therefore, the teachers' role, and the aims and practices of entrepreneurship education at lower education levels, need to be studied. In this study, entrepreneurship education is approached through the teachers' role as educators, and from this perspective their practices and goals are crucial. Therefore, the questions of what kinds of aims teachers have set for themselves and for students, and what kinds of practices teachers use in order to achieve their goals, will be approached in detail. The effects of teachers' different backgrounds and teachers' actions will also be studied, in order to create a picture of

[1] In Finland, compulsory education begins at the age of seven. After nine years in basic education, it is possible to continue either to general upper secondary education or to vocational upper secondary education and training (VET). In this study, the concept of "upper secondary education" is used to describe both general upper secondary education and VET.

who is an entrepreneurship educator. Notions concerning how teachers' entrepreneurship education practices can be concretised, followed, steered, and measured will also be studied.

1.1. Entrepreneurship education as a main concept of the study

In this study, entrepreneurship education is approached from many angles, although the main focus is on entrepreneurship education practices taking place at basic and upper secondary schools. The theoretical framework is based on studies from Gibb (1996; 2000; 2002a, 2005), amongst others, in the sense of entrepreneurship education being about learning through, for, and about entrepreneurship, taking place in an entrepreneurial learning environment, and being about dealing with, creating, and enjoying uncertainty and complexity. The concept is especially approached through, and divided into, entrepreneurship education as method, practice, and content of teaching and learning (Vesalainen & Strömmer, 1998; Remes, 2003; Seikkula-Leino, 2006: 2007). Fayolle's (2008; 2013) studies about objectives, contents, targets, methods, and evaluation of entrepreneurship education are also important in framing this study. In line with this, Jones & Matlay's (2011) heterogeneous view of entrepreneurship education, where the student, educational processes, educator, community, and institution all have their interrelated relationship and role in a dialogic entrepreneurship education system, was very useful as a baseline.

The aforementioned compendium of theoretical background highlights the importance of certain sub-themes of entrepreneurship education and therefore, to be more specific, a wide variety of studies become observed. For example, entrepreneurship education's aims, expected outcomes, and resources become important (e.g. Hynes, 1996; Jones & Iredale, 2010; Hytti & O'Gorman, 2004; Cooper et al., 2004; Frank, 2007; Pittaway & Hannon, 2008). Studies where the teachers' role as entrepreneurship educator (e.g. Fiet, 2001a; Bennett, 2006; Birdthistle et al., 2007; Löbler, 2006; Hytti & O'Gorman, 2004; Jones, 2010) and useful methods, practices, entrepreneurial learning, and related learning environment (e.g. Cooper et al., 2004; Solomon, 2007; Gibb, 2002a; Pittaway & Cope, 2007b; Fayolle & Gailly, 2008; Blenker et al., 2011; Bell et al., 2004; Biggs, 1999; Neck & Greene, 2011; Shepherd, 2004; Cope, 2005) are dealt which were also of great importance. In turn, studies concerning measuring and evaluating entrepreneurship education practices (Pittaway & Edwards, 2012; Fayolle et al., 2006; Fayolle, 2008; 2013; Edwards & Muir, 2012; Falkäng & Alberti, 2000; Matlay & Carey, 2007; Dickson et al., 2008) guide an essential part of this study.

Johnson et al. (2006, 40) argue: "While most agree that entrepreneurs have and do contribute to economic development and that the role of entrepreneurship needs to be acknowledged and valued, pedagogically, entrepreneurship is still a conundrum to many." In turn, Pittaway and Cope (2007a) published a review of more than 180 articles in which they reported that, still, clear definitions of entrepreneurship and enterprise are missing, and it is vague what is meant by entrepreneurship or enterprise education. (See also Sexton & Bowman, 1984; Bygrave & Hofer, 1991; Cunningham & Lischeron, 1991; Gibb, 2000; Hytti & O'Gorman, 2004; Blenker

et al., 2006; Matlay, 2008; Dickson et al., 2008; Jones & Iredale, 2010; Harte & Stewart, 2012; Penaluna et al. 2012.) Jones and English (2004) claim that entrepreneurship needs to be defined broadly. In turn, Frank (2007) and Kirby & Ibrahim (2011) argue that the emphasis should be on ways of thinking and behaving, and on creativity, innovation, risk taking, and problem-solving rather than profit making. (See also the compendium of key elements of entrepreneurship by Seikkula-Leino et al., 2010, 119.)

While there are no clear and mutually accepted definitions of entrepreneurship, enterprise education, or entrepreneurship education, educational practices related to them also need to be studied. Here, the main focus is on basic and upper secondary schools, where entrepreneurship education is related to teaching practices aiming, creating, and enhancing students' ability to act responsibly, to be active, creative, and able to seize opportunities, to be able to assess and take controlled risks, and to plan and manage projects of suitable sizes. According to the Finnish national core curriculum, entrepreneurship education is also to help pupils to observe society from the viewpoint of different players, and is linked to enhancing students' entrepreneurial attitudes as characterised by pro-activity, independence, innovativeness, and initiative (Finnish National Board of Education, 2004). As seen here, entrepreneurship education at lower educational levels is mostly on entrepreneurial attitudes and knowledge rather than the skills and competence needed as an entrepreneur. In turn, in vocational education and training (VET), entrepreneurial attitudes are still important, but competence concerning how to start one's own business is to be adopted as well. VET provides students with the knowledge base needed, for example, in culture and social services, health, and sport branches that are known to be professions for a large number of small businesses and entrepreneurs. Therefore, this kind of knowledge might be crucial for students' near future (Commission of the European Communities, 2006; Finnish National Board of Education, 2003; 2004; Ristimäki, 2004).

Education is one of the main concepts in this thesis, and therefore it needs to be defined, although its meaning is known and understood as general knowledge. The Oxford Advanced Learner's Dictionary (online, 2013) defines education as a process of teaching, training, and learning, especially in schools or colleges. Education aims to improve knowledge and develop skills; it is a particular kind of teaching or training; and it is a subject of study that deals with how to teach. The New Penguin English Dictionary (Allen, 2000) defines education in a fairly similar way, but highlights more the process side of education: it is the action or process of educating or of being educated; a stage of such a process, or any kind of process of this type; the knowledge and development resulting from instruction, such as in school; the field of study that deals mainly with methods of teaching; and an experience that causes one to see things in a new way. In turn, but with a more general approach, the Macmillan Dictionary (online, 2013) states that education is the activity of educating people in schools, colleges, and universities, and all the policies and arrangements concerning this; the activity of teaching about a particular subject; someone's experience of learning or being taught; and the process of providing people with information about an important issue.

In the Finnish national core curriculum, the concept of learning is socio-constructivist, where learning is constructed in an individual and communal process of building knowledge and skills, and learning takes place in a variety of situations, independently, in interaction with others and under a teacher's guidance. Work habits and learning are to serve as tools for lifelong learning, and learning is characterised as a situational, active, and goal-oriented process, with independent and collective problem solving (Finnish National Board of Education 2003; 2004; Hietanen, 2012).

In summary, in this thesis, the word education is understood and used to describe the processes that basic and upper secondary education level teachers create and use in order to improve students' knowledge base and learning, and to enable the development of students' skills and competencies. The next chapter defines more precisely the concept of entrepreneurship education.

Entrepreneurship education and its synonym and cognate terms

There are many similar concepts used in the research field concerning this thesis. At least concepts such as entrepreneurship education, enterprise education, and entrepreneurial education are widely used. In some sense, terminology has been a bit problematic, as all the concepts seem to have their established usage. Some of the concepts have corresponding versions, some are understood as synonyms for each other, and some seem to have a strong connection to a specific context or are mainly used in a specific culture or in a specific linguistic area. However, there are many definitions used, but a lack of clear and mutually accepted ones.

Harte and Stewart (2012, 332) argue that enterprise education and entrepreneurship education have very different meanings as concepts in curricula, and the differences would be: "Enterprise education approaches can be about 'taking an enterprising approach to teaching', or 'including challenging concepts within teaching practice to aid and increase problem-solving skills' or to 'bring about an awareness of key employment skills beyond university education'. Entrepreneurship education whilst similar in its approach to developing and improving skills has in addition, in many instances, a clear intention on business start-up and the factors to consider in choosing this as a route of employment." In addition, for example, Gibb (2000), Jones and Iredale (2010), and Hytti and O'Gorman (2004) argue that entrepreneurship and enterprise are linked to "being business-like", and therefore there is much confusion; the concepts are not completely understood and are not used correctly.

Jones and Iredale (2010) also argue that in research literature, but also amongst policy-makers, teachers, lecturers, students, and pupils, the concepts are mixed, and therefore they decided to clarify the current status and wrote an analysis of the key differences. They describe entrepreneurship education as mainly focusing on business start-ups, new business venture planning, launching, growing, and managing a business, the development of skills,

behaviours, and knowledge needed while developing and running a business, and self-employment. However, enterprise education is about an enterprising individual, active learning, developing personal skills, behaviours, attributes, and knowledge needed in many contexts, as an employee, consumer, and citizen, and especially how a small business works. Entrepreneurship education, whilst similar in its approach to developing and improving skills, has, in addition, in many instances, a clear intention on business start-up and the factors to consider in choosing this as a route of employment.

According to Gibb (1996, 313), in some languages it is not easy to make a difference between an "entrepreneurial" and "enterprising" person, and therefore he uses the words synonymously. He also describes (1996, 313; 2005) "entrepreneurial" as referring to business activity, whereas "enterprising" can be used in any context. Jones and English (2004, 417), however, say that "entrepreneurial education can be viewed broadly in terms of the skills that can be taught and the characteristics that can be engendered in individuals that will enable them to develop new and innovative plans". Harte and Stewart (2012) also ended up pondering whether enterprise education is the best name, or whether it should be "enterprising", or whether an even more crystallised concept, like creative or innovative, could be more useful.

Kuratko (2005, 589) reported the "dilution effect" as one of the challenges he has observed when studying the development of entrepreneurship education. He sees there is a danger of diluting the real meaning of entrepreneurship and entrepreneurial, where, as he points out, in some cases everything seems to become "entrepreneurial" because it sounds hot and popular. He warns: "There seems to be a real use and abuse of this term for purposes other than enhancing the field of entrepreneurship education. As entrepreneurship educators, we must be the guardians of the true meaning and intent of the world 'entrepreneurship'."

It seems that contextual issues play a role in concepts. For example, "entrepreneurship education" is commonly used in Canada and in the United States, but it is rarely used, for example, in the UK, where the concept is more often "enterprise education". However, in scientific literature, "entrepreneurship education" has been primarily adopted (Haase & Lautenschläger, 2011, 147; Gibb, 2011; Jones & Iredale, 2010). Without presenting any justification, Jones and associates (2012) systematically use, in their article, the pair of concepts "enterprise/entrepreneurship education", and one reason for that might be that the article was written in collaboration with researchers from different cultural backgrounds. Hannon (2006) also systematically uses the concept "enterprise and entrepreneurship education" when presenting the current state-of-the-art in the UK, whereas Jones & English (2004) use "entrepreneurial education" when describing the case in Australia. Penaluna and associates (2012), on the other hand, note that recently the term "enterprise" has gained ground from the simpler term "entrepreneurship" as it is more broadly understood. Abbreviations like "E&E" (Penaluna et al., 2012) and "EE" (Fayolle, 2013) are also used.

Mwasalwiba (2010, 21) argues: "different interpretations of entrepreneurship, enterprise, and an entrepreneur have far-reaching effects on the understanding of the objectives of entrepreneurship as a field of study, the setting of specific course objectives, the choice of target audiences, the design of course content, the teaching methods applied, and ultimately on evaluating progress and on the design of impact assessment frameworks". Mwasalwiba (2010, 40) summarises his findings by saying "although there is no consensus in the basic definitional issues, there is a common understanding of what entrepreneurship education is generally attempting to achieve".

Finally, at European Union level (European Commission, 2013a; 2013b), the concept of "entrepreneurship education" is used when presenting aims and actions taking place at primary, secondary, and tertiary education levels. In line, Fayolle (2008) and Fayolle and Gailly (2008) use the concept of "entrepreneurship education" and validated their choice as a generic notion that covers a wide diversity of learning and teaching situations and institutional settings.

Later on in this thesis, I intentionally use the concept of "entrepreneurship education" to describe the phenomena studied at basic and upper secondary level, although in some sense, entrepreneurial education or enterprise education could have been better. This is in order to be consistent, but also in line with the wording used in the English version of the Finnish national curriculum and other official documents describing the Finnish education system. (See, for example, Finnish National Board of Education 2003; 2004; Ministry of Education, 2009.) This particular concept is also used in most of the studies. However, in quotations and when appropriate and needed, other concepts are used.

1.2. Need for entrepreneurship education

The aim of this chapter is to present a different viewpoint on the needs for entrepreneurship education. There is a wide variety of needs and levels of needs, starting from international or European level needs and going down to national, regional, or individual level. The variety of needs shows differences between policy-makers' strategic level views and individual teachers' or students' needs, not to mention needs presented for different education levels.

Societal and strategic level statements for entrepreneurship education

Entrepreneurship and entrepreneurship education has been defined as a Europe-wide development target. In the Green Paper of the European Union (Commission of the European Communities, 2003), the promotion of entrepreneurship was named as an area of emphasis in basic and upper secondary education. Furthermore, the European Union (2000; 2004) and European Commission (2004; 2008; 2012; 2013a; 2013b) have named "entrepreneurial mindset" as a key competence for European citizens, and an entrepreneurial way of living and doing things as a life-long learning skill, and have stated that entrepreneurship education is to

be developed and nurtured at all education levels. In turn, many strategic documents state that entrepreneurship education should be offered to all students, not only to those studying business (for example, European Commission, 2013a; Ministry of Education, 2009; Kirby & Ibrahim, 2011; Jones & Iredale, 2010). It has been realised that entrepreneurial capabilities, such as innovativeness, problem definition and problem solving, time management, flexibility, and independent decision–making, are skills needed in all fields of work, in the private and public sectors (Frank, 2007; Nurmi & Paasio, 2007; Jones & Iredale, 2010). Therefore, entrepreneurship education must not be expected to be only about encouraging students to start and run their own businesses (Hytti & O'Gorman, 2004; Kirby, 2004).

Finland (European Commission, 2002) is the first European Union country to embed entrepreneurship education in curricula at all education levels, from basic education to tertiary education. Therefore, entrepreneurship has been promoted in many ways in Finland (Opetusministeriö, 2004; Ministry of Education, 2009; Finnish Government, 2007; Nurmi & Paasio, 2007). Numerous development plans in the latest Prime Ministers' governmental project policy programme for employment (see for reference Finnish Government, 2007) and the Ministry of Education and Culture's "Education and research" have highlighted the importance of promoting entrepreneurship and the significance of entrepreneurship education (Ministry of Education and Culture, 2012). In turn, regions, areas, and different municipalities have set aims, strategies, and development plans for promoting entrepreneurship and entrepreneurship education. Consequently, entrepreneurship education should be present in the everyday education delivered in Finnish basic (Finnish National Board of Education, 2004) and general upper secondary schools (Finnish National Board of Education, 2003), in accordance with the curricula that regulate their activities. In addition, according to the national curricula of vocational education and training, all vocational degrees contain a minimum of 5 study weeks of entrepreneurship education (Opetushallitus, 2009). In 2009, the Finnish Ministry of Education published guidelines for entrepreneurship education, to define the national targets until the year 2015, highlighting its role at every education level (Ministry of Education, 2009).

Hannon (2007) argues for a coherent cross-departmental policy (see, for example, Ministry of Education and Research, Ministry of Local Government and Regional Development, and Ministry of Trade and Industry, 2002; 2009; Ministry of Education, 2009) for enterprise and entrepreneurship education, targeted at the whole education system. He claims (Hannon, 2007, 206) that the government has a significant role in shaping the future education environment for enterprise and entrepreneurship. Therefore, for example, Norway has had an entrepreneurship education policy for the whole education system (Ministry of Education and Research, Ministry of Local Government and Regional Development, and Ministry of Trade and Industry, 2002; 2009) and there are also fairly similar processes in Germany (Kuckertz, 2013) and in the UK (Gibb 2000). For example, in Norway, both the strategic plan for 2004-2008 and the action plan for 2009-2014 were the results of cooperation among three ministries (Ministry of Education and Research, Ministry of Local Government and Regional

Development, and Ministry of Trade and Industry, 2002; 2009), describing the role of entrepreneurship in education and training at all educational levels.

Entrepreneurship education initiatives are expected to foster entrepreneurship skills in and through education in order to respond to the emergent economic and employment challenges (Falkäng & Alberti, 2000; Hytti & O'Gorman, 2004; Frank, 2007; Bennett, 2006; Haase & Lautenschläger, 2011; Nurmi & Paasio, 2007; Kirby & Ibrahim, 2011; Kuckertz, 2013), and in the creation of an entrepreneurial mindset, a direct relationship between entrepreneurial intentions, motivation, and attitudes is presupposed (Jones et al., 2012). Matlay (2008) also adds that there are assumptions that entrepreneurship education influences attitudes towards entrepreneurship; it provides students with necessary knowledge and skills, but entrepreneurship education can also increase the numbers of better-educated entrepreneurs. Indirectly, established companies have been reported to benefit from entrepreneurship education (Kuckertz, 2013).

Henry et al. (2005a) present global, societal, organisational, individual, and personal reasons and needs for entrepreneurship education. They highlight many viewpoints for current challenges, from Euro currency uncertainty to the reduction of trade barriers, and from privatisation and downsizing to decentralisation, strategic alliances, and employment options. Despite the mentioned challenges, they argue (2005a, 101) that at "all levels, there will be a greater need for people to have entrepreneurial skills and abilities to enable them to deal with life's current challenges and an uncertain future. Furthermore, whatever their career choice or personal situation, individuals will be able to benefit from learning an innovative approach to problem solving; adapting more readily to change; becoming more self-reliant and developing their creativity through the study of entrepreneurship. There is no doubt that in any economic climate such learning could have far-reaching benefits for society. It could be argued, therefore, that the need for entrepreneurship education and training has never been greater." (See also Cheng et al. 2009, 557-558; Gibb, 2011, 151; Heinonen & Poikkijoki, 2006.) Furthermore, Jones (2010) argues that life-learning skills are the foundation of the attributes that society expects and that are demanded from students. In turn, Draycott and associates (2011) define that learners need enterprising attitudes and skills to survive and succeed in the world of today.

Draycott and Rae (2011, 139) point out that enterprise education guidelines and frameworks are strongly directed by current political stakeholders and governments, and ask how independent of political ideology enterprise can be. They conclude that "enterprise should be defined above the level of political and economic ideology, since equating enterprise with free-market capitalism is simplistic and problematic".

As can be seen, policy makers' expectations are running high, and therefore Jones et al. (2012) point out that although entrepreneurship education has positive results in many respects, it is a lot to expect that entrepreneurship education alone can cure the current and future economic challenges.

Need for entrepreneurial individuals

Draycott and Rae (2011, 139) note: "As the economy, society and expectations of education change, enterprise should become an intrinsic part of the survival skills which young people need to be able to build their lives and portfolio careers in this new era, through flexibility, diversity and lifelong learning. There is a need to change the view that enterprise education and highly assessed soft skills, as they are currently defined, are sufficient to prepare young people for the post-recessionary economy. A narrow reading of profit-centred entrepreneurship alone is also insufficient and an explicit grounding in social and community based enterprise is required, being present in some enterprise teaching but not fully understood or evident in all." Kuckertz (2013) also argues that entrepreneurship educators have shown, in some sense, that economic and societal problems can be mitigated if people have more entrepreneurial behaviour, and there entrepreneurship education has met its expectations.

Kirby (2004, 514) describes the needs and aims of entrepreneurship education: "In a global economy, every citizen is inter-dependent, but increasingly will be required to take ownership of their own destinies – for the benefit of themselves, their families, their colleagues, their fellow countrymen and world citizenry. Thus, within individuals, communities, organisations and societies there is need to develop a greater sense of enterprise and self-help. People are needed who see opportunity, create and build, initiate and achieve." Birdthistle and associates (2007) connect the need for enterprise education to countries' transformation from agriculture and unskilled manufacturing of the past into a knowledge-based, high value-added, service-led economy (see also Dreisler et al., 2003). Nurmi and Paasio (2007) describe, in Finland, an ongoing extensive shift from a salaried society towards an entrepreneurial society. Hynes and Richardson (2007) argue that students should be familiar with and prepared to work effectively in small firms, either as employers or employees.

Fuchs et al. (2008) add, however, that the current time is very challenging, with high unemployment statistics, and with companies planning to relocate to other parts of the world, the change from an industrial society into a knowledge-based and information business environment sets new kinds of challenges for schools to provide education. One big challenge, according to them, is the large number of entrepreneurs retiring during the next few years. They argue there is going to be a demand for younger people with entrepreneurial abilities to take over. Nurmi and Paasio (2007), for example, argue that Finns in general have positive attitudes towards entrepreneurship, but attitudes seemingly seldom lead to actual entrepreneurship (see, for similar findings, Richardson & Hynes, 2008; Hynes, 1996). Minnity (2005) claims that the existing culture and environment are important determinants of whether one is in favour of or against entrepreneurship.

Some researchers suggest that the used teaching methods should be updated to enhance students' creativity and innovation. Educating organisations are facing great changes as they

are moving away from teaching-oriented traditional education focusing on theoretical knowledge and preparing students for working in large companies (Haase & Lautenschläger, 2011; Birdthistle et al., 2007; Gibb, 1996). Similarly, many argue that teaching needs novel approaches, and education systems need crucial changes (Kirby, 2004; Kothari & Handscombe, 2007; Kirby & Ibrahim, 2011) in order to develop people's capabilities as needed in tomorrow's world (Holmgren & Fromm, 2005). In addition, curricula need to be updated to face the new challenges (Hynes & Richardson, 2007; Cheng et al., 2009; Draycott & Rae, 2011) and the ways people are taught need to be changed (Richardson & Hynes, 2008; Jones & Iredale, 2010; Neck & Greene, 2011). Neck and Greene (2011, 55) conclude that today's entrepreneurship education practices are based on yesterday's world. They see a contradiction there, as entrepreneurship should be "about creating new opportunities and executing in uncertain and even currently unknowable environments".

Draycott and Rae's (2011, 131) study concentrated on the secondary school level in the UK, where they summarise enterprise education concepts and key ideas (literature from 1988 – 2010) and argue that a "summary of literature suggests a confused agenda, fraught with tensions between ontology, pedagogy and assessment. The voices of educators in the school sector and of students are significantly absent in a discourse dominated by political ideology and educational policy guidelines and frameworks…" They point out challenges concerning many levels and stakeholders in the field, and add that policy literature gives more guidance on enterprise than academic research, but assessing enterprise is challenging as it is driven by institutional competency not student impact. They conclude that enterprise at secondary education level has personal, situational, and economic aspects and claim that (2011, 137): "Enterprise is about developing a mindset, goals (self-efficacy) and skills (personal capabilities) to equip young people for their futures. Enterprising learning is the process of learning in enterprising ways as we are becoming enterprising." They also conclude that enterprise education in the UK's secondary level schools is focusing on delivering "soft skills", and enterprise teaching and learning has become almost synonymous with PLTS skills (personal, learning, and thinking skills).

According to Cunningham and Lischeron (1991), entrepreneurs have, for example, the following attributes: they are creative and innovative, vigorous, persistent, honest, responsible, and able to take moderate risk; they have high self-esteem and have unique values and attitudes towards work. It has been noted that people seem to highly value (Nurmi & Paasio, 2007; Hynes, 1996) individuals' capacity to innovate, create, cope with, and enjoy uncertainty and complexity in a globalised world, as workers, entrepreneurs, consumers, and members of a family and community. Interestingly, Vesper and Gartner (1997) describe how in the late 60s, the noun "entrepreneur" was connected to greed, exploitation, selfishness, and disloyalty, but there has been a shift into creativity, job creation, profitability, innovativeness, and generosity. Interestingly, according to Drakopoulou Dodd and Hynes (2012), there are different attitudes towards entrepreneurship between developed and less developed regions of Europe. Their findings, amongst secondary school pupils, teachers, and other stakeholders, show that in less developed regions, an entrepreneur is seen as exploitative and greedy,

whereas in developed regions positive associations can be seen with entrepreneurial activities as whole. Drakopoulou Dodd and Hynes (2012) argue that there is a lack of research concerning contextual influences and regionality of entrepreneurship education. Gibb (2011, 151) points out that many teachers were found to be hostile to the notion of teaching anything labelled "entrepreneurship" because of its connotations of capitalism and commercialisation (see also Frank, 2007). Therefore, criticism of entrepreneurship education has also been voiced (e.g. Holmgren & From, 2005; Komulainen et al., 2010; Gibb, 2011). For example, Jones and Iredale (2010, 12-13) wrote: "Adopting an enterprise education pedagogy accords with liberal educational ideals whilst entrepreneurship education has at its theoretical base libertarian values." … and… "Libertarianism has been closely associated with "neo-liberalism" and the "new-right"". In turn, Holmgren and From (2005, 382) write: "The focus on fostering a certain identity in entrepreneurship education might be seen as a part of the ongoing neo-liberal oriented educational restructuring process, which is sweeping through Europe." Questions like "is entrepreneurship education something like a start-up fabric, a fabric making entrepreneurs?" have also been asked.

1.2.1. Need for entrepreneurship education research

Different needs can be seen for entrepreneurship education research, depending on whose viewpoint is taken as the perspective. For example, policy makers, teachers, and researchers have various kinds of desire for knowledge. This chapter will first propose the needs for policy levels, then for educators, and finally for research itself and for researchers.

Policy-level needs and expectations for entrepreneurship education research

Policy-makers, together with practitioners and educators, have set great expectations for the benefits of entrepreneurship education, but its effectiveness has not been truly empirically grounded (Falkäng & Alberti, 2000; Kirby, 2004; Haase & Lautenschläger, 2011; Birdthistle et al., 2007; Hannon, 2007; Fayolle & Gailly, 2008). Because of the high expectations set at both EU and national levels, there is a great need for models of successful entrepreneurship education. Policy-makers' growing interest in impact, relevance, and efficiency of entrepreneurship education can be seen, as they realise the resources allocated to that field, but so far not too much evidence has been shown (Matlay & Carey, 2007; Pittaway & Cope, 2007a; Jones & Iredale, 2010; Draycott et al., 2011; Fayolle, 2013). Jones and Iredale (2010, 14) claim that entrepreneurship education has been seen as a "universal all-embracing panacea that can address economic and societal structural inequalities".

Dreisler et al. (2003) present, in their study, how policy-makers have used the number of start-ups as an index of entrepreneurial spirit. However, they argue that the number of start-ups has been fairly constant, despite different entrepreneurship policies, and therefore the policies and their effects needs to be measured and clarified. In turn, Pittaway and Cope

(2007a) conclude that there is a lack of research evaluating policies designed to promote entrepreneurship education, and they suggest that there is rather limited evidence on outputs, and a lack of knowledge of the impact of policies that are working more effectively and in what context. Therefore, they point out the need for research exploring how policies create a climate within which entrepreneurship education operates, and especially the lack of regional and national education policy research was highlighted. Hytti and O'Gorman (2004, 12) argue that "there is still limited understanding of how best achieve these quite diverse objectives" [of entrepreneurship education] and therefore conclude that "policy makers and educators need a thorough understanding of the diverse and alternative aims and objectives of enterprise education interventions, of the alternative forms such interventions can take, and of the need to 'train the trainers'".

As shown above, policy-makers would benefit from knowing what kind of strategy would best ensure the required results, whether the aims are to have as many start-ups as possible, the creation of a more entrepreneurial culture, or ways to embed entrepreneurship education in schools, just to name a few.

Need for entrepreneurship education research from the educators' point of view

Educators presumably have different needs for entrepreneurship education research than policy makers. For example, Kirby (2004) summarises that research and knowledge concerning how to teach entrepreneurship remain underdeveloped. Pittaway and Cope (2007a) continue, that in order to get appreciation for the field, there is a need for evidence-based research, and it is time to start assessing and understanding what is working in entrepreneurship education and why. Nevertheless, the research field and the theme is fairly new and it is just establishing its role. However, Jones and Matlay (2011) see the process of entrepreneurship education has newly gained an already increasing legitimacy.

Fayolle (2008, 325) states that entrepreneurship education lacks academic credibility, practices are driven by experience more than by systematic teaching approaches, and entrepreneurship education has not yet established its role in the field as a fairly new teaching domain. In addition, the need for accepted paradigms or theories in entrepreneurship education has been stressed by many researchers (Fiet, 2001a; 2001b; Kirby, 2004; Kuratko, 2005; Blenker et al., 2006; Fayolle & Gailly, 2008; Penaluna et al., 2012), and there are only a few longitudinal studies (see, for example, Falkäng & Alberti, 2000; Matlay & Carey, 2007; Matlay, 2008; Mwasalwiba, 2010) concerning the theme. Fayolle (2013) suggests that entrepreneurship education would benefit from a wider perspective, where researchers would borrow concepts, methods, and, in some sense, theories from other fields, like evaluation literature and educational psychology. He also claims that entrepreneurship education researchers partly take assumptions, approaches, and research practices for granted, which is presumably not developing the academic field of entrepreneurship education. One reason for that might be the novelty of the research field and, therefore, on a larger scale, the "critical

voices" have not found it yet. When the field establishes its role, this might change. Different values also play their role. According to Tiikkala (2013, 97), there are so many values connected to entrepreneurship education that teachers are having difficulties choosing which to concentrate on when embedding, planning, and evaluating entrepreneurship education.

Kuratko (2005) lists the future challenges of entrepreneurship and argues that, as the theme of entrepreneurship is new in research world, it has been furthered by passionate pioneers, and it has not yet established its role (see also Penaluna et al., 2012). In turn, Henry et al. (2005a, 99) state that "each discipline views entrepreneurship from its own perspective without taking cognisance of approaches in other disciplines", and therefore the knowledge is not necessarily cumulative. Honig (2004) claims that entrepreneurship education needs empirical literature of its own, and there is an immediate and critical need for careful pedagogical analysis.

As suggested above, teachers have various needs for entrepreneurship education research. However different school-level educators probably show different interests in research, there can be similarities amongst them: educators are after empirical evidence and are, for example, interested in knowing whether entrepreneurship education makes any sense and, if so, which pedagogical solutions are the best. Educators' interests are often connected to the students' or pupils' interface, such as whether students are learning, and whether entrepreneurship education affects knowledge, values, or skills.

Need for knowledge and stronger research-base from the researchers' point of view

In the literature of entrepreneurship education, a number of studies draw a picture of a growing field of research and a developing discipline. Many of the articles, providing background information, start by describing the growth: growth of both entrepreneurship education research and programmes offered (Sexton & Bowman, 1984; Gibb, 1996; Vesper & Gartner, 1997; Katz, 2003; Kuratko, 2005; Bennett, 2006; Solomon, 2007; Pittaway & Cope, 2007a; Hannon, 2007; Honig, 2004; Fayolle & Gailly, 2008; Dickson et al., 2008; Pittaway & Edwards, 2012; Fayolle, 2013); and growth of infrastructure elements like positions and the number of entrepreneurship-related journals and books (Sexton & Bowman, 1984; Katz, 1991; 2003; Hytti & O'Gorman, 2004; Pittaway & Hannon, 2008; Kuratko, 2005; Hannon, 2007; Pittaway & Cope, 2007a; Fayolle, 2013). Many researchers also argue that the phenomenon is topical (Anderson & Jack, 2008; Katz, 2003; Kuratko, 2005; Jones & English, 2004; Bennett, 2006; Haase & Lautsenschläger, 2011). The increasing importance has been noticed worldwide (see, for example, Gorman et al., 1997; Falkäng & Alberti, 2000; Lüthje & Franke, 2003; Bell et al., 2004; Hannon, 2007; Matlay, 2008; Richardson & Hynes, 2008; Cheng et al., 2009; Jones, 2010; Haase & Lautenschläger, 2011; Higgins & Elliott, 2011; Kirby & Ibrahim, 2011; Jones et al., 2012; Penaluna et al., 2012; Mwasalwiba, 2010). Katz (2003) even argues that the number of journals is growing faster than the number of researchers. However, Matlay (2006), Fuchs et al. (2008), and Dickson and associates (2008) write that there is a gap in regional variations and cross-country comparisons in

entrepreneurship education research. They also, amongst others, claim that most studies originate in the US and focus on graduate entrepreneurship, pointing out the need for research concerning other contexts and education levels. Anyway, there are some country-specific studies, for example from Sweden (Johannisson et al., 1998), Denmark (Dreisler et al., 2003), Australia (Jones & English, 2004), the UK (Matlay, 2008) and Finland (for example, Hietanen, 2012; Järvi, 2013; Tiikkala, 2013).

Years ago, Vesper (1974) and Sexton and Bowman (1984) argued that entrepreneurship lacks academic respectability. Matlay (2005; 2008) also pointed out that because of the above-mentioned growth, the quality of studies, generalisation, and comparability of findings stay low and studies do not give much support to developing theory further. Dickson and associates (2008, 241, 250) made a notion: "One difficulty in aggregating research across disciplines and national settings is the wide range of definitions utilized by researcher… Lack of consensus in the definition of terms as well as the lack of clarity in outcome measures makes it difficult to draw a definite conclusion". Maritz and Brown (2013), on their behalf, argue that as the contextualisation, implementation, monitoring, assessment, and output of entrepreneurship education programmes is not explicit, there is confusion about the entrepreneurship education concept. Matlay (2005; 2008) argues that the emergent theory of entrepreneurship has polarised because, in some cases, researchers have ignored conceptual and contextual attributes (see also Drakopoulou Dodd & Hynes, 2012; Maritz & Brown, 2013). However, it could still be useful to remember Bygrave and Hofer's (1991) conclusion that it is unlikely to find a single entrepreneurship definition or model that will meet the requirements of the wide range of stakeholders.

Gorman et al. (1997) summarise their large review from the literature of 1985-1994 by saying that the research field is in the early stages of development, and maybe therefore only a few of the studies had an existing theoretical frame to build hypotheses; they were more self-reports in their nature and, in many cases, there were no empirical data. Later on, Katz (2003) was pondering whether the subject is mature or not, but concluded by saying that the discipline is growing worldwide and entrepreneurship education is succeeding beyond anyone's past predictions. Henry and associates (2005a) and Johnson et al. (2006) mention that entrepreneurship scholars and teachers have gained respectability and are winning the battle against more established disciplines. Acceptance of entrepreneurship as a discipline of value in academia shows great success as, some ten years ago, the discipline was uncertain of itself and its value.

According to Fayolle (2013, 2) "at least two major evolutions are required. First, we need robust theoretical and conceptual foundations, drawing from the fields of entrepreneurship and education to support entrepreneurship programmes and courses. Second, we need to reflect upon our practices and take a more critical stance, breaking away from the far too common 'taken for granted' position." He also argues that studies concerning ontological, epistemological, and ethical issues are missing, and that these are the issues that entrepreneurship education researchers need to address.

Gaps can be seen in the essence, target groups, objectives, teachers' role, teaching context, applied teaching methods, students' learning activities, and course content. However, they, together with outcomes and impact indicators for entrepreneurship education, need to be interrelated and along the same lines (see also Mwasalwiba, 2010, 35). Although the theme and research about it have become more and more popular, there are still many unsolved matters that will be approached in this study. Partly, the challenges are described by Mwasalwiba (2010, 40) in his review, where he concludes: "Entrepreneurship is taught to various target groups ranging from students to the unemployed and minority groups in the community. However, not only do the educators differ in the choice of subjects to be taught, they also have failed to substantiate the impact of most entrepreneurship programmes mainly due to the absence of a generally accepted framework for evaluating and assessing the outcomes of the training process."

1.2.2. Need for entrepreneurship education research especially at basic and upper secondary education level

The aim of this chapter is to highlight the need for entrepreneurship education research at lower educational levels. To be very critical, the so-called theory of entrepreneurship education at lower levels seems to be more like a scattered collection of theories from education and economics. There are varieties of models, methods, and practices used in entrepreneurship education; however, in this chapter, the need for studies concerning lower educational levels will be presented.

Robinson et al. (1991) argue that there are several obstacles that need to be overcome to facilitate the development of entrepreneurship education, as it has been a phenomenon of rapid and significant growth. The first challenge is to develop the existing programmes and personnel, in order to improve the quality of the field (see also Bennett, 2006). Robinson et al. (1991) say there is a lack of good theoretical bases upon which to build pedagogical models and methods (see also Fayolle & Gailly, 2008; Kirby, 2004). In turn, one challenge according to Fayolle (2013, 8) is that entrepreneurship educators need to understand the theories and key concepts from both education and entrepreneurship. Dickinson and associates (2008) add that there is a range of definitions used by researchers when aiming to define both educational and entrepreneurial outcomes. According to them (Dickson et al., 2008, 246), many studies "do not provide the underlying theories or strategies employed in the educational intervention". They also note that as the lower educational level research is limited, but in case there is any, the challenge is to compare findings, as some researches use total years of education as a variable and some use secondary school informant as a dummy variable.

Entrepreneurship education studies have been mainly conducted at the adult education level and with university students (Gorman et al. 1997; Dickson et al., 2008; Jones et al., 2012). Most of the entrepreneurship education programmes, courses (Fayolle, 2013; Maritz & Brown, 2013), and studies deal with university level (see, for example, Gorman et al. 1997;

Dickson et al., 2008; Fuchs et al., 2008; Jones et al., 2012; Mwasalwiba, 2010; Maritz & Brown, 2013). Therefore, it is somewhat challenging to study the practices taking place at lower educational levels. One of the reasons for the strong emphasis on university-level study has been mentioned as the ease of gathering data in studies: researchers established at universities have easy access to course feedback, course content, and learning outcome data, and it is understandable that researchers are also interested in elements of entrepreneurship or entrepreneurship education near their everyday life (see, for example, Vesper, 1974; Maritz & Brown, 2013). Furthermore, the background of the theme lies in the USA, and a lot of studies have also been done in the UK. Therefore, country-specific aspects, different education systems and education levels, and different target audiences bring extra challenges to this study, concerning lower educational levels. Although the target audience seems to be wide (Mwasalwiba, 2010), in most cases entrepreneurship education research has not dealt with basic or upper secondary education. Research concentrating on how to implement entrepreneurship in the school curriculum is very limited, there seems to be a lack of empirical data and research concerning lower education levels, and therefore basic and upper secondary education research about practices and empirical evidence seems to be almost non-existent. However, Gibb (1996) argues that, throughout the world, there is an interest in fostering an enterprise culture in secondary schools and in vocational education.

On a practical level, primary school teachers' orientation, role, and state-of-mind is on teaching pupils the alphabet and how to read and write, rather than entrepreneurship. In addition, teachers also have aims in cross-curricular themes (Finnish National Board of Education, 2004), describing objectives and core contents, for example, for entrepreneurship education. The challenge is that entrepreneurship education's theoretical background is one theme mainly researched and developed in universities, amongst university students or entrepreneurs whose learning is to be enhanced. From the general education teachers' point of view, start-ups are pretty far away, and it needs "transfer of knowledge" to include elements from entrepreneurship in the core teaching. In addition, there could also be challenges when combining the every-day teaching work with elements from the world of entrepreneurs and entrepreneurship studies.

Fayolle (2013) claims that entrepreneurship education, in general, is mainly disconnected from the field of education. In Finland, entrepreneurship education research and development as such seems to take place in business schools, faculties of education, and faculties of social sciences. During the last seven years (2006-2012) at least 19 Finnish Doctoral Thesis were presented with a connection to entrepreneurship education, and 10 of them more precisely with a connection to basic or upper secondary level education. (Kyrö & Hytti, 2014) However, it seems that most of the thesis on basic education were presented in faculties of education. Therefore, studies with an emphasis on entrepreneurship and economics are lagging behind.

1.3. Setting the research objectives

1.3.1. Identifying the research gaps

Vesper stated already in 1974 (Vesper, 1974, 15) that it would be useful to keep track of the methodologies teachers use in entrepreneurship. He added that knowledge of what is working and what is not, and by whom, would be of interest. He describes that in the 70s, in the USA, visiting speakers and students' money-raising projects were the most used practices. Many years later, empirical research concerning teachers' actions and what they are doing as entrepreneurship educators is still very limited (Fiet, 2001a; 2001b; Solomon, 2007; Löbler, 2006; Fayolle, 2013).

Powell (2013) argues that pedagogy of entrepreneurship is not yet mature and, according to Mwasalwiba (2010, 36), it is still debatable which methods have the best impact. In general, it is widely agreed that traditional methods are less effective in encouraging entrepreneurial attributes. In turn, problem-based learning, action learning, and future-oriented learning approaches are said to be useful in entrepreneurship education (amongst others Jones & Matlay, 2011; Bager, 2011). In essence, these learning approaches provide students with as much real-life setting as possible (Honig, 2004) and ownership of their own learning (Kirby, 2004; Jones & English 2004; Jones, 2006; 2007b; Draycott et al., 2011).

According to Bennett (2006, 184) and Fayolle and Gailly (2008), there is no consensus among educators as to "what entrepreneurship is" or "how it should be taught", and therefore the lack of uniformity of pedagogical approaches can be seen. In turn, according to Blenker et al. (2011), one of the most frequently discussed topics in the entrepreneurship education literature is what is taught and how it is taught. Blenker et al. (2011) argue, for example, that fundamental questions in entrepreneurship education are how to educate students to solve societal problems entrepreneurially, and how to educate students to adopt an entrepreneurial mindset. As the theme is fairly new, there is also a lack of commitment on the part of institutions. Powell (2013) argues that although entrepreneurship as a discipline is becoming mature, the pedagogy of entrepreneurship is not, but it is developing rapidly. However, the pedagogy is still in the development stage and the pedagogy of entrepreneurship seems to be more vocational than other business disciplines, and that may have an effect on its academic acceptance amongst faculty members.

Entrepreneurship education has been a part of Finnish basic education curricula for a fairly long time, since 1994. Still, on a national level, it is not known what is happening in classrooms in the sense of entrepreneurship education, or what practices, and how much and how often particular practices or materials, are used. Teachers have also been reported as having difficulties in finding contents and means to respond to the aims of entrepreneurship education (Seikkula-Leino, 2007; Seikkula-Leino et al., 2010). As entrepreneurship education has not yet established its position in teacher education and in the continuing professional education of teachers (Seikkula-Leino, 2007; Seikkula-Leino et al., 2012; Birdthistle et al., 2007), it is no wonder that the inclusion of the theme in school curricula is very challenging.

According to Powell (2013), entrepreneurship education lacks fundamental goals and purpose. This very strong argument, whether it is completely true or not, is in line with the findings and presumed ideas that led me to study this topic.

In the field of entrepreneurship education, there are many stakeholders: pupils and students representing different ages, different school level teachers, principals and other administrators, and local, national, and international decision-makers. They all seem to have, if any are set, different aims of and for entrepreneurship education. Although the "big picture" of aims is presumably in line, but with different levels of aims, they are not completely continual and coherent. Some gaps can also be seen, but the aims set by authorities may not be the ones that are followed, "obeyed", nor understood by other stakeholders, such as teachers. Enterprise is an important angle in entrepreneurship education. Therefore, Gibb (2000) claims that there probably are not many places where entrepreneurs and teachers meet and interact. There might be a lack of mutual understanding and a lack of knowledge about what is current in schools of today. They might have a different understanding of what the cornerstones of enterprise are, and therefore they might use different concepts. It would be interesting to find out the similarities and differences between these two worlds, and what possibilities the stakeholder could have for fruitful cooperation in the future.

The variety of stakeholders is very wide and it brings quite many challenges in the field. Therefore, Mwasalwiba (2010) presents different levels of stakeholders[2] and their roles in the supply and demand side of entrepreneurship education. According to him, policy-makers, presenting the demand side, value economic development and see socio-economic benefits gained through entrepreneurship education as important, and believe that enterprise culture has a key role in job creation and new ventures. He argues that students are also presenting the demand side while competing against the challenges of changing working opportunities and self-employment possibilities. On the supply side are teachers, academicians, and support organisations, who provide entrepreneurship education as a tool for building enterprising societies to satisfy policy-makers, and create novel training programmes to satisfy students. According to him, different definitions of entrepreneurship education have been connected to different supposed outcomes or objectives of entrepreneurship education.

Fayolle (2013) argues that there is a lack of knowledge about what are the best contents, combinations of objectives, and teaching methods that will fill the needs of different audiences. He also argues that society is the "client" of entrepreneurship education as, in the long run, entrepreneurship learning and entrepreneurship outcomes should meet social and economic needs.

[2] The number of stakeholders is large and at least the following have been mentioned: government, policy-makers, teachers at different educational levels, researchers, students and pupils at different school levels; students of different disciplines and of different backgrounds (country specific), with different motivations and aspirations towards entrepreneurship; special education students, entrepreneurs, small business owners, the unemployed, minority groups (immigrants, women), external resources, associations networks, and so on.

To be able to discuss or set the goals and aims, a clear, mutual understanding about the phenomena is needed. Therefore, Fayolle (2013, 2) argues: "We need to stand back and reflect upon our practices and what we talk about when we talk about EE [entrepreneurship education]. What are we really doing when we teach or train people in entrepreneurship, in terms of the nature and the impact of our interventions? What do we know about the appropriateness, relevance, coherence, social usefulness and efficiency of our initiatives and practices in EE?"

It also seems that the aims and goals of entrepreneurship education have been stated by decision-makers who may have only a slight connection with everyday school and teachers' practices (Tiikkala, 2013, 99). Policy and curriculum-level aims need to be opened and concretised, and maybe some milestones need to be added in order for them to become more tangible for teachers and easier to understand, follow, and, later on, measure.

It has been noted that teachers appear to struggle when naming their aims of entrepreneurship education, but there also seems to be a lack of links between teachers' aims and students' learning results (Seikkula-Leino et al., 2010). It has also been noted that teachers are having challenges locating subject matter and methods for putting entrepreneurship education into practice (Seikkula-Leino, 2006; 2007). In turn, Maritz and Brown (2013) argue that, in entrepreneurship education discussion, objectives and outcomes do mix. They claim that outcomes are about skills, knowledge, attitudes, graduate careers, self-efficacy, intentionality, competitiveness, and practical learning, whereas objectives are pedagogical, social, economic, contextual, or attributes.

One very interesting meta-aim notion was presented by Holmgren and From (2005, 385): "The agreed importance of entrepreneurship education is not related to entrepreneurship education in itself, it is related to the assumed effects of it." This seems to show one of the challenges in the field of entrepreneurship education, a challenge I would like to study more closely, as it seems to be that entrepreneurship educators' actions have not been under that specific research, and more closely, teachers' aims for their actions have not been studied in detail. In turn, as mentioned, teachers' aims and students' learning results seem to mix (Seikkula-Leino, 2006; 2007), but also teachers seem to outsource their own goal-setting process (Seikkula-Leino, et al., 2010).

To summarise, entrepreneurship education has been part of Finnish core curricula for approximately 20 years, but still it is not known what, how, and how often particular actions are used in schools. The concept and definition of entrepreneurship education in basic and upper secondary level education needs to be concretised, and entrepreneurship education at lower educational levels lacks knowledge, empirical data, and empirical evidence.

This aforementioned lack of knowledge makes up research gap number one:

It seems that the connection between entrepreneurship education objectives set on different levels of operation and the teachers' practices taking place in schools is missing. There is a need to operationalise international and national strategies (incl. curricula) and their aims into understandable and concrete practices for basic and upper secondary level teachers.

In the context of Finnish basic and upper secondary education, entrepreneurship education is embedded in all teaching, and therefore it is described as activities done by all teachers. However, it can be assumed that there are differences between teachers.

The teacher chooses the pedagogies used in the classroom. Therefore, the teacher is a key player (Seikkula-Leino et al., 2010; Fiet 2001a; Löbler, 2006; Jones, 2010; Garnett, 2012) in entrepreneurship education and needs to be studied in more detail. There is especially a lack of basic and upper secondary education research concerning the teachers' role; however, there are studies clarifying that at a higher education level (e.g. Klandt, 2004; Shepherd, 2004; Henry et. al., 2005a; 2005b; Fiet, 2001a; 2001b; Bennett, 2006; Haase & Lautenschläger, 2011). There seems to be quite uniform understanding that words like adviser, coach, facilitator, manager, mentor, or promoter best describe the changing role of teachers. In addition, as the student-centred approach has gained ground, the teachers' role in research is lacking. Furthermore, according to Biggs (1999, 59): "Learning has been the subject of research by psychologists for the whole of this century, but remarkably little has directly resulted in improved teaching."

It has been argued that teachers do not have sufficient training and do not know how to embed entrepreneurship education into their teaching (Sexton & Bauman, 1984; Hytti and O'Gorman, 2004; Hannon, 2007; European Commission, 2008; Kirby & Ibrahim, 2011; Bennett, 2006; Birdthistle et al., 2007; Fayolle & Gailly, 2008; Ministry of Education, 2009; Draycott & Rae, 2011; Niemi, 2012; Fayolle, 2013). Therefore, there might be a lack of competent teachers. In turn, Frank (2007) and Bennett (2006) claim that, in order to improve the quality of the entrepreneurship education, personnel development is needed.

As the need for training has been argued for, there still is not enough information concerning the entrepreneurship educator's background. Research concerning "who" in entrepreneurship education is very limited (Fayolle, 2013), especially at lower education levels. At higher levels, different aspects of teachers' backgrounds have been studied: it has been stated that a teacher's ideal background contains experience in business, and that they have the required teaching competencies and experience in the private sector (European Commission, 2008, 30-31). In addition, teachers familiar with entrepreneurship are more likely to teach in an entrepreneurial way (Powell, 2013), and their business experience affects their entrepreneurship education practices (Hytti & O'Gorman, 2004; Bennett, 2006). Some researchers even suggest that a non-entrepreneur cannot teach entrepreneurship, but more knowledge is needed to understand the relationship between an educator's experience and its

influence on teaching philosophy and educational processes (Vesper, 1974; Weinrauch, 1984; Jones & Matlay, 2011; Fayolle, 2013).

According to Bennett (2006), an educator's age, gender, and length of service have no significant correlation to entrepreneurship education practices used. However, according to Powell (2013), entrepreneurship educators use less structured learning environments that are not the approaches most respected by administrators and colleagues. According to Bennett (2006), teaching-oriented educators are the ones who are more into entrepreneurship education than those who are more research-oriented. In turn, Powell (2013) claims that entrepreneurship educators are the ones that have practical experience rather than a primary academic background. In turn, Fayolle (2013) argues that there is also a lack of research concerning how to mix these two, practice-oriented and theoretical knowledge.

The studies concerning teachers' backgrounds seems to relate to higher education levels. There are just a few empirical studies and limited knowledge concerning basic and upper secondary education in the sense of entrepreneurship educators' backgrounds. The aforementioned notions lead to the second research gap:

> **In spite of the central role of teachers in education, research has provided relatively little evidence on the teachers' characteristics or backgrounds in relation to entrepreneurship education.**

The two aforementioned research gaps show the need for new insights into the aims and practices of entrepreneurship education and the role the teacher's background plays in entrepreneurship education practices. However, there seems to be a very limited number of evidence-based studies and a lack of rich data in the field of entrepreneurship education research, especially at lower education levels (Pittaway & Cope, 2007a; Honig, 2004; Gorman et al., 1997).

There is a lot of research about evaluating entrepreneurship education programmes (Fayolle et al., 2006) and their impact upon new venture creation (e.g. Hytti & O'Gorman, 2004; Barr et al., 2009), students' changing entrepreneurial attitudes or intentions (e.g. Boyd & Vozikis, 1994; Lüthje & Franke, 2003; Liñán et al., 2011; Mwasalwiba, 2010), opportunity identification (DeTienne & Chandler, 2004), and different kinds of comparisons such as entrepreneurship major students compared to other major students (Robinson et al., 1991; Sexton & Bowman, 1984). However, many researchers argue that an evaluation system for entrepreneurship education is missing (e.g. Matlay, 2005; Seikkula-Leino et al., 2010), and evaluation of entrepreneurship education needs to be developed (Birdthistle et al., 2007; Fayolle et al., 2006; Fayolle, 2008; Fayolle & Gailly, 2008; Pittaway et al., 2009; European Commission, 2012). In particular, research concerning the evaluation of entrepreneurship

education at lower school levels seems to be lacking (Draycott et al., 2011; Seikkula-Leino et al., 2010).

According to Honig (2004), entrepreneurship educators' learning interventions need to be examined in order to be able to concentrate, in the future, on the most effective ones. Knowledge about how to best teach entrepreneurship seems to be low (Hytti & O'Gorman, 2004; Walter & Dohse, 2012). Fayolle and Gailly (2008, 577) list common entrepreneurship education evaluation criteria that are connected to measuring knowledge, specific skills or tools, level of interest, awareness or intention, degree of participation in the classroom, or motivation. They also present a challenge for future studies (2008, 579), that is, the different pedagogical approaches used in entrepreneurship education have not been evaluated, and therefore one could not say that one approach is better than another (see also Matlay, 2005; Pittaway & Cope, 2007a; Seikkula-Leino et al., 2010).

Evaluation and assessment seems to be an acknowledged area of weakness, there is a lack of empirical evidence, and longitudinal research is needed, especially in basic and upper secondary level education (Pittaway & Cope, 2007a; Honig, 2004; Gorman et al., 1997). Pittaway and Cope (2007a) argue that there is a need to start assessing and understanding what is working and why in entrepreneurship education, and then continue to say that there is a lack of studies concentrating on interrelationships between educational practices and actual outputs. In particular, there is a very limited amount of research on what entrepreneurship educators actually "do" when assessing entrepreneurship education (Pittaway & Edwards, 2012).

As mentioned, there is both a lack of and a need for evidence-based research on entrepreneurship education. Because of the lack of empirical evidence, evaluation and the measurement and assessment of entrepreneurship education have been challenging. Therefore, the evaluation practices are scattered and scarce. Entrepreneurship education seems to have a crucial role in different strategic plans, and they highlight aims for entrepreneurship education. So, there are aims, but there are no suitable ways of measuring entrepreneurship education practices. Understandably, strategies without measures, or with practices that are not measurable, do not work as effectively as wanted. As there is a lack of empirical evidence, it has been difficult to develop entrepreneurship education into measurable actions.

These notions generate the third research gap:

> **There is a need for systematic data collection and empirical evidence about teachers' entrepreneurship education practices in schools.**

1.3.2. The purpose of the study and the research question

The purpose of this study is to increase the level of understanding of teachers' entrepreneurship education practices, and through this to develop entrepreneurship education.

The research question of this study is:

> **What are teachers' entrepreneurship education practices and how to utilise this knowledge in the development of entrepreneurship education?**

In order to answer the research question, a more detailed picture of entrepreneurship education is needed. First, the concept and definition of entrepreneurship education in basic and upper secondary level education needs to be concretised. Second, as there seems to be a lack of knowledge and empirical data, I aim to structure and amplify strategy-level aims into concrete and measurable variables. Third, the practices used in schools needs to be gathered, categorised, and analysed. Through these steps, the objective is to enable the aims of entrepreneurship education to become more clear and visible for teachers. As a result, entrepreneurship education would become – for teachers and decision-makers – concrete actions that are possible to follow and measure.

The main research question and the aforementioned notions lead to the following sub questions:

1. What kinds of aims are set for entrepreneurship education?
2. How to evaluate and measure entrepreneurship education?
3. What kinds of entrepreneurship education practices are used in Finnish schools?
4. How are teachers' background characteristics related to entrepreneurship education practices?
5. How to utilise empirical data in the development of entrepreneurship education?

These sub-questions will be used for structuring the articles and research strategy for this study.

1.3.3. Scope and limitations of the study

Entrepreneurship education can be seen as a system that consists of multiple layers and multiple stakeholders. Although other layers and dimensions are approached as well, central to my thesis is the practical level of entrepreneurship education, namely teachers' actions. Therefore, I will concentrate on teachers' actions, teaching, and teachers' views and practices in entrepreneurship education. More precisely, the context is Finnish teachers in basic and upper secondary education level schools. As the variety of entrepreneurship educators is wide,

I will concentrate on teachers and will leave out such actors as the third sector and parents. As the teachers are in focus here, themes like students' learning, entrepreneurship intentions, intentional behaviour, motivation, business start-ups, and business activities are only mentioned here.

However, there are elements embedded in entrepreneurship or enterprise education that have been used widely under some other labels than entrepreneurship or enterprise education (different pedagogical branches and approaches like Steiner pedagogy, Montessori pedagogy, and so on), and here notions concerning other approaches are kept to a minimum. There seem to be many interpretations, different connotations, and many approaches to the theme of entrepreneurship or enterprise education. However, there seems to be a fairly uniform vision that so-called "traditional teaching" needs to step aside and novel teaching methods, pedagogical solutions, and teaching approaches are gaining ground (see, for example, Kirby, 2004; Kothari & Handscombe, 2007; Kirby & Ibrahim, 2011). There are different labels and names, but in this study, only those under the category of the enterprising and entrepreneurial approach are discussed.

The theme of entrepreneurship and enterprise education is multidisciplinary, and therefore elements concerning both entrepreneurship and education are discussed. This business administration study relates to the research field of entrepreneurship and especially entrepreneurship education. However, on a small scale, pedagogical issues are also covered.[3] Fayolle and Gailly (2008) present a generic teaching model in entrepreneurship education, constructing philosophical and didactical levels, and describes the latter as being about what, why, how, for which results, and for whom things are taught.

As most of the entrepreneurship education research is connected to university level, this brings some challenges. Not only is the target audience on a different level, but teachers also have other kinds of viewpoints towards entrepreneurship and entrepreneurship education. In practice, university teachers are producing, for example, courses about small business management and entrepreneurship as such, and then their actions are studied and reported as entrepreneurship education. The field of interest is partly the same, but there are significant differences between an entrepreneurship lecturer lecturing about business planning, and a primary school teacher teaching pupils the alphabet. Similarities can be seen, as both mentioned education levels could have an entrepreneurial way of teaching and learning, but the context and content vary substantially. The aim here is to go as deep as possible into the world of basic and upper secondary school. The research about entrepreneurship or enterprise

[3] Words like didactics and pedagogy need to be roughly defined and especially the definitions presented by entrepreneurship education researchers are of particularly high value. According to Garnett (2012, 3), following Alexander's (2001) study: "Pedagogy is a word that is understood differently in different parts of the world. In Anglo-American thinking, pedagogy is often connected with teaching method and is distinct from (and subordinate to) the curriculum, whereas in Europe, the term "didactics" is more frequently used in connection with teaching method, pedagogy having a wider implication that includes both curriculum and didactics." According to Kyrö (2005), the word "didactic" is used in Central European and Scandinavian countries, but is almost unknown in French- or English-speaking countries.

education at lower education level is limited, and here the aim is to use that as much as possible. Because of a lack of more relevant studies, a great amount of research connected to the higher education level needs to be used. Keeping the educational differences in mind, studies are carefully selected, and only those with possible connections to the lower education level are used.

1.4. Research strategy

The aim of this chapter is to present the research strategy and the philosophical background of this study. The research design is based on five different articles, each of them with its own specific role in this thesis. Articles aim to provide increased understanding of the research question and answers for sub-questions, by extending the level of understanding of teachers' entrepreneurship education practices.

This study is based on a constructive approach (Kasanen et al., 1993) and it also has features from participatory action research (Cohen et al., 2007; Metsämuuronen, 2006, 217-222; Coughlan & Coghlan, 2002). The main focus of construction is on creating, testing, and standardising the measurement tool and using the data gathered with it. The constructive process is described in Table 1. This illustrates the different stages of the process, from the pre-work and building process of the tool to using different parts of the data. In the construction, both qualitative and quantitative data and a multi-method approach were used, in order to answer the main research question "What are teachers' entrepreneurship education practices and how to use these practices in the development of entrepreneurship education?", and related sub-questions.

Table 1. Research design, essential choices, data gathering, used analysis methods, and number of the research sub-question (1-5) answered in a particular article.

Article	Research phase	Data	Analysis methods	Research sub-question:
1. Teachers' reflections on entrepreneurship education: their understanding and practices	Before creating the tool, there was a need to understand teachers' perceptions of entrepreneurship education.	Texts gathered from 29 Finnish basic and upper secondary teachers by e-mail questionnaire.	Data was analysed through content analysis and content typing.	1, 3
2. Creating a Measurement Tool for Entrepreneurship	Developing a standard research survey through a	Multiple data, gathered from Finnish basic and upper	Descriptive multi-method case study presenting the	2, 5

	Education – a Participatory Development Approach	constructive process.	secondary teachers, n 25-148.	participatory action research methodology used when creating the measurement tool.	
3.	Teachers implementing entrepreneurship education – classroom practices	Testing the survey and using the early stages of the measurement tool as a data gathering instrument.	Quantitative data, gathered by the measurement tool from 521 Finnish basic and upper secondary teachers.	Descriptive statistics and factor analysis were used when analysing the data.	3
4.	Entrepreneurship Education in Schools – Empirical Evidence on the Teacher's Role	Using the tested measurement tool for more data.	Quantitative data, representing 1359 Finnish basic and upper secondary teachers, data gathered by the measurement tool.	Descriptive statistics, factor analysis and regression analysis were used.	3, 4, 5
5.	Broadening the Resource-Base for Entrepreneurship Education through Teachers' Networking Activity	Using the standardized research survey's specific (VET) data.	Quantitative data, gathered by the measurement tool, representing 448 Finnish vocational education and training (VET) teachers.	Descriptive statistics, ANOVA, and linear regression analysis were used.	3, 4, 5

Brinberg & McGrath (1985) divide the research process into experimental, empirical, and theoretical paths. In this study, there are elements of each of them. In the experimental part, conceptual and methodological domains are combined, but most parts of this study are empirical. As entrepreneurship education at lower education levels lacks a theory base, hypotheses were not used, and therefore the elements of the theoretical path are used on a limited scale. However, two of the attached articles (articles 4 and 5) include proposition creation and testing. Those articles have a stronger emphasis on existing theory, and reasoning was deductive in nature. In turn, the study carries elements from a nomothetic

approach, employed in the natural sciences, where scientific tests and the use of quantitative techniques are highlighted (see, for example, Burrell & Morgan, 1979). Surveys, questionnaires, and standard research instruments represent a nomothetic approach where hypotheses and deductive reasoning are distinctive. However, all in all, the process in which the measurement tool was created, the main approach in this study, both empirical data and applicable theory were guiding the processes, and therefore this study is described as abductive in nature. In this study, there are different needs and different approaches to knowledge. However, distinctive elements in this study are empiricism, where knowledge comes from experience; pragmatism, which emphasises the importance of knowledge for practice; and partly critical realism, as existing theories presumably do not match the reality (Kasanen et al., 1993).

The research strategy, the methodologies applied, and the content of the study all have strong connections to constructivism and social constructivism (Berger & Luckman, 1966). Constructionism is a problem-based research strategy aiming at both empirical and practical findings. The construction is built on team-work, where researchers and practitioners both play a significant role. The construction is based on theory, its usefulness is tested empirically, and it aims to produce a theoretical contribution. The commitment of the participants is significant, and the researcher needs to identify their double-role as a participant and a developer-researcher. The aim is to test the usefulness and functioning of the developed construction immediately after and during the process for which the used theories and existing knowledge will be tested. In addition, only after the practical test is passed, is the usefulness of the construction proved (Kasanen et al., 1993).

The Finnish education system is based on a learning conception in which learning is considered to be a result of a student's active and focused actions, aiming to process and interpret received information in interaction with others, and is based on students' existing knowledge structures (Finnish National Board of Education, 2003; 2004). In turn, the pedagogy of entrepreneurship education is based on socio-constructivism, where students' active roles, and their engagement in learning, knowledge construction, and team collaboration are of great importance (Higgins & Elliott, 2011; Garnett, 2012). Therefore, the chosen research philosophy and entrepreneurship education research go nicely together without any contradictory challenges.

Action research aims to develop holistic understanding, solve a problem, and contribute to science. Therefore, it is an approach that aims to take action and create knowledge or theory about actions. According to Coughlan & Coghlan (2002), the approach is based on Kurt Lewin's work, but it also has similarities to Kolb's (1984) learning cycle. The approach is run through six conscious steps: data gathering; data feedback; data analysis; action planning; implementation; and evaluation. The steps follow each other iteratively, so that after gathering data, the data is fed back, analysed, the next actions are planned, actions are taken and then evaluated, leading to future data gathering, and so forth. However, the steps are deliberate and planned ahead, and they cannot be designed in detail in advance, as the previous step and its

evaluation affect the next step. In addition, an action research project might have different level cycles, one major and many minor cycles, running at the same time. As in a constructive approach, in action research the cooperation between researchers and practitioners is crucial, as both players have a significant role both when analysing and gathering data. In the action research approach, all types of data gathering methods can be applied, and it is noteworthy that the data collection tools themselves are also interventions and generate data as such. Action researchers are called "outside agents" acting as facilitators of the actions and reflecting among practitioners. In order to be able to do that, the researcher needs to have a wide theoretical pre-understanding and know the world of the practitioners. The action researcher needs to be confident and experienced to cope with uncertainty and challenging situations. An apprenticeship model could also provide help, as a more experienced researcher could guide and help the researcher. To illustrate the inferences, it is crucial that all the data, gathered in joint activities, network meetings, assignments, and discussions are observations in nature, and are systematically and regularly documented. Although action research is situation-specific and does not aim for universal knowledge, it should have some theoretical implications. When selecting the scope of the process, involvement with the key person's external steering group would be useful (Coughlan & Coghlan, 2002).

It is noteworthy that the action research process increased the researcher's understanding of the phenomenon of entrepreneurship education. Therefore, the building process followed a hermeneutical circle, as understanding was growing in a dialogic interaction between the researcher and the data. The cycle, for example, has the following stages: in the beginning, qualitative data was gathered and analysed; with help of growing understanding, the analysed entrepreneurship education practices were then translated into quantitative measures. The quantified items were tested together with participants, knowledge was growing, and the items were developed further according to received feedback, while invariably the growing knowledge was guiding the development work. As described above, multi-method, multi-investigator, multiple data, and multiple theory triangulation settings were used (Denzin, 1988).

The chosen research strategies also have limitations. For example, action research is dependent on the commitment of both researchers and participants. Therefore, it could be challenging to find sufficiently motivated participants for a process that could take a longer period of time (Metsämuuronen, 2006). Researchers' personal assumptions might also affect the process and interpretation of the data. Therefore, in order to minimise one researcher's role, a steering group, presenting different stakeholders in the field of entrepreneurship education, was invited. The steering group members had an active role at different stages of the process. They participated in the development process by giving comments on the structure of the measurement tool; they commented on specific items; and by communicating in their networks, they participated in increasing the number of respondents. In that sense, a multi-disciplinary group of researchers also had their important share. Some of the group members were very experienced researchers, and therefore they had a crucial role in guiding the process, and an apprenticeship model was used (Coughlan & Coghlan, 2002).

Action research is sometimes claimed to be too consultative in nature. That has been avoided by having a strong theoretical justification (Coughlan & Coghlan, 2002). However, challenges can emerge while adapting theory and practice. In addition, a constructive research setting is challenging, with the researcher having a double role in the process, and that needs to be reported clearly. During a long-standing process, the motivation of participants might also be challenging to maintain, but in a long process, delicate issues that were not meant to become public might emerge. In order to minimise the challenges mentioned above, in this study, a multi-method approach was chosen (Metsämuuronen, 2006; Kasanen et al., 1993; Koskinen et al., 2005).

1.4.1. Data collection

The theoretical framework and the research question guide what kind of data is meaningful to gather and what kinds of analysis methods would be useful. Studies are commonly divided into qualitative and quantitative, and described roughly in that a qualitative approach is used when wanting to understand the phenomena and quantitative when wanting to explain them. In this study, there are aims in line with both approaches, and therefore this study consists of articles with both qualitative and quantitative approaches. The qualitative data was gathered during 2008-2009 and the quantitative data during 2010-2013. Next, the data gathering is described, but the constructive data gathering process is represented more precisely in Article 2 and Table 1.

At the beginning of the building process, a group of twenty-nine teachers was invited to participate in testing and developing the measurement tool. Teachers represented different parts of Finland, represented different school levels, and were named as "trial group members" by their school or organisation. In autumn 2008, the "trial group members" got an e-mail with four questions, and this e-mail functioned as an orientation task for the teachers and also aimed to gather important data and illustrate a starting point for the research group for the forthcoming development work. The four questions were about teachers' aims for entrepreneurship education, their practices related to entrepreneurship education, about achieved results in entrepreneurship education, and about those ways in which entrepreneurship education is manifested in their local education strategies, business strategies, or curricula. Depending on the teacher, they produced a few pages of text. The received data was used in article number one.

During the measurement tool's building process, the teachers were given different tasks; they participated in brainstorming sessions, and they tested, retested, and gave feedback about the technical solution. They were used as informants, but they also participated in the operationalising process, where entrepreneurship education practices were operationalised into measurable items. In the operationalising process, existing pedagogy, entrepreneurship, and business administration research, available curricula, and strategies were also used. Groups of teachers took part in and gave regular feedback while testing the tool's user-

friendliness and usefulness. The research findings and gathered feedback guided the development. The intelligibility of the questions, their measurability, wording, clarity, and grammar were checked in many expert consultations. After the first year of the building process, the number of tester teachers was growing constantly, and the aim was to get data as rich as possible for analysis. While testing the tool, teachers' responses were automatically saved in the database. The gathered data was regularly analysed by the interdisciplinary research group, and on that basis, items were added, removed, or combined, and answer options were carefully checked. The functioning of the database and items as such were cross-checked. In the development process, some reversed and duplicate items, as well as open questions, were used. Later on, different user profiles were generated for specific user groups, in order to have somewhat different questions for different level teachers. All stages of the development process were documented and the gathered diverse data was significant as background information. Only some of the data and studies are included in this thesis, however; the second article describes more precisely the building process of the measurement tool and related data gathering and analyses.

At the end of 2011, the tested research-based tool was launched nationally for Finnish basic and upper secondary school teachers. The tool is used by teachers as a self-evaluation system, and it gives detailed, personalised feedback to teachers concerning their current entrepreneurship education practices, and it gives ideas on how to develop as an entrepreneurship educator. Different stakeholders use the tool as a follow-up system concerning their own region or area. Interestingly, at the same time, the teachers' self-evaluation tool also works as a data-gathering system for research purposes. The tool is run by a database that automatically saves all the responses. The researcher has unlimited access to the data source, and the structure of the tool is built in such a way that the cumulative data can be downloaded at any time from the database and saved for analysis. It is possible to choose the format for the downloaded data, and in most of the cases, Excel format was used. The online survey gathers data from the teachers constantly and, at the publication date of this thesis, the data consists of approximately 3 100 responses. The data gathered using the measurement tool is used in articles 3, 4, and 5.

It is also important to report the research process and its ethical premises (Koskinen et al., 2005; Metsämuuronen, 2006). As shown, the gathered data varies between different articles. However, in all of them, teachers voluntarily provide the information needed. In the early stages of the process, the 29 "pilot group members" all signed permission for research. The quantitative data was gathered through the measurement tool, which teachers use anonymously. When a teacher starts using the tool, they are informed that anonymous responses will be saved in the university's database and used for research purposes only. Anonymity is guaranteed and individual responses are used only as part of the larger data. All the information is handled confidentially and nobody but the named researchers are able to see, analyse, or use the data.

Articles 3, 4, and 5 present more closely specific items and quantitative data analysis. However, it is noteworthy that the data-gathering method, the Measurement Tool for Entrepreneurship Education, contains approximately 140 items, of which some 55 are used in articles attached to this thesis. The items that are not used here are mostly more general in nature; they deal with general pedagogical solutions and school culture as such. Those important and interesting themes and the related rich data will hopefully be a source for studies in the near future, as it seems that those areas also need more in-depth research.

1.4.2. Analysing the data

The aim of the article or study and the theoretical framework have all affected the choices made (Hirsijärvi et al., 1997). The data analysis has been described in the attached articles, so in this chapter the decisions made on analysing the data will only be presented briefly. The chapter continues with a description of the qualitative data analysis and then the quantitative analyses are presented.

The aim of analysing qualitative data is to test and integrate empirical data, which in this case are teachers' entrepreneurship education practices, and the theoretical framework (Alasuutari, 1994). Here, especially, the target was to understand and find answers to questions such as how teachers implement entrepreneurship education in their practice.

When analysing the qualitative data, theory-driven content analysis and content typing was used in order to interpret the data. In content typing, the data was grouped into parallel types according to similarities identified. Based on theme categorisation and grouping, content analysis is efficient in terms of providing examples to illustrate the research problems (Eskola and Suoranta, 1998, 174-181). In the early stages of the research process, the aim was to find answers to the question of what was being said and to identify similarities from the data with regard to the teachers' views on entrepreneurship education. In the analysis process, the data was read several times in order to build an overall picture of the responses. Next, the texts were read more reflectively and analytically, the aim being to organise them in terms of the teachers' responses to the questions. The responses were grouped into categories based on, depending on the need for knowledge, the structure of the questionnaire or the theoretical framework. Next, the responses were mirrored against the literature review based on the current need for knowledge, and grouped accordingly. Then the responses were analysed on the basis of the current theoretical framework, and finally reported accordingly. The multidisciplinary group of researchers participated in the analysis process in order to avoid one researcher's personal preferences affecting the results too much (Brinberg & McGrath, 1985; Coughlan & Coghlan, 2002). In most of the cases, the categorisation and grouping work was done using pen and paper, but Atlas.ti software was also used in some stages.

During the analysis process, the current theoretical framework was tested. Some overlaps and gaps were found, and after analysis, the theoretical framework was developed further and reported accordingly (Miles & Huberman, 1994, 92). For example, it has been shown

(Shulman & Shulman, 2004) that teachers' reflection plays a crucial role in the development of teaching. Our findings highlighted the need to develop teachers' reflection skills in entrepreneurship education, and therefore the framework was updated with theories of teachers' learning and teachers' reflection (Novak & Gowin 1984; Shulman & Shulman, 2004). In addition, when analysing the data, the heterogeneity of the responses was noted. For example, when analysing the content of entrepreneurship education, it was found that teachers reported having a lot of practices and aims for entrepreneurship education, but that they did not report gaining that many results. Therefore, a balance between different elements was reported as something that could be useful to develop. In turn, similar findings were made amongst teachers' aims, practices, and results. These seem to mix and overlap, and teachers were found to be unsure of their aims. These findings were of great importance in the sense of the construction and background assumption (Kasanen, et al., 1993) for building the measurement tool. It became evident that the aim was to create a tool that could partly enhance teachers' reflection skills, guide their learning in the field of entrepreneurship education, and also help teachers to reflect their entrepreneurship education practices and aims and help them to evaluate their actions as entrepreneurship educators.

The quantitative research material was collected with the Measurement Tool for Entrepreneurship Education (Yrittäjyyskasvatuksen mittaristo™, www.lut.fi/mittaristo). At different stages of the process, different needs for knowledge guided which analysis methods to choose. The current data was downloaded from the data source into Excel format, saved on the computer, and analysed with IBM® SPSS® Statistics software, version 21.

To describe the data, analysis methods like frequency, percentage, mean, median, mode, standard deviation, variance, minimum, and maximum were used. Later on, new variables were created and sum variables were used for compressing the data. At different stages, factor analysis, regression analysis, and reliability analysis were heavily used in order to get a more in-depth picture of the data. Exact analysis methods are presented in each article.

1.4.3. Validity and reliability

In the sense of checking the validity and reliability of the measures and this study, there have been many steps. As described earlier, the pilot teachers have a very important role in the process towards the creation of a valid and reliable instrument (Cohen et al., 2007; Metsämuuronen, 2006; Brinberg & McGrath, 1985). As the aim was a credible study, multi-method, multiple data, multiple theory triangulation, and multi-investigator settings (Denzin, 1988) were used.

Different internal validity checking points were as follows: the content and construct validity was checked with pilot-users of the tool. Those teachers that were involved in the development process gave regular feedback to the research team and commented on the wording, comprehensibility of the items, and their relevance for a particular school level. The wording and content were also cross-checked with the strategic guidance documents. The

formulated items were built on a strong theory base, and there the criterion validity was checked in order to make sure that the items were operationalised correctly. Special attention was paid to the fact that the theory basis comes mostly from the context of a higher education level, and the challenge was to operationalise the items from that basis. The criterion validity was cross-checked with reversed and duplicate items, and in some items it was possible to roughly compare the findings to other studies. In the early stages, for example, items connected to external stakeholders were also tested with open questions. There, teachers could both tick the mentioned externals, but also suggest actors to be added to the next version. The responses were constantly cross-checked so that they were reasonable and feasible, and so that they made sense as practices really used in schools (Brinberg & McGrath, 1985; Metsämuuronen, 2006, 115-121; Kyrö, 2004, 135-138).

In this study, external validity is understood as the generalisability of the findings (Brindberg & McGrath, 1985), and this has been achieved by describing the whole research project in as much detail as possible. Kasanen et al. (1993) state that the main idea of a constructive approach lies in pragmatism, and therefore practical usability is a major characteristic showing the true nature of the construction. In turn, they (Kasanen et al., 1993) argue that constructively created solutions are also quite likely to work in different contexts.

During the data-gathering process, teachers voluntarily responded to the online survey. Therefore, it might be possible that the teachers with a positive attitude towards entrepreneurship education and the ones who are familiar with the theme responded more actively. That might produce biased data. Therefore, the increased data was checked constantly. It was noted that amongst respondents, there were “bellwethers”, but also ones that were very passive in the sense of entrepreneurship education practices. In order to track down and, later on, minimise the possible bias, certain Finnish regions strongly encouraged all their teachers to respond. By these kinds of agreements, the aim was to gather as wide and representative data as possible. Gathered regional data was analysed carefully, and comparisons were made. The results showed that the data was coherent, as both the “regional data” and the “whole data” were similar and in line with previous findings, and was not positively biased. The representativeness and credibility of the data was also confirmed by factoring the data. At different stages (n 300, 450, 700, and 1500 teachers), the factor analysis produced a similar factor structure.

The use of self-reported data from a single informant may also entail a risk of common method bias (Podsakoff et al., 2003). However, teachers are considered to have the best information and knowledge about their practices and, as specialists of education and evaluation, they are used to using self-reports and reflecting on their actions. In order to make the most of this, different kinds of check-points were organised while building the tool. In addition, as the data is as rich and wide as it is, a possible single error or mistake will presumably fade away.

In the sense of transferability of the results, it is important to define the conditions under which the findings fit or are inconsistent. The Finnish data, especially the largest data set used in article number four, correspondents well with the Finnish teacher profile, and therefore the findings are considered generalised. However, the data is solely gathered in Finland, and therefore the generalisability of the results outside Finland remains unknown. In addition, the respondents represent Finnish basic and upper secondary education teachers, and therefore it is impossible to say anything about the generalisability outside that context.

The reliability of the tool was also checked in many ways. In the pilot stage, the questionnaire was significantly longer, having some duplicate and reversed items. Those items were carefully checked per respondent to make sure that they are in line and the measures are working correctly. No systematic error was found. Although using the same questionnaire again after a short period of time is somehow contradictive, a test-retest procedure was organised. The retest results were treated as replicates (Brinberg & McGrath, 1985) and, as they were in line with previous test, the results show reliability of the measures. The quantitative data was carefully analysed and specific attention was paid to the scales of the measures. The analysis showed variance and the reliability was then checked using sum variables. Based on the sum variable analyses, the items that were not providing more information were removed. In the sense of internal consistency, the quantitative data was factor analysed and Cronbach Alpha was checked (see more precisely in articles 3 and 4) (Metsämuuronen, 2006, 64-67).

According to Kasanen et al. (1993), the validity of the construction is clear if the construction works in real life, and it has connections to and is part of the theoretical framework. Therefore, during the process, different studies were regularly exposed to a wide research audience and the articles presented in this thesis were published in various, fairly strong and highly evaluated books, journals, and conferences. These can be seen as indicators that the studies have made a contribution in this field of research (Eisenhart & Howe, 1992, 660; Tiikkala, 2013, 96).

1.5. Outline of the study

This study consists of two parts. The first part gives an overview of the thesis, and the second part introduces the five research publications. The overview in part one consists of five chapters, presenting a short overview of the phenomenon of entrepreneurship education; the need for entrepreneurship education and the need for this kind of study; setting the research objectives; the research strategy; and finally the outline of the study. The following chapter, Chapter 2, introduces the major concepts and theories on entrepreneurship education research. Chapter 3 summarises the contents of each of the five publications, and presents their major contributions. Chapter 4 concludes the first part by presenting the main theoretical, practical, and methodological implications of the study and suggestions for future research in the field.

2. AN OVERVIEW OF THE RESEARCH ON ENTREPRENEURSHIP EDUCATION AND ITS CENTRAL ELEMENTS

The aim of this chapter is to present a compendium of the history and the most influential reviews concerning the development of entrepreneurship education. In addition, different kinds of categories, approaches and perspectives of how entrepreneurship education has been defined will be presented in the beginning of the chapter. This study concentrates on teachers' actions, teaching, teachers' views and practices in entrepreneurship education. The literature review was structured following the teaching model framework for entrepreneurship education (Fayolle & Gailly, 2008) and supplemented with the notions of teacher's role and resources that were suggested, for example, by Gibb (1996), Hynes (1996), and Jones with English (2004). The aim is to create coherent overall picture of planning, implementing and evaluating entrepreneurship education in context of basic and upper secondary education. Based on that, the following chapters will present the aims, results and benefits of entrepreneurship education. Teachers' roles and characteristics of entrepreneurial learning will also be discussed, as well as methods of entrepreneurship education, what kind of learning environment best enhances entrepreneurial learning, and finally, what kinds of practices have been used and tested in the sense of measuring, evaluating, and assessing entrepreneurship education.

There are different interpretations of the starting point and history of entrepreneurship education: Katz (2003) and Vesper and Gartner (1997) describe the first ever entrepreneurship course taking place at Harvard Business School in the late 1940s: according to Katz (2003) the actual time was in February 1947, and according to Vesper and Gartner the year was 1945. This seems unclear as, for example, Falkäng and Alberti (2000) and Bell and associates (2004) argue that the first entrepreneurship programme was developed in Japan in the late 1930s, and Kuratko (2005) claims that actual entrepreneurship education began in 1971, when the University of Southern California launched the first Master of Business Administration (MBA) in entrepreneurship. Anyhow, Western Europe and the UK come along in the early 1980s (Kirby & Ibrahim, 2011).

The field of entrepreneurship education has drawn many researchers to capture the field's current state. Broad reviews present interesting findings and illustrate snapshots from a fairly new research area. For example, Dainow (1986) reviewed articles from 1975-1984, Gorman et al. (1997) reviewed articles published in 1985-1994, and Pittaway and Cope (2007a) studied articles published during the years 1970-2004. Despite different researchers and times, they all seem to have partly the same findings: there is a need for a stronger empirical focus, and evaluation of the effects of education and training needs to be emphasised. In turn, Gorman et al. (1997) summarise, based on both empirical and descriptive articles, a need for research concerning basic and upper secondary schools. However the lack of lower education level studies can partly be because only journals in the areas of entrepreneurship and small business – not, for example, education – were selected. This appears to be relevant even today. However, there are some new Finnish dissertations concerning basic and upper

secondary education, but they come from faculties of education (e.g. Hietanen, 2012; Järvi, 2013; Tiikkala, 2013).

Fayolle (2013) presented some possible categories for entrepreneurship education, based on three partly overlapping literature reviews. The first review was of approximately 100 articles published in leading entrepreneurship journals during the years 1984-2011, and he categorised the articles into five groups: state of play; specific audiences and special needs; measurement and evaluation; entrepreneurial learning; and teaching methodology and media. The second review covers 2004-2012, and the articles were mainly about the impact of entrepreneurship education. Here, approximately 100 articles were analysed and then categorised in three themes: theoretical underpinnings and methods; types of entrepreneurship education; and types of impacts. The third review of 220 articles, published in 2006-2012, focused mainly on entrepreneurial intentions, and there the majority of the articles were about assessment of entrepreneurship intentions or about the relationship between entrepreneurship education and entrepreneurial intentions. The aforementioned categories describe well the research field of entrepreneurship education and the related themes of discussions. What is especially interesting is that in all of them, impact, assessment, measurement, or evaluation was one independent category showing its role in the research.

2.1. Different categories and dimensions of the concept of entrepreneurship education

The aim of this chapter is to present and partially summarise different entrepreneurship education definitions and categorizations used in the research literature.

There are many definitions of entrepreneurship education, but actually none of them seems to have established its role as "the one". Therefore, many researchers argue that a clear, accepted, and established definition of entrepreneurship education is missing (Gibb, 2000; Bennett, 2006; Fayolle & Gailly, 2008; Matlay & Carey, 2007; Jones & Iredale, 2010; Draycott & Rae, 2011), and have presented more or less unique versions of their own. In turn, Fayolle (2013) suggests that entrepreneurship education research is missing its theoretical framework and is suffering from a lack of theoretical grounding. He proposes that it might be useful to borrow theories and concepts from different disciplines, and suggests that a "trial and error" concept of entrepreneurship education needs to be invented.

However, the phenomenon has been described by presenting outlined questions (for example, Fayolle, 2008; Fayolle & Gailly, 2008), an essential preposition (for example Gibb, 2005; Pittaway & Edwards, 2012), or describing verbs (for example, Gorman et al. 1997). One of the most used categories seems to be the one presented by Gibb (2005) which is: learning through, learning for, and learning about entrepreneurship. Hytti and O'Gorman (2004) quoted Gibb (1999) by defining "learn to understand entrepreneurship, learn to become entrepreneurial, learn to become an entrepreneur". Quite similarly, Pittaway and Edwards (2012) describe entrepreneurship education as being "about", "for", "through" or "embedded" / "in". There, "about" approaches are mainly practices to raise students' awareness and share

knowledge, and it is content or subject driven. “For” is when students are engaged in tasks, project-based methods are used, and learning is experiential and students are learning key skills and competencies. In “through” approaches, students learn through doing, they run real companies and practise actual entrepreneurship. “Embedded” or “in” is where educational practice, mainly for non-business students, is embedded within courses focused on other disciplines or subjects, they learn entrepreneurship within their discipline, and the aim is mostly to raise awareness and experience of entrepreneurship. Examples of question-based definition are the following, by Fayolle (2008) and Fayolle and Gailly (2008): according to them, entrepreneurship education is to answer questions such as why (objectives, goals), what (contents, theories), for whom (targets, audiences), how (methods, pedagogies), and for what results (evaluation, assessment)? The last example is by Walter and Dohse (2012). They divided entrepreneurship education into two categories, reflective modes and active modes, based on Kolb’s (1984) model of experiential learning. Reflective modes contain techniques in which students acquire knowledge through reflective observation, and the objectives are changing knowledge and appreciation. Active modes, on the other hand, are about methods in which students gain knowledge through active experimentation, and by using them, understanding, skills, and attitudes are supposed to change. Table 2 summarises the most relevant definitions, categories and perspectives.

Table 2. Different approaches and categories to conceptualising entrepreneurship education.

Entrepreneurial approach to teaching emphasises "need to know", "how to", and "who with" processes	Gibb (1996)
Goals should be set for knowledge, skills, and attribute learning: Learning "what", learning "how to", and learning "who with"	Hynes (1996)
Three categories of entrepreneurship education: didactic methods, skills building methods, and discovery methods	Hynes (1996)
Learn to understand entrepreneurship; learn to become entrepreneurial; learn to become an entrepreneur	Gibb (1999), in Hytti & O'Gorman (2004)
Learning through, for, or about entrepreneurship	Gibb (2005)
Entrepreneurship as a method, practice, and content of teaching and learning	Vesalainen & Strömmer (1998); Remes (2003); Seikkula-Leino (2006; 2007)
Education about entrepreneurship (theory building); education for entrepreneurship (know-what = hard facts; know-how = soft skills; know-why = conviction)	Laukkanen (2000); Haase & Lautenschläger (2011)
Equipping students with knowledge, skills, and competencies to exploit opportunities in this knowledge environment	Hynes & Richardson (2007)

Why (objectives, goals), what (contents, theories), for whom (targets, audiences), how (methods, pedagogies), and for which results (evaluation, assessment)?	Fayolle (2008); Fayolle & Gailly (2008)
About, for, through, and in	construction presented by Fayolle (2008)
Know-what; know-how; know-who; know-why; know-when	constructed and presented by Fayolle (2008); Fayolle & Gailly (2008)
The professional dimension, the spiritual dimension, and the theoretical dimension of entrepreneurship education	constructed by Fayolle (2008); Fayolle & Gailly (2008)
Enterprise in the context of secondary education (and beyond) is personal, situational, and economic	Draycott & Rae (2011)
The conceptual framework of entrepreneurship education = educational processes, institution, community, educator, and student (in the middle)	Jones & Matlay (2011)
"Through", "for", "about", and "embedded" (or "in") entrepreneurship	Compendium presented e.g. in Pittaway & Edwards (2012)
Reflective modes (learner acquires knowledge through reflective observation) and active modes (learner acquires knowledge through active experimentation) of entrepreneurship education	Walter & Dohse (2012)

The present study combines many of the approaches and dimensions described in Table 2. However, in this study, entrepreneurship education is mainly conceptualised following the approach by Vesalainen and Strömmer (1998), Remes (2003) and Seikkula-Leino (2006; 2007). That is, entrepreneurship education as a method, practice, and content of teaching.

Regardless of the way of defining the concept, researchers seem to have a mutual understanding that entrepreneurship education is connected, with different emphases, to entrepreneurial attitudes and skills, personal qualities, entrepreneurial activity, entrepreneurial spirit, internal entrepreneurship, entrepreneurship as a career choice, knowledge of entrepreneurship, training entrepreneurs, small business owners and managers, the role of entrepreneurs in society, economic growth, and new venture creation (e.g. Hynes, 1996; Gibb, 2000; Falkäng & Alberti, 2000; Hytti & O'Gorman, 2004). According to Mwasalwiba (2010), the definitions are connected to different supposed outcomes of entrepreneurship education. Therefore, in most of the studies, the viewpoint is on educational processes aiming to influence participants' personal skills, attitudes, values, intentions, and behaviour, but also on new business creation, opportunity recognition, and managing existing firms. It is noteworthy that the audience or target groups, in most of the cases, are university students or entrepreneurs.

As seen (see Table 2), the variety of ways of categorising entrepreneurship education is wide. Furthermore, the phenomenon is wide-ranging, and so a holistic and multi-voiced approach is needed. Referring to Gibb (2000), entrepreneurship can be seen and stimulated by a large variety of ways of communicating, doing, feeling, learning, and seeing things.

Even though the aforementioned categories are widely presented in various articles, there are not many studies where the balance, if such a "balance" is desired, between different parts is presented, or where parts are evaluated in terms of their importance or usefulness for different purposes. One of the exceptions was presented by Pittaway and Edwards (2012). They researched contents and evaluation systems in entrepreneurship education courses taking place both in the USA and the UK. According to them, in most of the courses, the content was "About" entrepreneurship, which means that the courses were aiming to help students to understand the phenomenon itself, rather than preparing them for entrepreneurial activity or entrepreneurial skills.

2.1.1. Teachability of entrepreneurship

Over the years "can entrepreneurship be taught" discussions seem to arise every now and then (Vesper, 1974; Gartner, 1988; Cunningham & Lischeron, 1991; Hynes, 1996; Gorman et al., 1997; Falkäng & Alberti, 2000; Henry et al., 2005a; 2005b; Kuratko, 2005; Bennett, 2006; Blenker et al., 2006; Haase & Lautenschläger, 2011; Fayolle, 2008; Fayolle & Gailly, 2008; Kirby, 2004, Pittaway & Cope, 2007a; Johannisson et al., 1998; Bell et al., 2004; Neck & Greene, 2011; Walter & Dohse, 2012). According to Walter and Dohse (2012), the reason for current discussions emerges because of some recent studies that showed contradictory results concerning entrepreneurship courses' effects on the entrepreneurial career. However, most of the studies present some level of positive effects of entrepreneurship education, and agree that entrepreneurship can be taught and entrepreneurship education can enhance entrepreneurial behaviour and enterprising skills. For example, Gorman et al. (1997, 71) state: "There is also preliminary evidence that entrepreneurial attributes can be positively influenced by educational programs and that many entrepreneurship programs and courses are able to build awareness of entrepreneurship as a career option and to encourage favourable attitudes towards entrepreneurship." (See also, for example, Hynes, 1996; Henry et al., 2005a; b; Kuratko, 2005; Bennett, 2006; Solomon, 2007; Fayolle, 2008; Fayolle & Gailly 2008; Neck & Greene, 2011.) Anderson and Jack (2008) summarise that some entrepreneurial skills can be taught and others cannot. Birdthistle et al., (2007, 266) argue that innate abilities can also be greatly enhanced by education. (See also Fuchs et al., 2008; Kuckertz, 2013.)

On a pedagogic perspective, Bell and associates (2004, 111) doubt whether psychological traits such as need for achievement, locus of control, and risk-taking propensity can be taught or are inherent. Interestingly, Cheng and associates (2009) present the case in Malaysia where students' skill expectations and skill acquisition did not match. They also took part in the discussion on whether entrepreneurial talents are born or made, and their data indicated that

while the majority of respondents, who were university-level students, believed that entrepreneurs could be made, still a little more than 40% believed that entrepreneurs are born. As the theme is controversial, Cheng and associates (2009, 557) reviewed studies presenting both mentioned views (entrepreneurship is or is not teachable) by summarising how personal traits are "essential factors in determining whether a person could become an entrepreneur", and therefore "there is little logic in teaching or training someone in entrepreneurship, as entrepreneurs are born to be entrepreneurs". They also present studies indicating ways to foster entrepreneurship through education.

Mwasalwiba (2010, 30) conclude the discussion about the teachability of entrepreneurship by arguing that it has been proved by many studies that entrepreneurship can be taught, and therefore educators should move ahead and face the question "how should it be taught?" and concentrate on choosing teaching methods that align the objectives involved.

In this thesis, the point of departure is, at least in some sense, that entrepreneurship is teachable. Without this kind of approach, it would seem unwise and meaningless to study entrepreneurship education practices and the teachers' role as entrepreneurship educators if they are not to have any effects on students or learning.

2.1.2. Entrepreneurial learning and entrepreneurial learning environment

The roots of the concept of entrepreneurial learning are in how entrepreneurs learn and how they learn best (Cope & Watts, 2000; Cope, 2005; Pittaway & Cope, 2007b; Higgins & Elliott, 2011; Breslin & Jones, 2012). The concept leans on Kolb's (1984) theory of experiential learning and his learning cycle approach (see also, for reference, Dewey, 1938; Lewin, 1951; Piaget, 1952) and Revans' (1971; 1982) action learning model. Over the years, many entrepreneurship education researchers have used and developed Kolb's model further (for example, Johannisson et al., 1998; Cope & Watts, 2000; Rae & Carswell, 2001; Birdthistle et al., 2007; Pittaway & Cope, 2007b; Jones & Iredale, 2010; Draycott et al., 2011; Pittaway & Thorpe, 2012; Walter & Dohse, 2012). However, Pittaway and Thorpe (2012) summarise the essence of entrepreneurial learning as any pedagogy that draws students closer to the world of the entrepreneur. In turn, Cooper et al. (2004) argue that entrepreneurial learning is about "see, touch and feel entrepreneurship", where the focus is on exploration and exploitation of real-world assignments and in-company projects. Higgins and Elliott (2011) compare "traditional" and entrepreneurial education and argue that traditional, passive learning methods boost the students' role as "spectators", while an active, entrepreneurial approach creates "participators".

Many studies suggest that the aim of entrepreneurial learning is to encourage students to take more control of their education, like being part of defining their learning objectives and the processes required to meet the objectives, and giving the ownership of learning to students (Kirby, 2004; Jones & English, 2004; Jones, 2006; 2007b; Draycott et al., 2011). According to Pittaway & Cope (2007b, 216), students learn best in multi-disciplinary teams, when

sharing their knowledge and experiences, and when learning both from peers and by making mistakes. At the core of the course are real-life problems, a problem-based approach is used, and external stakeholders, such as local business mentors, are used. They argue that social aspects are the corner stone of entrepreneurial learning, but also highlight the importance of emotional and experiential features. They describe how experiential, work-based, entrepreneurial learning teams create a social culture of their own, where social pressure, mutual commitment, group dynamics, and ownership of the problem is developing. When taking responsibility for one's own learning, the feeling of responsibility, emotional attachment, conflicts, uncertainty, and ambiguity can be used as fuel for learning. In turn, Cooper et al. (2004) conclude that cooperation projects give students an opportunity to learn valuable skills and knowledge with real-life connections, with entrepreneurs, but entrepreneurs also have a change to learn in the process.

According to Gibb (1997), the basis for entrepreneurial learning is built on autonomy, control, customer-related dependency, freedom, independence, and ownership, whereas learning takes place by copying, doing, experimenting, receiving feedback, solving problems, and taking opportunities, as well as from making mistakes and learning from peers. Gibb (2000) also concluded that, not only are the methods crucial, but so is the way they are executed. As an example, he mentioned that project-based learning is not useful if it is not executed in an entrepreneurial way (see also Leskinen, 1999).

The learning environment discussion is a broad field of research with at least approaches like technological, social, and physical learning environments. Here, only the most crucial parts will be presented, most of the emphasis is on the classroom setting, and the concept of the entrepreneurial learning environment is adopted from the Finnish National Board of Education (2003; 2004) and the Ministry of Education (2009). According to those strategic guidelines, the learning environment emphasises students' own active knowledge construction process, enables students to set their own objectives, and enables students to learn and work independently and collaboratively in different groups and networks. The environment should enable opportunities for students to test and find working methods suitable for themselves and for their individual learning style.

Therefore, the entrepreneurial learning environment should be a place that encourages active forms of learning, challenges learners to exploit their full potential, and serves as a place to test and create skills for the future. The learning environment is a place to test and put theory into practice. Therefore, it should mirror real-world challenges and be as much as possible connected to the real-life business environment. In turn, it should be a place to foster students' development of self-confidence, decision-making, and risk taking skills, in order for them to be ready to implement these skills later on in working life (Hynes, 1996; Honig, 2004; Hynes & Richardson, 2007; Pittaway & Cope, 2007b; Higgins & Elliott, 2011; Garnett, 2012). For example, family firms (Drakopoulou Dodd & Hynes, 2012) and mini-company programmes (Birdthistle et al., 2007; Drakopoulou Dodd & Hynes, 2012; European Commission, 2013a) are mentioned as valuable and effective entrepreneurial learning environments.

Jones (2007a) adds that in a student-centred approach, students have an active role in terms of the learning environment, as they are asked what to add, remove, or modify in the learning environment. Jones (2006) continues that an entrepreneurship educator is challenged to have strong faith in their students, even more faith than they may have in themselves. Therefore, the learning environment should be created into a place where students feel comfortable to fail, they are challenged by uncertainty, but they are also engaged in learning activities. In turn, the teachers' role is to force students into their discomfort zone or a significant challenge (Jones, 2006; 2007b).

Powell (2013) argues that a less structured environment is more challenging for the educator, but interestingly enough he also points out that, in particular, the students with the highest grades resist the less structured approach. He also claims that administrators feel that a structured environment is easier to supervise. Pittaway and Cope (2007b) reported that in some cases, a lack of regulations created problems in group dynamics, as some team members wanted to work and others did not. Jones (2007b, 602) adds that "the most serious issue is ensuring the right balance between student freedom and associated curriculum discipline".

2.1.3. Entrepreneurship education as a subject, cross-curricular or intra-disciplinary theme

There has been some debate on whether entrepreneurship should be a subject taught on a separate course or infused throughout the curriculum (Vesper & Gartner, 1997). Gibb (1996; 2011, 148) presents entrepreneurship as an intra-disciplinary as well as a multi-disciplinary and trans-disciplinary process, where entrepreneurship can be embedded into the curriculum widely in different disciplinary contexts. Gibb (1996) also points out that an interdisciplinary approach supports the fact that in real life, problems or challenges are not classified into boxes, but solutions need a broader view and knowledge. In turn, Draycott and Rae (2011) describe enterprise as intersubjectival, where students apply creativity, problem solving, and opportunity exploration in different subjects and contexts. Many researchers (for example, Hynes, 1996; Hytti & O'Gorman, 2004; Kothari & Handscombe, 2007; Richardson & Hynes, 2008) suggest integration between disciplines to be a fruitful approach while developing enterprise and entrepreneurship skills.

Jones (2010, 510) has said that entrepreneurship education is fast becoming ubiquitous for education that falls naturally across faculty and discipline boundaries. Holmgren and From (2005) describe the advantages that entrepreneurship education can bring when creating homogeneity in teaching practices. Kuratko (2005) sees that entrepreneurship education could be one of the transformers of the educational setting, with its pedagogical solution, "experiential classroom" testing, and possible interdisciplinary programmes.

According to Solomon (2007, 174), there is uniformity in curricula and pedagogies within entrepreneurship education. Although enterprise education can be seen as a holistic, intra-disciplinary theme, Birdthistle et al. (2007) report that enterprise education programmes are

not embedded in everyday school-life. They argue that because the programmes are considered to be taking time away from studying other courses, they are on the periphery of formal education programmes. Contrary to that, Kirby and Ibrahim (2011) say that an increasing number of British students are being exposed to enterprise education both within and outside the curriculum. Earlier on, Jones and Iredale (2010) described enterprise education as a theme enriching the curriculum overall, although in England it is not compulsory to teach enterprise. They also describe how enterprise education is applicable in any teaching, no matter what level or what subject is at hand, as it is about a creative and innovative pedagogical approach using experiential action learning methods. Neck and Greene (2011) describe how entrepreneurship educators are working in a cross-disciplinary field, and how the field of entrepreneurship is multidisciplinary. They outline that, in an ever-changing world, learning a method is presumably more important than learning content, and therefore methods need to cope with dramatic changes in content and context. They conclude their study by saying (2011, 68) "perhaps we do not teach entrepreneurship the discipline. Perhaps we teach a method to navigate the discipline".

Jones and associates (2012) describe entrepreneurship education as a cross-campus initiative where universities see opportunities to gain extra funding by organising, for example, different commercialisation activities. In turn, Harte and Stewart (2012) present a university case from the UK, where enterprise education was intended to be embedded across all subject disciplines during a five-year lifespan. During the development stages, they reported (2012, 331) that "enterprise education comes in many different guises from formalized mainstream curriculum, extra-curricular offerings, implicit curriculum, project-based and more newly emergent forms of curriculum (evolving pedagogies) including the use of technologies." Their university-level examples show the current development aims that universities are facing, and similar challenges might be faced at lower education levels in the future.

On a practical level, Bager (2011) presents a camp model approach, where cross-disciplinary groups of students intensively work, study, and learn, solving innovative or real-life problems, and where he reports having pleasing results. He argues that while students learn together and from each other, a cross-disciplinary approach provides students with insight into other disciplines, but also brightens understanding of their own discipline. (See also Pittaway & Cope, 2007b.) Biggs (1999) also argues that the great potential multidisciplinary basis can enable students' learning. He points out that most universities are divided into content departments, whereas such a holistic approach could be challenging to organise. Similar findings can be found concerning lower educational levels (Seikkula-Leino, et al., 2010). Presumably, administrators and teachers are facing extra work if they aim for these learning processes, but these possible awaited outcomes could be fairly easily organised in the lower levels of schools. According to Fuchs et al. (2008), effective enterprise education requires a holistic and active approach to learning and interaction between pupils. They support the use of interdisciplinary projects and mention the ongoing education reform in Germany, where interdisciplinary syllabi have been included in many subjects. Hynes (1996) argues that enterprise education should be included in non-business disciplines, as those are the fields

where business and product ideas emerge. She encourages faculties to integrate interdisciplinary teams and projects, as novel ideas, new expertise, and synergies can emerge from cross-functional learning. Bell and associates (2004), while describing their successful students' international real-world project, pointed out that although students learn the contents of many subjects simultaneously, the challenge is that students spend, according to non-participating teachers, "too much time" on one project, hampering other studies. Projects, therefore, need to be very carefully managed.

In Finland, entrepreneurship education has been a harmonising, cross-curricular theme (Finnish National Board of Education, 2003; 2004; Tiikkala, 2013) in national curricula since 1994, and its main ideas will be presented in more detail in the next chapter.

2.1.4. Entrepreneurship education in basic and upper secondary school curricula

Biggs (1999, 64) describes the key elements and nature of a curriculum as follows: "The curriculum is stated in the form of clear objectives which state the level of understanding required rather than simply listing the topics to be covered. The teaching methods chosen are those that are likely to realize those objectives; you get students to do the things that the objectives nominate. Finally, the assessment tasks address the objectives, so that you can test to see if the students have learned what the objectives state they should be learning. All components in the system address the same agenda and support each other. … The curriculum objectives are at the centre." He also presents a model of "constructive alignment", where curriculum objectives, teaching and learning activities, and assessment tasks all create a unit where the mentioned attributes are interconnected and in line.

In the Finnish basic education context, entrepreneurship education, or more precisely the theme, is called "participatory citizenship and entrepreneurship" and has been named as a cross-curricular theme. Cross-curricular themes represent the central emphases of the educational and teaching work, through which current educational challenges are met. Cross-curricular themes are to be implemented in the core and optional subjects, and in joint events and in the school's operational culture (Finnish National Board of Education, 2004).

The Finnish curriculum for basic education contains traditional school subjects and seven cross-curricular themes like growth as a person, cultural identity and internationalism, media skills and communication, participatory citizenship and entrepreneurship, responsibility for the environment, well-being, and a sustainable future, safety and traffic, and technology and the individual (Finnish National Board of Education, 2004). The curriculum for general upper secondary level is fairly similar to the curriculum for basic education, with six cross-curricular themes, out of which one is "active citizenship and entrepreneurship" (Finnish National Board of Education, 2003). During 2007–2010, vocational education curricula were updated, so that all vocational degrees require at least 5 study weeks of entrepreneurship education (Opetushallitus, 2009). In the sense of entrepreneurship education, intrapreneurship (internal entrepreneurship) and enterprising attitude are especially considered to be main

targets in the school context (Finnish National Board of Education 2003, 25; 2004, 40-41) and the curricular texts seem to guide that the younger the students are, the more emphasised the attitudes towards entrepreneurship are, and the older the students get, the more the content of teaching and learning is about knowledge of entrepreneurship (Remes, 2003; Ristimäki, 2004). In turn, from the teachers' perspective, lower educational levels emphasise methods used in entrepreneurship education (entrepreneurial pedagogy), and with older students, the content of entrepreneurship becomes stronger (Hytti & O'Gorman, 2004; Seikkula-Leino, 2007; Jones & Iredale, 2010; Hietanen, 2012). Interestingly, the Finnish national curriculum does not mention anything about how, when, and by whom the cross-curricula theme, its realisation or outcomes, should be followed, assessed, measured, or evaluated.

Country-specific differences can be seen in how governments view, develop, and frame the role of entrepreneurship education. For example, basic and upper secondary level school curricula are developed through very different processes and they have a different status in schools. In addition, strategic planning concerning entrepreneurship and enterprise education varies. Interestingly, there are some lower educational level studies focusing on entrepreneurship education and curricula. For example, according to Garnett (2012), the National Curriculum in the UK seems to have fairly similar basic ideas to the Finnish one. It has seven cross-curricular dimensions and, in some sense, elements of enterprise learning can be seen in the curriculum for pupils from eleven years onwards. An enterprising approach to teaching and learning is described under four characteristics: working as a team; learning by doing; learning through problem-solving activities; and the teachers' role being more like a facilitator than an instructor. Earlier on, Gibb (1996) reported that the UK, Hungary, Poland, Latvia, Slovenia, Italy, and Canada have designed enterprising modes of learning in the basic core curriculum. In Finland, Tiikkala (2013) studied entrepreneurship education values and curricula in the teacher education context. Birdthistle et al. (2007) also describe enterprise education programmes in Irish secondary schools, Fuchs et al. (2008) compares the school systems in Sweden and Germany, and Garnett (2012) studies enterprise pedagogy amongst 11-14 year old English students.

In her study, Hietanen (2012) encourages basic education teachers to do more teamwork between different subjects in order to apply novel approaches to teaching and entrepreneurship education practices. Frank (2007) stated that entrepreneurial skills are generic in nature, and when embedding those into teaching, there are positive and negative viewpoints. Negative issues could be, for example, the false belief that entrepreneurship skills are either nothing special or that they are skills covered in other subjects. Some teachers seem to think that entrepreneurship skills are marginal and distracting to the core of their own subject (Frank, 2007), and in some cases, enterprise programmes are not an embedded part of formal education, not graded, and therefore not that highly valued by teachers (Birdthistle et al., 2007).

2.2. Aims of entrepreneurship education

Biggs (1999) highlights the importance of objectives, teaching, and assessment being in line. This note brings an interesting approach to entrepreneurship education, as there seem to be objectives of many levels, set by different level stakeholders, and therefore presenting different perspectives for similar general objectives. For example, there are policy-makers' or government-level aims and aims they have set for school teachers. The national curriculum sets the general aims for teaching and learning, but cities and educational institutions can also have aims of their own, although they need to be in line with the national curriculum. There are general entrepreneurship education aims, but also aims for entrepreneurship courses. Furthermore, individual teachers can set their own aims for teaching in general, or for one particular course, and depending on how they are manifested, they might be same, similar, or completely different from, for example, those set by participating students.

Hytti and O'Gorman (2004) present, in their study, a variety of objectives and aims for enterprise education, and argue that there was limited understanding of how different aims are best achieved. They also note that in the same situation, different stakeholders, like promoters of enterprise education and participants on a course, can have divergent aims. Hytti and O'Gorman (2004) studied the objectives of 50 enterprise education programmes representing four European countries (Austria, Finland, Ireland, and the UK), and they had a target audience from primary school level to adult education. The results showed that the objectives can be divided into three categories: programmes aiming to create skills needed in starting up a business; programmes creating better understanding of businesses and the world of work; and programmes aiming to create entrepreneurial skills. As was expected, objectives on lower school level programmes were to improve the enterprising skills of pupils and enhance understanding of the world of work with cooperation from community linkages. Interestingly, already at secondary school level, an increasing number of start-ups was mentioned as the most common objective. Partially in line with this, Mwasalwiba (2010) suggested that influencing attitudes, values, and the general community culture; start-ups and job creation; contribution to society; and stimulation of entrepreneurial skills are generic objectives for entrepreneurship education. Kuckertz (2013) divides the aims into educating better entrepreneurs, raising entrepreneurial attitudes, and establishing an institution-wide entrepreneurial culture. However, many researchers argue that entrepreneurship education should give students a wide spectrum of skills they need in the future, should they start their own business or work in a smaller or bigger organisation (Cooper et al., 2004; Jones & English, 2004; Frank, 2007; Jones & Iredale, 2010; Penaluna et al., 2012).

Gibb (2011) states that the main focus of policy interest is on creating an "entrepreneurial mindset" in young people. That is in line with what the European Union (2000; 2004) and European Commission (2004; 2008; 2012; 2013a; 2013b) have stated as key competencies for European citizens. In turn, Fuchs et al. (2008) define aims for entrepreneurship education adopted from the European Commission (2002), but fine-tuned to a more suitable form for seventh to ninth grade students. They argue that the long-term objective is to increase the number of entrepreneurs and, by that, respond to international competitiveness, welfare, and

job creation challenges. Amongst pupils, the aim would translate into raising students' awareness of self-employment as an occupational option. A second objective, according to Fuchs et al. (2008), is to provide pupils with early contacts and knowledge for business. They emphasise that lower school levels need to have different approaches than business schools, and therefore basic understanding is enough and works as a base for the future. The third aim is to foster pupils' entrepreneurial qualities and attitudes, for example, by involving pupils to take part in decision-making processes, express their opinions, participate in choosing, in some sense, the used learning methods, and have the possibility to work at their own pace.

Kirby and Ibrahim (2011, 183) have the same point of departure, and they say that, "…it is generally agreed that there needs to be a more experiential approach to learning and the creation of enterprising environments and approaches that enable entrepreneurial aptitudes (such as creativity, need for achievement, calculated risk-taking, autonomy, etc.) to be developed alongside business acumen and understanding and the more traditional skills of the graduate student (critical thinking, communication, problem-solving, time management, etc.)". In line with previous researchers, Jones and English (2004) conclude that the aims are to fulfil the needs of future employers and increase students' employability. Honig (2004, 265) adds that the aim is "to teach students to be prepared for novelty and surprise, because this is the environment they will be facing", based on learning from trial and error. In turn, Heinonen and Poikkijoki (2004) define that, as lecturers and researchers, their aim for entrepreneurship education is to integrate the skills and attributes of an entrepreneurial individual with entrepreneurial process and related behaviour. Edwards and Muir (2012) name the purpose of enterprise education as being to enable students to understand their entrepreneurial roles and how they are personally applied. However, the number of companies started by students has also been mentioned as an aim (see, for example, Lüthje & Franke, 2003; Powell, 2013).

A wide variety of entrepreneurial and enterprising skills have been mentioned as being objectives of entrepreneurship education. For example, Frank (2007) and Gibb (1996) have listed problem definition and problem solving, time management, flexibility, independent decision-making and decision-taking, taking responsibility, persuasiveness, negotiation and leadership skills, critical thinking, ability to behave autonomously, versatility, dynamism, resourcefulness and ability to behave autonomously, and gaining awareness of what students can achieve by commitment as targeted entrepreneurial or enterprising skills. Neck and Greene (2011) call for the importance of "soft stuff" and mention students needing an entrepreneurial mindset, creativity, decision-making skills, empathy, social responsibility, opportunity identification, and ability to live with uncertainty.

Holmgren and From (2005, 385) present one very interesting meta-aim notion: "The agreed importance of entrepreneurship education is not related to entrepreneurship education in itself, it is related to the assumed effects of it. "Years later, Powell (2013) also argues that there is a lack of resolution regarding the purpose of entrepreneurship education. He claims that, rather than having a clear purpose of entrepreneurship education, entrepreneurship educators have

taken the preliminary goals and refined their teaching and methods to achieve the preliminary goals.

As can be seen, the aims of entrepreneurship education vary a lot, different stakeholders present different views, and the stakeholders set aims for both themselves and other players in the field. Therefore, somebody's aim is another player's result. That is at least one explanation of why the overall picture becomes partly blurred. It is challenging and partially impossible to present the aims and results separately. However, in order to be able to concretise as much as possible, both of the aspects in this study are presented, when possible, separately. The next chapter will present the outcomes and results of entrepreneurship education.

2.3. Results and expected outcomes of entrepreneurship education

Hynes and Richardson (2007) present the benefits of entrepreneurship education as divided into five categories by different stakeholders. They are benefits for students; for the faculty and educational institution; for the small firm owner; for the researcher; and for government policy. Earlier on, Hynes (1996) divided the benefits of entrepreneurship education for students into personal, knowledge, and career outputs, where confidence communication, initiative, management and market skills, problem solving, decision-making, risk taking, and improved knowledge and broader career options were mentioned as descriptive elements. Mwasalwiba (2010) analysed entrepreneurship education's community outreach activities and argued that very few activities are dedicated to improving the community. However, the most frequently reported activities were business centres and clubs with local entrepreneurs; technical and management assistance for entrepreneurs; dissemination of research results to the community; public symposia and awareness campaigns; and links with entrepreneurs and internship opportunities.

Hynes and Richardson (2007) describe win-win situations where students and external stakeholders (entrepreneurs, for example) both learn from each other, students get a concrete touch of working life, and external stakeholders can update their knowledge concerning the theme. During the students' company assignments, for example, a company's business plan or market plan can be developed further, and while the company gets this development boost, at the same time the students' self-confidence and self-efficacy have been reported to develop when giving the presentation for a real audience representing entrepreneurs, other external stakeholders, lecturers, and so on. A similar kind of setting has also been tested and reported as having positive effects at lower education levels (Remes, 2003).

From a researcher's point of view, cooperation with entrepreneurs can offer a real-life test-bed, as well as a data source, and in some cases they can also strengthen funding applications. Implications for government policy can also be seen, as the entrepreneurship education initiatives could enhance policy-makers' knowledge concerning training needs, and could

provide them with relevant knowledge of how to facilitate and guide policy development, and how or when to support or steer funding for effective initiatives (Hynes & Richardson, 2007).

From the students' perspective, entrepreneurship education provides them with the knowledge and skills base they need while studying, but especially for life after studies. Students want to enhance their opportunity to develop transferable skills, and develop their employability, as well as the knowledge and experience they need when competing for future jobs. A positive impact upon entrepreneurial outcomes has also been reported, related to career aspirations and critical skills in working life, like team-building, group working, planning, problem solving, and negotiating, which have been reported as being enhanced with entrepreneurship education (Cooper et al., 2004; Anderson & Jack, 2008; Matlay, 2008; Drakopoulou Dodd & Hynes, 2012). The aforementioned skills and knowledge could give an edge in competition for jobs, but they are also attributes of an entrepreneurial way of working, and skills needed as an entrepreneur (Solomon, 2007). In turn, Heinonen and Poikkijoki (2006) describe their entrepreneurship course students as saying their learned entrepreneurial behaviour is going to be useful both in the current studies and as a useful way of working in any context. They also mentioned that in an entrepreneurial-directed process, teachers and students can together show active goal consciousness, discover opportunities and meet challenges, and learn to enjoy uncertainty. According to Hynes and Richardson (2007), there is also a variety of positive effects. They argue that as the surrounding world is changing, it becomes increasingly important for teachers to update their teaching, both content and methods, to measure up to the changing economic landscape.

Dickson and associates (2008) claim that there is no consensus about what is considered as a measurable outcome for entrepreneurial education. In turn, Frank (2007) argues that entrepreneurship education needs relevant, more explicit learning outcomes that are contextualised to employability and entrepreneurship. In addition, the learning outcomes need to be included in assessment criteria, or they will not be addressed by the student in full (Frank, 2007). However, according to Drakopoulou Dodd and Hynes (2012), different outcomes in enterprise education can be seen between developed and less developed regions. Their findings show that secondary school teachers and pupils from less developed regions emphasise personal development and better employment options as outcomes of enterprise education, whereas representatives of more developed regions see academic outcomes and changed entrepreneurial intentions as outcomes. One very interesting notion, amongst less developed regions, was that entrepreneurship education is improving school attendance. Enterprise education has also been reported as bringing positive experiences and outcomes in special education and with "challenging pupils" (Draycott & Rae, 2011; Garnett, 2012). In turn, Walter and Dohse analysed regions representing higher and lower entrepreneurial activity, and found that both active and reflective modes of entrepreneurship education were effective in "high level regions", whereas active modes of entrepreneurship education were working more effectively in "lower level regions". Harte and Stewart (2012) reported their findings that enterprise education has developed students' enterprise and employability skills, and not only skills like team working, problem solving, decision-making, project planning,

time-management, communication, and "real-world" application of theory, but also increased student motivation to learn and improved self-confidence were reported. In turn, Jones and English (2004) had similar positive results with a teaching strategy based on the entrepreneurial process itself, and by including interaction with external environments.

Biggs (1999) argues that the student population is getting more and more diversified and a greater number of students are struggling. Therefore, he suggests that problem-based learning, which is a popular approach in entrepreneurship education, could be worth using more in education as it, according to him, narrows the gap between different learners and engages students at a high level of cognitive activity. He also describes (1999, 58) his results: "Good teaching is getting most students to use the higher cognitive level processes that the more academic students use spontaneously."

2.4. Resources of entrepreneurship education

Jones and Iredale (2010) claim that entrepreneurship and enterprise initiatives have been heavily dependent on public finance. However, there seems to be a limited amount of resource discussion (see also Pittaway & Hannon, 2008), but a lack of resources has been mentioned by many (Hynes, 1996; Hynes & Richardson, 2007; Drakopoulou Dodd & Hynes, 2012). Policy-makers worldwide promote the development of enterprise education, and some of the efforts have been supported with significant funding (Pittaway & Hannon, 2008; Matlay, 2006; Jones & Iredale, 2010; Kirby & Ibrahim, 2011; Honig, 2004). However, according to Pittaway and Cope (2007a), there is rather limited evidence about what outputs have been created. They conclude their review (2007a, 499-450) by saying "it seems clear that significant funds are flowing into promoting and developing entrepreneurship education but that much of the investment is founded on rather limited evidence"; …"governments investing in this [entrepreneurship education] area need also to invest in research examining entrepreneurship education in order to improve the evidence base, to evaluate the impact of interventions and thereby have a clearer idea of what policies might work more effectively in which contexts."

Matlay and Carey (2007) reported in their longitudinal research, concerning 40 universities from the UK, that as entrepreneurship education has become "fashionable", it has attracted students but also policy-makers' interest and universities that earlier on had a shortage of relevant funding but managed to gather governmental funding, and the number of courses has increased. However, Fuchs and associates (2008) argue the need for longitudinal studies and, in turn, Matlay (2005; 2006) argues that entrepreneurship education research also needs empirically rigorous qualitative and quantitative studies to provide policy makers with evidence-based analyses of the impact, validity, and efficiency of entrepreneurship education, in order to help policy-makers to allocate funding in the future.

Hannon (2007) presents a wide compendium of stakeholders, projects, development processes, and funding sources that have been used both in the UK and internationally to

promote entrepreneurship education (Draycott & Rae, 2011; see also, for reference, Jones & English, 2004, describing the case in Australia). He points out the crucial role of decision-makers in allocating, with ever increasing competition, funding for institutional, regional, and national levels. As a conclusion, he summarises his study by arguing that entrepreneurship educators need professional development and more teaching resources.

Entrepreneurship education, according to Frank (2007), requires departmental-level support and educators' training and time to develop their teaching. Birdthistle and associates (2007) argue that in order to have effective enterprise education, both financial and skills-based resources are needed. They claim that relevant teacher training is a key to successfully implementing enterprise education in teaching (see also Hannon, 2007; Hytti & O'Gorman, 2004). It has been argued that teachers do not receive sufficient training and do not know how to embed entrepreneurship education into their teaching (Sexton & Bauman, 1984; Hytti & O'Gorman, 2004; Hannon, 2007; European Commission, 2008; Kirby & Ibrahim, 2011; Bennett, 2006; Birdthistle et al., 2007; Fayolle & Gailly, 2008; Ministry of Education and Research (Norway), 2006; Ministry of Education (Finland), 2009; Seikkula-Leino et al., 2010; Draycott & Rae, 2011; Fayolle, 2013). Draycott and Rae (2011) argue that teachers need professional development, space to develop their practice, trust, and a passion for enterprise. According to both Deakins et al. (2005) and Birdthistle et al. (2007), the principal's role is very important to enable the training, as well as when setting the framework for implementing different enterprise programmes or activities in school.

Hytti and O'Gorman (2004) argue for a heavy work load for both students and teachers in a case when enterprise programmes are run as an extracurricular activity or extra subject instead of an integrated part of the curriculum. In turn, Fuchs et al. (2008) outline the need for teacher training, but also suggest that decision-makers offer a financial stimulus or time resource for those teachers who do cooperate with companies, as it seems to have a positive impact in fostering entrepreneurship in general. Although teachers would need extra incentives, Fuchs et al. (2008) also argue that there are many tested, nicely working practices hidden somewhere, and instead of reinventing the wheel, teachers should find them more easily. They also pointed out an interesting notion concerning the lack of resources: they mentioned support programmes and initiatives for companies who spend different resources on cooperation with schools.

Bager (2011) describes using the camp model for entrepreneurship education, which, according to him, is a cost-heavy teaching activity that needs extra funding for transportation, meals, accommodation, and so on, but at the same time he concludes that within that approach, students learn something different; they learn skills needed in working life, and learning is also faster than in a traditional classroom setting. One useful extra resource in the camp model is the involvement of outsiders: private company representatives working as mentors; entrepreneurs bringing concrete advice, presenting real-life problems, or acting as evaluators of students' marketing presentations, and so on.

Concerning the resources, quite often teachers claim that the class size is too big and therefore they end up with traditional lecturing. However, Biggs (1999) argues that there would be entrepreneurial solutions instead of traditional ones for those who want to be creative. Therefore, he encourages teachers to use student-activating methods, like peer-directed or self-directed activities, where students engage deeply with learning but do not demand any extra resources.

Fayolle (2008) mentions, in a university context, that entrepreneurial devices such as incubators might be a useful and relevant extra resource for teaching, in order to bring practical and real-life orientation into the classroom. Gibb (1996) suggests that schools could take advantage of building partnership networks with stakeholders, which could both broaden the school's intellectual base and also act as sponsors. In turn, Jones and Iredale (2010, 9) describe the case in the UK: "Partnerships between education and business have been encouraged by government as they are seen to offer opportunities to make education more relevant to life and work, to raise standards and levels of attainment, to raise enterprise awareness and business understanding amongst teachers and students, and to inform and develop advice and counselling so that individuals are better placed to build on and use their skills"; and "employers are encouraged to deepen their links with schools, colleges and universities. They seek to promote more effective education-business collaboration and mutual understanding, by developing better two-way contacts that benefit both education and industry and involve employers more centrally in young people's education." As a useful resource, Dickson et al. (2008) also mention different support organisations. They suggest that support organisations encourage teachers to adopt new processes and innovations known to provide positive outcomes. In contrast, Pittaway and Hannon (2008) mention that an enterprise education institution might become driven by the funding regime and targets, rather than by the entrepreneurship education opportunity or need, which would be a great challenge for the development of enterprise education.

Enterprise education practices, according to Birdthistle et al. (2007), need extra funding for schools to have time, resources, and trained, motivated teachers. Bell and associates (2004) describe their pedagogical approaches having very positive results concerning students' real-life projects in an international company context. Bell et al. (2004) admit the approach was resource intensive and relatively costly, but according to all stakeholders (teacher, students, company representative), the money was well spent. Kirby and Ibrahim (2011, 184) also comment that "not only does entrepreneurship education require a different set of instructional skill-sets, but it is labour intensive and costly, and very different from the traditional approach to education and learning …"

There are only a few international, secondary school level comparisons, but one by Drakopoulou Dodd and Hynes (2012) presents interesting views. Their findings show that secondary-level schools located in developed and less developed regions of Europe have differences between objectives, outcomes, resources, and social construction of the entrepreneurs. For example, less developed regions reported having fewer environmental

opportunity resources, a lack of physical and institutional resources, and an urge to have lower-cost activities than their counterparts. In turn, developed regions have better networks between schools, but less support from local government and less role models from family businesses. Walter and Dohse (2012) argue that in high entrepreneurial activity regions, nearby entrepreneurs and companies can fairly easily be used as knowledge sources. They can bring real-life experience and knowledge that could be better absorbed than theories from textbooks.

Already in 1996 Hynes summarised her study by saying that the faculty needs to endorse enterprise education and allocate necessary resources and time to make sure the enterprise culture is evident in their institution. Richardson and Hynes (2008) argue that in most cases, entrepreneurship courses are led, organised and dependent on just a few faculty members. In addition, according to a study by Penaluna et al. (2012, 168), teaching seems to be dependent on only a few committed educators, and in many cases faculties show minimal involvement. To support that, some of their informants call themselves "lone voices".

Kothari and Handscombe (2007) describe how teachers need support programmes and related resources in order to create an entrepreneurial organisation and be able to design, organise, and deliver novel learning opportunities for students. They also encourage organisations to develop processes to reward staff for innovation, and to allocate resources for supporting and guiding teachers in their entrepreneurial experiments. Jones and associates (2012) add that neither excellent nor poor entrepreneurship educators can support the development of enterprising students if the curriculum is too restricted. In partial contrast, according to Penaluna et al. (2012), the regional context and presumably also the working environment and culture affect the methods that teachers choose. However, they report that more than three-quarters of their teacher-informants said they were freely able to choose the methods they use.

2.5. Teachers' role in entrepreneurship education

It seems that in discussions concerning entrepreneurship education, the central focus is usually on students (Hynes & Richardson, 2007, 735). Therefore, research concerning teachers and their role in entrepreneurship education has been neglected in some sense. Especially research about "who" is an entrepreneurship educator (Fayolle, 2013) is missing, and especially concerning the basic and upper secondary level educators. In addition, empirical research concerning teachers' actions and what are they doing while being entrepreneurship educators is very limited (Fiet, 2001a; 2001b; Solomon, 2007; Löbler, 2006; Fayolle, 2013).

In education discussions, the teachers' role is crucial: the teacher chooses the pedagogies used in the classroom and is therefore a key player in the sense of practices used in entrepreneurship education. (See also Seikkula-Leino et al., 2010; Fiet, 2001a; Löbler, 2006; Jones, 2010; Garnett, 2012.) Garnett (2012, 4) highlights the teachers' role in chosen pedagogies and practices, but claims that they also mirror teachers' values: "by choosing to

adopt one of a number of possible pedagogies, teachers are choosing to use a set of classroom practices, but in doing so we have seen that they are also choosing the underlying theories and values that are implied by those practices (e.g. teachers choosing informal pedagogy will also be choosing a theory of learning that promotes self-directed learning by students over one based on instruction)."

Birdthistle and associates (2007) add that the success of enterprise programmes depends on the level of the teachers' commitment, knowledge, skills, and attitudes, as teachers' opinions will intentionally or otherwise be passed onto the students. In addition to this, partly in contrast, Hytti and O'Gorman (2004) report the school's values and culture being the most influential barrier, rather than the attitudes, skills, and values of teachers. Garnett (2012, 4) also describes how teachers' values and theories need to be parallel: "The effectiveness of teaching will therefore depend to some extent on the extent to which the practices are congruent with the underlying theories. If the practice and theories are not congruent, the teaching will not be effective."

There have also been notions concerning "who" should be the teachers (Vesper, 1974; Pittaway & Cope, 2007a) and, for example, whether a non-entrepreneur can teach entrepreneurship (Vesper, 1974; Weinrauch, 1984; Fayolle, 2013). In his old article, Vesper (1974) described how teaching arrangements were obstacles to entrepreneurship, as teachers were considered outsiders of the local community and they were not too motivated in the subject. From this point of departure, it is no wonder, as Vesper (1974) wrote, that the field of entrepreneurship was lacking academic respectability. Jones et al. (2012) argue that an entrepreneurship educator who does not have genuine first-hand experience in, for example, commercialising science, should not educate in this space. Findings from Penaluna and associates (2012) also show that educators themselves rate personal experience of entrepreneurship very highly, although some informants say that, for example, their own experience in venture creation does not give any support in the case of building students' confidence.

The European Commission (2008, 30-31) describes educators' ideal background as: "professors should have a background in academia, and recent experience in business, such as in consulting for, or initiating, entrepreneurial initiatives. Ideally they should maintain strong personal links with the business sector. The best professors are teachers who have the required teaching competences as well as real professional experience in the private sector… Most teachers have little or no practical experience of being entrepreneurs themselves. So the participation of real entrepreneurs in the teaching can make up for the existing lack of practical experience of professors." In turn, Powell (2013) argues that entrepreneurship educators who have practical experience tend to teach in a more entrepreneurial way than those with a primary academic background, whereas those with a practical background have significantly important characteristics towards uncertainty and ambiguity. He continues that, although there are no generally accepted educational techniques in entrepreneurship education, contrary to most of the disciplines, educators proactively develop and retune their

techniques and teaching itself. Hytti and O'Gorman (2004, 19) also claim that "teachers who are most familiar with entrepreneurship and the entrepreneurial process possessed the best prerequisites for the teaching of this phenomenon".

Many researchers argue that the role of the educator should change (see, for example, Gibb, 1996; Hytti & O'Gorman, 2004; Higgins & Elliott, 2011; Haase & Lautenschläger, 2011; Birdthistle et al., 2007; Fayolle & Gailly, 2008; Kuratko, 2005; Kothari & Handscombe, 2007; Jones & Iredale, 2010; Draycott & Rae, 2011). There seems to be a fairly uniform view that the traditional stand-and-deliver approach needs new elements, and to clarify the change needed the term "facilitator" was used instead of "teacher". For example, a teacher needs to be more like a facilitator of the process rather than a lecturer, and to provide feedback in learning situations (Blenker et. al 2011). Draycott and associates (2011) define the teacher's changing role as an encouraging, questioning coach where learners have the ownership of their learning. Haase and Lautenschläger (2011) present a fairly similar approach by defining that an entrepreneurship educator needs to act more like a promoter, facilitator, mentor, adviser, or manager, instead of being a teacher (see also Hytti & O'Gorman, 2004; Richardson & Hynes, 2008; Garnett, 2012; Powell, 2013), and that gives the students the role as an agent for learning (Garnett, 2012). Heinonen and Poikkijoki (2006) reported getting positive feedback and learning outcomes in their course, where their role as a teacher was more like a supporter or facilitator, and students had an active role in learning and felt it was their responsibility to take charge of their own learning. Jones (2010) argues that educators probably need to reconceptualise their role as entrepreneurship education promoters, as the way of teaching as well as the environment has been changing, so that educators need to further develop and understand their role and purpose in the development and delivery of entrepreneurship education (see also Kothari & Handscombe, 2007).

Jones and Matlay (2011) present their view of a teaching philosophy where educators need to understand the dialogic relationships between teacher and student, the diversity of students, and the heterogenic nature of entrepreneurship education. As teaching, learning, and the teachers' role need to be changed, Jones and Iredale (2010, 13) answered: "Traditional techniques of teaching and ways of working do still have a role to play. The balance of power between teacher and learner remains a constant zero sum co-dependent relationship of equals. Using techniques of enterprise education in no way diminishes teachers' authority or standing and equally, nor does it diminish students' quest to learn." They also emphasise not only the teachers' role, but also that the teaching environment is very important when introducing enterprise education.

Powell (2013) describes the versatile role of an educator as being both the one who designs the structure of the course, and prepares teaching materials and structure for course assignments, but at the same time enables students' freedom to experience the uncertainty and ambiguity and let the students develop their own structure for the course. In turn, the instructor is there not to tell the students the answers, but to help the students to find their way. He argues for simulations and imitations where students learn by getting as much as

possible "real world" feedback. According to him, it is challenging to develop students who do not have confidence and who underestimate their abilities and entrepreneurial self-efficacy, while at the same time trying to give realistic feedback to overconfident ones who do not have a clear view of their weaknesses. He adds (2013, 110): "If their [students'] instructor is a guide rather than a supervisor, students are more involved in structuring their activities, develop more realistic understanding of their abilities pursue the applied knowledge particularly useful to them, and learn to adapt rather than blindly imitate examples. The role of a guide or coach comes naturally to some instructors; others need more experience and perhaps training to adapt to this role." According to him, the less structured environment, as described earlier, is more challenging for the instructor, but also for students, and as administrators seem to respect structured and clear approaches, the entrepreneurship educator needs to be able to cope with this kind of contradiction and dilemma. In turn, he describes the entrepreneurship educators' work as being contradictive, that is, at the same time the educator helps students but also hurts them, whether it is about clear pedagogical structures where students feel comfortable but are not learning uncertainty, or when building students' confidence it makes them less careful. A study by Hytti and O'Gorman (2004) also presents the same kinds of findings. They describe the challenging balance and role between "coach" and "teacher", as students need space and guidance, instruction, and attractive questions. They suggest that in the case of independent work, the quality of interventions is of high importance, rather than the number of interventions. The best way would be, when applicable, to provide advice, give suggestions, and let the students make the choices on how to proceed.

Bennett (2006) was interested in entrepreneurship educators' perceptions of entrepreneurship and found that there is no consensus of definition of either entrepreneurship or entrepreneurship education. According to his findings, entrepreneurship was taught in the same way as other disciplines, and the entrepreneurship educators were more likely to be teaching rather than research-oriented. The educators' age, gender, and length of service had no significant correlation to entrepreneurship education practices. However, the way the educator interpreted the meaning of entrepreneurship had significant consequences for the person's teaching approaches and methods. Teacher training and the educator's business experience and background also affect their entrepreneurship education practices. In turn, Jones and Matlay (2011) argue, that the diverse background of educators is a virtue and lived experiences affect teaching practices, but more knowledge is needed to understand the relationship between educators' experience, its influence on teaching philosophy, and the educational processes to which students are exposed. As teachers have a major role in choosing the methods and in some sense choosing specific contents, it is worth noting Drakopoulou Dodd and Hynes' (2012, 761-762) finding concerning a "regionally path-dependent route to socio-economic achievement for youngsters" and their argument "that schools are an important locus, and enterprise education a vital process, in the enactment of regional discourses of entrepreneurship."

According to Kuratko (2005, 591), “entrepreneurship educators must have the same innovative drive that is expected from entrepreneurship students.” He continues with some warnings to the educators. He sees there is a possibility of diluting the real meaning of entrepreneurship as the theme is popular, and therefore everything becomes “entrepreneurial”, and therefore he asks all the educators to act as guardians of the true meaning of the word “entrepreneurship”. Gibb (2000) has also stated that, in some cases, entrepreneurship seems to be a “hip theme”. This could be one of the reasons why sometimes “all teaching” is considered to be “enterprising” even if it is carried out in a non-enterprising manner.

Kuratko (2005) also presents a challenge for educators concerning the risk dilemma. He argues that one of the cornerstones of entrepreneurship education is risk, the ability to take risks, and coping with moderate risk. How do educators prepare and train students to take moderate risks? According to him, this takes place very seldom and emphasises how students could learn by taking moderate risks, as the education system and structures pursue security. In turn, Jones and Matlay (2011) argue that, although the capacity to learn from failed initiatives is a virtue in that sense, it should not be assumed that every educator has a capacity for such behaviour. However, they (Jones & Matlay, 2011, 701) see that “many entrepreneurship educators share a general view about the importance of developing the person rather than delivering the facts. It would seem that most educators also accept the varied outcomes open to our students to step-up to.” Pittaway and Thorpe (2012, 853) also discuss the role of emotional, financial, and social risk in an entrepreneurial learning approach. Although they see risks playing a crucial role in entrepreneurship, they presented questions like: “how can we raise the potential for social risk in an adequate and acceptable way when seeking to simulate entrepreneurial learning? And should educators indeed seek to do this at all?” For suitable solutions, they presented, for example, long-term group work and peer assessment, where such risks can partially be met in concrete way. Jones and English (2004) summarise that in a complete entrepreneurial process, both the students and the teacher need to go beyond their comfort zone and that is not easy all the time. One interesting case was presented by Pittaway and Cope (2007b), where in a problem-based learning setting, students were out of their comfort zone and therefore gave negative feedback to teachers, but interestingly the learning outcomes were higher than in a traditional setting. Conversely, and also the most interesting part, would be whether the teachers are more into getting positive feedback or positive learning outcomes.

Kuckertz (2013, 69) summarises his study by presenting future challenges for entrepreneurship educators. He feels that the target audience of entrepreneurship education is growing in a more non-traditional direction, where a huge potential of creativeness can be found, but there is a lack of skills and therefore knowledge creation is needed. Fayolle (2013, 8) presents a different approach: “Entrepreneurship educators need to be experts in many different areas and notably in the fields of entrepreneurship and education. They need to understand the key concepts and theories from both entrepreneurship and education. They need to incorporate in their educational practice ‘softer’ entrepreneurial topics such as the

entrepreneurial mindset, opportunity construction, work-life balance, managing emotions and learning from failure."

2.6. Methods and practices of entrepreneurship education

The discussion about entrepreneurship education mostly leans on a social constructivist view of teaching and learning (Higgins & Elliott, 2011; Garnett, 2012). Key elements there are, according to Garnett (2012, 6): "Of particular importance is the role of the student as the agent of learning… Learning involves the student actively in deriving understanding from his or her experiences by connecting these experiences with prior learning." Also, independent working, interaction with peers and teachers are also crucial, as well as learning in authentic situations and learning having strong connections with the world of work (Garnett, 2012). According to Honig (2004, 264), "traditional pedagogy is frequently in contrast to the needs of entrepreneurial education".

The knowledge and research on how to best teach entrepreneurship is still low (Sexton & Bowman, 1984; Gorman et al., 1997; Hytti & O'Gorman, 2004; Honig, 2004; Kirby, 2004; Walter & Dohse, 2012), and according to Fayolle (2013), there are only a few studies that compare the effectiveness and efficiency of different teaching methods. In their study, Hytti and O'Gorman (2004) analysed 50 enterprise education programmes from all education levels, and showed the great number of different objectives that exist. They propose that different objectives need different methods of delivery.

However, Neck and Greene (2011) claim that teaching entrepreneurship needs to be both a method and a process where the method is not only understanding, knowing, and talking, but also requires practice: using, thinking, applying, and acting. They clarified that the core is students experiencing the entire cycle of entrepreneurship by practising entrepreneurship within their coursework; reflective practice, where students have time to think and absorb the learning; design-based thinking and learning, where students are encouraged to create opportunities and observe the world from new perspectives; and using simulations and games in order to mirror the real world when playing in a virtual world. They especially highlight the importance of reflection, where experience develops a knowledge base and enhances deeper learning, and they mention the significance of reflection when solving problems and trying to cope in uncertainty.

Hynes (1996) divided the teaching focus in entrepreneurship education into three categories: didactic methods; skills building methods; and discovery methods. According to her, didactic methods, like textbooks and lectures, are to fulfil the cognitive objectives and to help students to understand and analyse different kinds of data. Active group discussions, presentations, and simulations are mentioned as skills building methods, whereas learning through discovery and experiential learning present discovery methods.

Gorman et al. (1997, 70) argue in their ten-year literature review that empirical studies indicate that entrepreneurship can be encouraged by entrepreneurship education, and "a variety of teaching methods have been successfully used. As a general conclusion, it appears that the more 'hands-on' the teaching method is, the greater its chance of success." In turn, Draycott and Rae (2011) add that enterprise educators' students "get their hands dirty and have fun. They learn by experimenting, doing, discovering unexpected outcomes." Bager (2011) describes problem-based learning, action learning, and future-oriented learning approaches as suitable and useful in entrepreneurship education, and adds that students working in cross-disciplinary groups learn not only their own discipline, but also from each other's disciplines, and useful skills needed in future work. He argues (Bager, 2011, 295): "It serves to promote the development of a much needed double competence: deep knowledge in a discipline combined with ability to apply this knowledge in a creative and innovative way to solve problems in cross-disciplinary settings."

According to Garnett (2012), the key features of enterprise pedagogy are assignments having a clear, real-life purpose; students being creative and owning control of their work; teachers allowing students to make mistakes and accepting risk; teacher facilitating the learning and encouraging students to see their strengths and use them when working in groups, with different roles there. Powell (2013), however, argues that the pedagogy used in entrepreneurship education needs to have both structured and unstructured elements, that is, something students are familiar with and elements that require students to deal with uncertainty and create their own structures.

A wide variety of methods have been mentioned concerning entrepreneurship education, however, for example, Powell very recently (2013) argues that the pedagogy of entrepreneurship is not yet mature, but is in a development stage. According to the findings of Cheng and associates (2009), educators seem to rely on fairly passive methods, instead of bringing real-life experiences into the classroom. These findings are in line with Mwasalwiba's (2010) review, where he categorised methods used in traditional or innovative teaching, and he also labels methods as "normal lectures" or "action-based" ones, and "passive methods" and "active methods". He also highlighted that teaching methods, target audience, and content need to be in line with the objectives at hand, and adds (Mwasalwiba, 2010, 36): "Although it is still debatable as to what educational methods have an impact on changing behavioural attributes, it is however also generally agreed that traditional methods are less effective in encouraging entrepreneurial attributes." According to Jones and Matlay (2011), the National Council of Graduate Entrepreneurship in the UK has listed 44 teaching pedagogies used for entrepreneurship education. The following methods, for example, are often repeated: learning by doing, project work, projects with actual clients, teamwork, workshops, studios, experiential problem-based approaches to develop entrepreneurial attitudes, cooperation with companies and small-scale sponsorship, students raising funds, facilitating and encouraging students to critical thinking and discourses (see also Cheng et al., 2009), as well as business simulation, workshops, counselling or mentoring, study visits,

setting up a business, games and competitions, and practical training (Hytti & O'Gorman, 2004).

Birdthistle and associates (2007) described mini-companies as a useful platform for learning. There, elements like innovation, creativity, development of personal and social skills, and self-directed learning were emphasised, and students were provided with experience of adult and working life. In turn, Drakopoulou Dodd and Hynes (2012, 754) reported mini-enterprise programmes having a positive impact on secondary school pupils' self-confidence and knowledge, and added that this kind of project could be the only time when some learners experienced genuine success and positive reinforcement of achievement in school. Similarly, a recent study by the European Commission (2013a, 5-6) reported: "Investing in entrepreneurship education is one of the highest return investments Europe can make. Surveys suggest that between 15% and 20% of students who participate in a mini-company programme in secondary school will later start their own company, a figure that is about three to five times that for the general population."

Jones (2007b) describes his own and students' experiences while using enterprise education games. He argues that playing provides students with an equal opportunity to fail or succeed, and at the same time learn about the theoretical concepts; it offers an opportunity to develop strategic skills, meet with the challenges of decision-making as is in real life, function in chaotic situations, and learn from failures, for example. Jones (2007b) also describes how, when allowing students to fail, the teacher actually allows them to succeed.

Shepherd (2004) offers changes to pedagogy to help students manage the emotions of learning from failure. There, he presents indirect and direct experience ways to connect lectures with emotions and failure. He, in line with many other researchers, presents different kinds of useful methods and practices for that purpose, like using simulations, group work, presentations, role-playing, case studies, and inviting guest speakers. He argues that learning for the experience helps the learners to improve their self-reflection, self-evaluation, and problem-solving skills. Jones and Iredale (2010) describe that as "positive mistake-making" and "calculated risk-taking". Jones and English (2004) emphasise a student-centred approach, where students work in small groups presenting, discussing, and debating actual cases, there is interaction with external environments included, and when possible, new technology is used and processes are as much as possible imitated from entrepreneurial processes.

According to Gibb (2002a; 2002b), business plans used to play a major role in entrepreneurship education, and they often seem to be the vehicle for real or simulated project-based activities. In line with this, Honig (2004) presents the great success that the business planning method and business plan competition have had, but also shows that controversial results have been reported. He claims that learning through experience is well suited to learning tacit knowledge, and encourages the use of different simulations where students can learn from trial and error, in as genuine a real-life setting as possible.

Liñán and associates (2011) studied factors affecting entrepreneurial intentions amongst university students, but concluded their findings by adding suggestions for lower education levels. They suggest, on the basis of their empirical finding, that role play, business games, and different skill-development exercises where students can learn, for example, creativity, innovativeness, leadership, networking, and negotiation skills, would be useful. Kuratko (2005) adds to the list dialogue between different stakeholders, using entrepreneurs as role models, and integrating entrepreneurs into the classroom setting, where interesting stories can be shared. He adds (Kuratko, 2005, 589): "Students need exposure to those entrepreneurs who have paid the price, faced the challenges, and endured the failures. We must take the lessons learned from our experienced entrepreneurs' 'make a difference' idea."

Suggested by Walter and Dohse (2012), the outcome of entrepreneurship education depends on both how and where it is taught. They studied how different modes of entrepreneurship education affect students' self-employment intentions. Their study showed that active modes in which students gain knowledge through active experimentation have a positive impact on students' self-employment intentions and attitudes. One of their aims was also to clarify whether the regional context, and more precisely regions' levels of entrepreneurial activity, affect the results. Their findings supported the idea that regional circumstances have an impact: reflective models, where students gain knowledge through reflective observation, are more effective in regions with a high degree of entrepreneurial activity, and active modes have a positive impact in all regions. Therefore, they (Walter & Dohse, 2012, 826, 827) argue that "optimal design of entrepreneurship education depends on regional circumstances"; and the "outcome of entrepreneurship education is moderated by the degree of entrepreneurial activity in the region". They highlight that it is important to enhance the development of students' entrepreneurial know-how and skills, and this easily happens when putting students and entrepreneurs in touch, through internships, for example.

According to Garnett's study (2012), in effective enterprise learning, both students' and teachers' attitudes and chosen pedagogy need to be congruent. Although the students' active role in the learning process is of high importance, it is crucial that the teacher devotes time at the very beginning of project, to make sure students have enough information about the task to take ownership of the project. He also highlighted the teacher's role in promoting students' independent learning skills, helping students to find suitable roles in group work, and when setting targets.

As mentioned earlier, there is a very limited amount of entrepreneurship or enterprise education research concerning basic or upper secondary level schools. One very useful exception is by Fuchs and associates (2008), where they compared Swedish and German school systems by asking seventh to ninth graders' opinions about, for example, how different methods are embedded in school, their self-employment preferences, their contacts with the world of business, and their involvement in decision-making processes. Their findings show a significant difference between countries. For example, Swedish pupils seem to have more opportunities to participate in the decision-making processes than Germans. These differences

are fairly understandable, as school systems and curricula structures, for example, are seemingly different in nature, with Swedish model having similarities to the Finnish one. The results also show that, in Germany, interdisciplinary projects are more used than in Sweden; however, Swedish pupils describe the learning atmosphere as more encouraging than their counterparts in Germany. Interestingly, the findings indicate that German pupils have more theoretical knowledge about business, whereas the Swedish are exposed to more practical elements. One of their most important findings was about pupils' ambitions to become self-employed, and the conclusion that schools obviously have not had success in presenting self-employment as an attractive alternative. What were especially interesting were the comparisons between different age groups of German pupils: the older the pupil, the less they were interested in becoming self-employed.

As described, there is a large variety of methods in entrepreneurship education, and those presented above have been named as useful, and in some of them there is empirical evidence that they are working. However, some critical notions concerning the elements have also been raised. For example, simulations are a great way for students to become familiar with different practices and situations, and to empathise with different roles; however, in some sense, simulations can bring a distorted or biased view of reality. The teachers' role has also been described as contradictory and challenging: the teacher encourages students to act in an entrepreneurial way, but at the same time does not give them an unrealistic view, and builds students' self-confidence, which could make them less careful. (See, for example, Powell, 2013.) One crucial notion made by Gibb is important to note here. He (2000) argues that sometimes almost all pedagogical solutions are considered to be entrepreneurship education or to enhance students' enterprising behaviour. He highlights that the manner in which the learning and teaching is carried out is crucial and can make or break the connection to entrepreneurship or enterprise education.

Table 3. Examples of entrepreneurship education practices and their theoretical backgrounds.

Practices	**Sources (e.g.)**
Had students prepare entrepreneurship-related calculation exercises, presentations, writings, and interview	Fayolle & Gailly (2008); Shepherd (2004); Solomon (2007); Gibb (2002b); Liñán et al. (2011)
Used stories about entrepreneurs as teaching material	Fletcher (2007); Gartner (2008); Shepherd (2004); Neck & Greene (2011); Pittaway & Hannon (2008); Korsgaard & Neergaard (2010); Blenker et al. (2011)
Had students play games related to entrepreneurship	Jones (2007b); Löbler (2006); Neck & Greene (2011); Gibb (2002b); Liñán et al. (2011); Hytti & O'Gorman (2004)

Arranged or took part in an entrepreneurship-related competition	Blenker et al. (2011); Gibb (2002b); Holmgren & From (2005); Lüthje & Franke (2003); Hytti & O'Gorman (2004)
Introduced local businesses in teaching	Henderson & Robertson (2000); Pittaway & Cope (2007b); Pittaway & Hannon (2008); Shepherd (2004)
Invited entrepreneurs or representatives of the business world to take part in instruction	Cooper et al. (2004); Pittaway & Cope (2007b); Solomon (2007); Pittaway & Hannon (2008); Kuratko (2005)
Arranged a field trip to a business enterprise	Kickul et al. (2010); Solomon (2007); Bell et al. (2004); Hytti & O'Gorman (2004)
Invited an entrepreneur to present their work in the school	Pittaway & Hannon (2008); Shepherd (2004); Solomon (2007); Fuchs et al. (2008)
Guided learners to utilise experts	Fayolle & Gailly (2008); Gibb (2011); Solomon (2007); Shepherd (2004); Fuchs et al. (2008)
Discussed entrepreneurship related to the subject with learners	Gibb (2002b); Neck & Greene (2011); Solomon (2007); Shepherd (2004); Fuchs et al. (2008)
Discussed entrepreneurship related to hobbies	Gibb (2002b); Solomon (2007)
Discussed current financial news with learners	Gibb (2002b); Shepherd (2004); Solomon (2007)
Discussed the economic effects of different actions with learners	Gibb (2002b); Shepherd (2004); Solomon (2007); Fuchs et al. (2008)
Guided learners to manage their own finances	Shepherd (2004)
Organised a voluntary work project with students	Blenker et al. (2011); Neck & Greene (2011)
Enabled learners to organise a jumble sale, hold a sales stand, etc.	Blenker et al. (2011); Jones & Matlay (2011)
Facilitated a project created by the learners (presentation, event, newspaper, video, book, etc.)	Gibb (2002b); Löbler (2006); Pittaway & Cope (2007b)
Facilitated an enterprise or working world-driven project by learners	Cooper et al. (2004); Gibb (2002b); Pittaway & Cope (2007b); Pittaway & Hannon (2008); Shepherd (2004); Kickul et al. (2010); Jones & Matlay (2011); Fuchs et al. (2008)
Had learners complete a business idea assignment	Blenker et al. (2011); Gibb (2002b); Neck & Greene (2011); Fayolle & Gailly (2008); Hytti & O'Gorman (2004); Honig (2004)
Enabled learners to create marketing or other material for a business	Cooper et al. (2004); Pittaway & Cope (2007b); Solomon (2007); Pittaway & Hannon (2008)

Enabled learners to create a practice enterprise or a business of their own	Neck & Greene (2011); Pihkala (2008); Blenker et al. (2011); Leskinen (1999); Birdthistle et al. (2007); Fuchs et al. (2008); Drakopoulou Dodd & Hynes (2012)
Organised a theme day or study module related to entrepreneurship	Gartner (2008); Pihkala (2008); Shepherd (2004); Leskinen (1999); Blenker et al. (2011)

Table 3 presents examples of entrepreneurship education practices and their theoretical backgrounds. As can be noted, the variety is rich and there are many studies related to practices. Nevertheless, not all the practices are empirically tested (for evidence, see e.g. Hytti & O'Gorman, 2004; Jones, 2007b; Solomon, 2007; Pihkala, 2008; Drokopoulou Dodd & Hynes, 2012). However, those mentioned in Table 3 seem to be adaptable to basic and upper secondary level education.

2.7. Measuring and evaluating entrepreneurship education

The heterogeneity of the field of entrepreneurship education, and its variety of stakeholders and target audience, together with the diversity of its aims, make measuring and evaluation entrepreneurship education somewhat challenging. In addition, different viewpoints are connected to the discussions of the wide phenomenon of evaluating entrepreneurship education. Later on in this chapter, the most crucial aspects of evaluation, such as what, who, and by whom, are discussed; but before that, the most common research approaches to the evaluation and assessment of entrepreneurship education are presented.

In the past, there has been a limited number of studies concerning entrepreneurship education evaluation and assessment practices (Draycott et al. 2011; Pittaway & Edwards, 2012; Fayolle, 2008; Fayolle & Gailly, 2008; Matlay & Carey, 2007; Pittaway et al., 2009; Fayolle, 2013), but now increasing attention by different stakeholders can be seen (Pittaway et al., 2009; Mwasalwiba, 2010). Researchers seem to have a mutual agreement that evaluation and assessment practices of entrepreneurship education are important, novel approaches need to be developed (Pittaway et al., 2009; Pittaway & Edwards, 2012) Draycott et al., 2011), and, in general, there is a lack of empirical studies (Pittaway & Edwards, 2012; Edwards & Muir, 2012; Fayolle, 2008; Fayolle & Gailly, 2008; Matlay & Carey, 2007; Henry et al., 2005b). Falkäng and Alberti (2000) also argue that there is a need for longitudinal studies, but sufficient sample sizes and use of control groups are also needed in order to develop the effectiveness of entrepreneurship education. Furthermore, discussions about evaluation concerning entrepreneurship education mainly focus on the higher education level (Pittaway & Edwards, 2012; Edwards & Muir, 2012; Seikkula-Leino et al., 2010; Pittaway & Hannon, 2008; Fayolle et al., 2006; Matlay & Carey, 2007; Matlay, 2008). Therefore, Draycott et al. (2011) argue that the research concerning the evaluation of enterprise education, especially at lower school levels, has been neglected. Draycott and associates point out that the need for

evaluation is also pushed by decision-makers, as enterprise education has been resourced by them and now they want to see the results.

According to Haase and Lautenschläger (2011), entrepreneurship education pedagogies are heterogenic and therefore a more systematic way and research based on best-practice concepts are needed in order to develop entrepreneurship education itself, its effectiveness and impact. In turn, many researchers argue that because of the holistic nature of entrepreneurship and entrepreneurship education, there are many facets to take into consideration when measuring entrepreneurship education (Cuningham & Lischeron, 1991; Johannisson et al., 1998; Fayolle, 2013). Pittaway and Cope (2007a) state that there is a need to start assessing and understanding what is working and why in entrepreneurship education, and they continue to say that there is a lack of studies concentrating on interrelationships between educational practices and actual outputs. Recently, Walter and Dohse (2012, 808) claim that "the impact of entrepreneurship education is not the same in all contexts" and argue that there is a need for study to clarify under which circumstances entrepreneurship education is effective. Falkäng and Alberti (2000, 104) conclude that although there is little empirical evidence of the success of entrepreneurship education, this does not necessarily mean that there is a lack of positive results. Furthermore, Matlay (2006) argues that entrepreneurship educators are uncertain about the effectiveness and impact of used entrepreneurship education practices, but nevertheless are unwilling to change and test different kinds of approaches, but settle for traditional practices. However, Dickson et al., (2008, 240) add that there is no consensus about appropriate measurable outcomes for entrepreneurship education.

Assessment practices concerning entrepreneurship education are important, as entrepreneurship education has grown rapidly worldwide and, if not done earlier, the assessment practices need to be researched, analysed, and developed. Fayolle (2013) argues that evaluation of entrepreneurship education lacks connections to theories of educational evaluation. He encourages the use of general education evaluation approaches, as presented by Eseryel (2002), like *goal-based evaluation*, *goal-free evaluation*, *responsive evaluation*, *systems evaluation*, and *professional review*.

Pittaway and Edwards (2012) compared syllabus and course descriptions in the UK and the USA, and how the aims and evaluation of the courses have been defined. They took into consideration general assessment typologies such as:

- What is assessed
- How is it assessed
- Who is doing the assessing
- When and where is it assessed
- External vs internal assessment
- Objective vs subjective assessment
- Formative or summative assessment

This list of notions and questions is very informative, covering the wide variety of viewpoints that need to be taken care of when discussing assessment of entrepreneurship education. Eseryel (2002, 96), however, divides the main points of evaluation into the following: *Purpose* of evaluation (formative or summative), type of evaluation objectives (cognitive, affective, behavioural, impact), level of evaluation (reaction, learning, behaviour, organisational impact), type of instructional objectives (declarative knowledge, procedural learning, attitudes), type of instructional delivery (classroom-based, technology-based, mixed), and size and type of participant groups (individual, small group, whole group). As Bloom et al., (1971) states, *formative* evaluation is used to modify or improve products, programmes, or activities, and is based on feedback obtained during students' planning and development, whereas *summative* evaluation is at the conclusion of an activity or plan, to determine its effectiveness. As an example, Jones (2007b, 603) describes summative feedback as providing an indication of students' degree of understanding, and formative feedback as providing feedback through which future change is possible.

Mwasalwiba (2010) presents the view that *progress* evaluation and *impact* assessment are two separate processes, where impact or effect measuring is about looking for causality. Evaluation, on the other hand, is about measuring progress or quality. He also highlights how different stakeholders, like students or other participants, teachers, policy-makers, and politicians, have different interests, orientations, and perspectives regarding entrepreneurship, and therefore different aims and agendas for evaluating or assessing outcomes. His findings (2010, 34) show that the studies analysed can be categorised into two: "studies that have attempted to measure the general progress in entrepreneurship education as a field of study", and "studies that attempted to measure a change in some pre-determined variables among students as a result of attending a course in entrepreneurship".

According to Falkäng and Alberti (2000, 103), "The research and assessment methods for e-EDU [entrepreneurship education] are not well defined, and there are no generally accepted standardized means of measuring results. The lack of such generally accepted measures is attributable to the heterogeneity of a number of key factors: target groups; university/business schools versus e-EDU/training focus; objectives of e-EDU; level of analysis; and time dimension." In their point of view, the main target groups were entrepreneurs, managers of entrepreneurs, entrepreneurial sympathisers, people with entrepreneurial spirit, and scholars. It is not a surprise that students at lower education levels or lower level teachers' entrepreneurship education practices were not mentioned as a target. However, the heterogeneity between – and also within – groups is wide, and therefore there are different aims for entrepreneurship education, and in turn, different skills and knowledge required.

There are also critical views towards measuring entrepreneurship education. Jones and Matlay (2011) argue that the theme is and should remain a heterogenic phenomenon with changing, dialogic relations between its unique and diverse elements (student, educator, institution, community, and educational processes). Therefore, they argue, standardisation attempts work against its heterogeneous, complex, and multidimensional nature. They also add that there is

an increasing number of quality assurance measures coming into the field, trying to standardise the entrepreneurship education delivery processes. In that sense, they see it is a threat, as techniques and practices are leading the process more than the educators' philosophical approach to entrepreneurship education. As a conclusion, they summarise their view by saying (2011, 701): "What makes entrepreneurship education effective, we argue, has less to do with transferable teaching techniques of standardised curricula and more to do with the unique set of dialogic relations."

The Finnish National Curriculum (Finnish National Board of Education 2003; 2004) describes a wide variety of assessment practices recommended for use in Finnish basic and upper secondary schools. It depicts, for example, that assessment aims to guide learning, assess learning results, provide feedback, and help students to develop their self-assessment skills. Assessment also encourages students to develop, but to set their own objectives. The curriculum describes grading, course assessment, written tests, continuous observation, the student's own self-assessment, assessment discussion, and written verbal assessment as useful practices, and mentions that the assessment criteria are discussed with students at the beginning of the course, and student assessment is also done for parents, representatives of working life, and the school, to evaluate the effectiveness of the education. As can be seen, the aforementioned practices are related to students, and mainly students' learning, in the sense of one subject or course. Interestingly, the curriculum does not describe how to evaluate or assess cross-curricular themes, or teachers' practices used in that context.

The Finnish curriculum (Finnish National Board of Education, 2003; 2004) mentions the usefulness of self-assessment, where students learn the skills needed in the self-assessment process and do self-evaluation. In the curriculum, self-evaluation or any other evaluation approach is not mentioned in connection with entrepreneurship education. Interestingly, very seldom in entrepreneurship education research literature does such an approach emerge. The next two chapters are more precisely about *what* is evaluated in entrepreneurship education, what the ways of measuring entrepreneurship education are, and *who* is doing the evaluation.

2.7.1. What has been measured when measuring entrepreneurship education

Vesper and Gartner (1997) present how the most useful entrepreneurship education evaluation criteria were the number of courses offered, the number of faculty publications, the courses' impact on the community, the number of alumni involved, created innovations, the number of alumni start-ups, and the outreach of scholars. According to Falkäng and Alberti (2000, 102), the focus in entrepreneurship education studies is mainly on course content and its appropriateness, like course concepts and their selection or usefulness, or the relative efficacy of different pedagogical techniques. According to Mwasalwiba (2010), the most used indicators for impact assessment were start-ups by graduates (see also Lüthje & Franke, 2003); academic standards of students; psychological constructs like students' perceptions,

self-efficacy, attitudes and intention to act; contribution to society and technology transfer; resulting innovations; and participant (student, alumni) satisfaction.

Fayolle and Gailly (2008, 577) note that common entrepreneurship education evaluation criteria are connected to measuring knowledge, specific skills or tools, level of interest, awareness or intention, degree of participation in the classroom, or motivation. They also present a challenge for future studies (2008, 579) that different pedagogical approaches used in entrepreneurship education have not been evaluated, and therefore one could not say that one approach is better than another (see also Matlay, 2005; Pittaway & Cope, 2007a; Seikkula-Leino et al., 2010). However, different cornerstones of effectiveness of entrepreneurship education have been evaluated, but a very limited number of studies have been conducted to evaluate very important educational variables, such as programme design and pedagogical approaches (Fayolle et al., 2006).

Fayolle and associates (2006) present practices concerning different aspects of measuring entrepreneurship education. They divide practices into direct and indirect impact measurement, where direct impact measurement concerns new ventures and job creation, and indirect impact measurement concerns, for example, increasing entrepreneurial spirit within the target group. They present measurement practices of different layers, like attitudes, skills, tools, and knowledge required for entrepreneurship, and predict intentions and behaviour. Aspects concerning evaluation criteria adjusted to educational level and the purpose of measuring delayed effects were also presented. Earlier on, Robinson with associates (1991) argued that entrepreneurial characteristics are not stable, and therefore results are somewhat contradictory, as attitudes need to be measured longitudinally. Johannisson et al., (1998) argue that as in most Western cultures entrepreneurship is conceived positively, this makes it difficult to avoid biased answers, whereas Littunen (2000) concludes that personal characteristics cannot be studied separately from the environmental attributes.

According to Draycott and Rae (2011, 140), "Assessment, rather than being defined against outcome frameworks, should reflect the personal learning and conative, affective and cognitive changes which students express, contributing to self-discovery, awareness and enhanced understanding of their world." Henry and associates (2005b, 165-166) highlight that it is vital "that entrepreneurship educators and trainers have a complete understanding of what they wish to achieve from a course or programme from the outset, as this will have ramifications for its accurate assessment. Thus, with the objectives, content, structure and pedagogy of entrepreneurship programmes inextricably linked with the issue of effectiveness, the debate surrounding the degree to which entrepreneurship can be successfully taught continues."

Edwards and Muir (2012) argue that enterprise education evaluation should be developed beyond the economist's viewpoint of start-ups and business growth, in the direction of evaluating pedagogical objectives and students' entrepreneurial identity. They also argue that there are many studies evaluating intentions, but the gap between intentions and behaviour is

unknown or not understood. In contrast, Mwasalwiba's (2010, 38, 41-42) review concludes that "intention-based models have proved to be good predictors of future entrepreneurial events", and "attitudinal variables are the best predictors of future entrepreneurial behaviours, and that attitudes and intentions are hard to change. But, what remains uncertain is when and how these attitudes and intentions start to build and become actions, given the time lag between the two". Lüthje and Franke (2003, 135) had similar findings and they conclude: "Personality traits have a strong impact on the attitude towards self-employment. The entrepreneurial attitude is strongly linked with the intention to start a new venture."

According to Henry et al. (2005b), entrepreneurship programme evaluation concentrates mostly on the instructor's knowledge, preparation, and presentation style or degree of the programme itself, but there is a lack of measuring the financial implications of a training course. However, Shepherd (2004) describes the challenges associated with measuring the implications of proposed changes to pedagogy. He mentions that it is difficult to determine whether one specific course has an impact on students, for example in becoming entrepreneurs, but it is possible to test the impact of a pedagogy on the intention to become an entrepreneur, as intentionality is central to entrepreneurship (Bird, 1988; Katz & Gartner, 1988; Krueger, 1993; Krueger et al., 2000).

There are few evaluation studies connected to enterprise education curricula. However, Harte and Stewart (2012) launched a study that was followed by one unsuccessful evaluation project, where a pre-designed instrument with a global and generic approach was used. They felt it was not a suitable approach for evaluating curricula, preferred contextual evaluation, and started a local project. They aimed for evidence-based research in order to aid the sustainability of their enterprise education curriculum, where contextual aspects are taken into consideration. They gathered qualitative and quantitative data from two student groups, one group taking part in a module that was explicitly enterprise education, and the other very implicit in nature in relation to enterprise education. In addition to practical implications that can be used when developing both modules, they (Harte & Stewart, 2012, 332; 337) conclude that "if the context is not taken into account many examples of implicit enterprise education will be missed", and "designing evaluations that are underpinned with the correctly identified contextual factors can and do have a direct impact. We believe that these individually designed evaluations have more impact on maintaining degrees of sustainability than would a global, generic evaluation."

Pittaway and Hannon (2008) took as a point of departure institutional strategies for enterprise education at some UK universities, and developed methods and models of organising enterprise education. They presented evaluation criteria for themes like educational impact, financial sustainability, academic credibility, structural embeddedness, contextual criteria, human capital, infrastructure, alignment with institutional strategy, community engagement, and alignment with policy context. Their findings show, for example, advantages and disadvantages of single department-led enterprise education and campus-wide enterprise

education models, and they provide educators and policy-makers with a basis for considering the viability of particular methods for organising enterprise education in HEIs.

Table 4. Some examples of different approaches to how and what to evaluate or measure in entrepreneurship education.

	What has been evaluated or measured?	**Sources (e.g.)**
Programme and course evaluation	Impact, content, number of entrepreneurship programmes, and entrepreneurship courses	Barr et al. (2009); Cooper et al. (2004); Falkäng & Alberti (2000); Henry et al. (2005b); Hynes (1996); Hytti & O'Gorman (2004); Maritz & Brown (2013); Matlay & Carey (2007); Matlay (2008); Solomon et al. (2002); Vesper & Gartner (1997)
	Entrepreneurship education programme evaluation	European Commission (2013a); Fayolle et al. (2006); Kirby & Ibrahim (2011); Shepherd (2004)
	Learning outcomes	Draycott et al. (2011); Pittaway & Edwards (2012)
	Comparisons between different student groups	Kirby & Ibrahim (2011); Sexton & Bowman (1984); Robinson et al. (1991)
Evaluating or measuring personal characteristics	Entrepreneurial attitudes (Entrepreneurial Attitude Orientation (EAO)), tendencies (General Enterprising Tendency Test), and intentions (Entrepreneurial Intention Questionnaire (EIQ))	Bird (1988); Boyd & Vozikis (1994); Henderson & Robertson (2000); Katz & Gartner (1988); Kirby & Ibrahim (2011); Krueger (1993); Krueger et al. (2000); Liñán et al. (2011); Lüthje & Franke (2003); Mwasalwiba (2010); Robinson et al. (1991)
	Students' developing entrepreneurial intentions, attitudes, or identity	Bird (1988); Boyd & Vozikis (1994); Cheng et al. (2009); Edwards & Muir (2012); Henderson & Robertson (2000); Katz & Gartner (1988); Krueger (1993); Krueger et al. (2000); Liñán et al. (2011); Lüthje & Franke (2003); Mwasalwiba (2010);

		Ristimäki (2004); Robinson et al. (1991)
	Entrepreneurial skills and personality characteristics connected to entrepreneurs	Fayolle et al. (2006); Heinonen & Poikkijoki (2006); Kirby (2004); Kirby & Ibrahim (2011); Liñán et al. (2011); Littunen (2000); Robinson et al. (1991)
	Entrepreneurship studies connected to Trait theory, Need for Achievement (nAch) theory, and Locus of control theory: in what sense individuals believe they can control what is happening to them	Bell et al. (2004); Boyd & Vozikis (1994); Breslin & Jones (2012); Cheng et al. (2009); Haase & Lautenschläger (2011); Henderson & Robertson (2000); Kirby (2004); Kirby & Ibrahim (2011); Lüthje & Franke (2003); McClelland (1961); Rotter (1966); Shepherd (2004)
	Students' self-efficacy	Bandura (1977); Boyd & Vozikis (1994)
Start-ups, etc.	What elements play a crucial role in shaping a person's decision to start a company	Edwards & Muir (2012); European Commission (2013a); Gartner (2008); Haase & Lautenschläger (2011); Henderson & Robertson (2000); Liñán et al. (2011); Littunen (2000); Lüthje & Franke (2003); Pittaway & Cope (2007a)
	Entrepreneurship education's impact on start-ups and new venture creation	Barr et al. (2009); Birdthistle et al. (2007); Drakopoulou Dodd & Hynes (2012); Hytti & O'Gorman (2004); Lüthje & Franke (2003); Mwasalwiba (2010)
Miscellaneous	Effect of cultural and contextual issues (attitudes, start-ups, etc.)	Boyd & Vozikis (1994); Drakopoulou Dodd & Hynes (2012); Dreisler et al. (2003); Johannisson et al. (1998); Kothari & Handscombe (2007); Pittaway & Cope (2007a); Pittaway & Hannon (2008); Sardana & Scott-Kemmis (2010); Walter & Dohse (2012)

	A curriculum's development, its evaluation and values	Harte & Stewart (2012); Tiikkala (2013)

Questions like what value do students feel is created from entrepreneurship education (Jones, 2011) and what is the effectiveness of enterprise education (Hytti & O'Gorman, 2004) still seem to need answering. In addition, measuring learning outcomes is challenging, and it is difficult to assess where the "origin" of learning is (Draycott et al. 2011; Harte & Stewart, 2012), and which contextual elements and other parts of a student's life, for example, have an effect on learning.

Although there are many examples and approaches to measuring and evaluating entrepreneurship education, it can be noted that most of the aforementioned studies are related to higher educational levels, and research concerning lower levels seems to be lacking (Draycott et al., 2011; Seikkula-Leino et al., 2010). It is also noteworthy that *what* are measured are mostly outcomes, students' learning, or their actions or processes. That is, the teacher, the methods they were using, and teaching as such are not usually measured. The next chapter presents more closely the findings and possibilities of how to measure entrepreneurship education in that sense.

2.7.2. Remarks of teacher evaluation on entrepreneurship education

According to Cheng et al. (2009), the most used assessment methods in entrepreneurship courses were group projects, written exams, oral presentations, individual projects, writing business plans, and essays. According to many studies traditional forms of assessment are the most used methods (Matlay & Carey, 2007; Cheng et al., 2009; Kirby & Ibrahim, 2011; Pittaway & Edwards, 2012). However, Gibb (2002b, 237-242) suggests that evaluation and assessment of entrepreneurship education appears to be via projects, with reliance also upon classroom assessment. Business plans, business reports, presentations, and case studies, as well as essays, were also assessed (Pittaway & Edwards, 2012). Pittaway and Edwards (2012) argue that novel solutions like self-assessment and peer assessment could be used more, and that more reflective assessment practices could be useful. They mentioned that interviews and in-class assessment, which means students being given credit for attendance and involvement in class, would also be worth testing. Different viewpoints will also emerge when evaluating instead of learning outcomes, for example, course satisfaction, teaching or learning methods adopted, performance against objectives, or objectives themselves.

According to Hynes (1996), the following assessment techniques would be useful: a written exam on a set of pre-course reading or lectured material, and a project proposal submission where especially a team-building and group-work process of generating ideas is rewarded, rather than the validity of the ideas. Teamwork, its analysis and presentations, together with materials, would also be useful things to evaluate. Hynes (1996) also mentions that both students and faculty members could take part in the overall evaluation process, where

satisfaction with the content of the module, used methodologies, facilities, resources, learning outcomes, and implications for practice would be evaluated.

Draycott et al. (2011) categorise, in their secondary-level enterprise education study, students' *self-assessment* approaches into *assessment of learning*, *assessment for learning*, and *assessment as learning*. They also say that assessment should be flexible, ongoing, and student-centred. In turn, Jones and English (2004) suggest that *peer evaluation* has a crucial role in entrepreneurial education, and it shifts both the learning and assessment focus from lecturer- to student-centred. They describe how peer evaluations are used to reward, evaluate, and monitor individual and group performances, and how there are *internal and external* peer evaluations, from which the former focuses on individuals' contributions and the latter focuses on group performance during group work, for example.

Finally, Pittaway and Edwards (2012) argue that there is a very limited number of studies on what entrepreneurship educators actually "do" when assessing entrepreneurship education, and there are too few empirical studies on the assessment. In their view, assessment practice needs to be more innovative and, in that sense, they raise a discussion about who is doing the assessment. The traditional and most frequent situation is the teacher doing the assessment, but they suggest that other stakeholders, like visitor entrepreneurs, could be engaged in the assessment process. Similarly, many researchers suggest novel methods of evaluation, like teachers evaluating themselves, students evaluating teachers' actions, and also peer-evaluation amongst teachers and students (Eseryel, 2002; Pittaway et al., 2009; Fayolle et al., 2006; Mwasalwiba, 2010; Lüthje & Franke, 2003; Falkäng & Alberti, 2000).

In one of the previous chapters, the teacher's role as an entrepreneurship educator was highlighted. Therefore teachers' entrepreneurship education practices and teaching itself seem to be an interesting field of assessment, and also a vague, undiscovered area. As can be seen, *how* or *what* is measured very seldom connects to the teacher in the sense that teachers' practices, their teaching or methods used, were not evaluated, but students' learning outcomes, start-ups, and so on were evaluated. Interestingly, recently Pittaway and Edwards (2012), Draycott and associates (2011), and Gibb (2011) argue for the usefulness of self-evaluation and, in that way, teachers' self-evaluation would be a novel approach.

In educational studies, self-assessment seems to gain ground, and especially in the sense that self-evaluation is a key to self-improvement and a useful professional development method for teachers (Avalos, 2011; Ross & Bruce, 2007; Stalmeijer et al., 2010; Sutherland & Wehby, 2001; Topper, 2004). McVarish and Solloway (2002) describe self-evaluation as being useful, as the ownership of learning and evaluation is outsourced to the one who is doing the self-evaluation, but it also involves the whole learning culture. In their study in a constructivist classroom, they noticed that at the same time as students were reflecting on their learning, students were also exploring ideas, constructing understanding, and building their own knowledge, rather than giving just textbook answers. With the engagement, the expanded learning culture, the importance of reflecting one's own actions, and the

involvement of different stakeholders in the process, self-evaluation seems to go nicely in line with the basic assumption of entrepreneurship education and especially entrepreneurial learning (Pittaway & Cope, 2007b).

Ross and Bruce (2007) show evidence that self-assessment helps the teacher to define excellence in teaching, set aims, select improvement targets, and find the gaps between desired and actual practices. Topper (2004) highlights how self-assessment, even a simply and easily administered version of it, can be a powerful tool for demonstrating to teachers that they have attained the competence needed. In turn, Stalmeijer et al., (2010) argue for the usefulness of self-assessment by stating that it provides a framework for good teaching, it works as an eye-opener, stimulates teachers to look at their teaching in a more structured way, and it gives suggestions for improvement. Finally, with a more generic view, Shepard (2000) argues that social-constructivist pedagogy requires a consistent evaluation system, where self-assessment could play its part.

3. THE PUBLICATIONS

The overall objective of this study, and consequently also of the publications, is to describe and find what basic and upper secondary level teachers' entrepreneurship education practices are, and how to use this knowledge in the development of entrepreneurship education. Each of the publications contributes differently to this objective, and they are presented in the following order. The first article describes pilot teachers' (n 29) understanding and perception of entrepreneurship education before they started their role as co-creators of the Measurement Tool for Entrepreneurship Education. The second article is about the development process, and it describes how the tool was created. Articles three (n 521), four (n 1359), and five are all based on data gathered by the measurement tool, and they highlight and present different views concerning teachers' entrepreneurship education practices. Whereas article number five concentrates on vocational education and training teachers' (n 448) networking practices, the two other articles present wider basic and upper secondary education teachers' practices.

3.1. Teachers' reflections on entrepreneurship education: their understanding and practices

3.1.1. Overall objectives

The first publication (Seikkula-Leino, Ruskovaara, Ikävalko, Kolhinen & Rytkölä, 2013) focuses on the teacher's role as an entrepreneurship educator, their perceptions of entrepreneurship education, how they realise entrepreneurship education in practice, and their understanding of the theme. There were three research questions:

1) How do teachers understand entrepreneurship education?

2) How do they realise entrepreneurship education in practice?

3) How do teachers reflect on entrepreneurship education?

The aim of the article was to gain pre-understanding concerning the above-mentioned themes, in order to be able to draft the first version of the Measurement Tool for Entrepreneurship Education.

3.1.2. The main findings

The findings show that basic and upper secondary level teachers' understanding of entrepreneurship education is rather limited, and internal entrepreneurship seems to be considered to be the main goal of entrepreneurship education. However, the results show that teachers have a great variety of aims and practices connected to entrepreneurship education. In addition, entrepreneurship education seems not to be an integral part of everyday work at school, but it is implemented mostly through separate projects and theme days. In line with this, teachers seem to have limited knowledge of how to implement entrepreneurship

education in practice. The findings also show that entrepreneurship education's objectives and practices are not clear or supportive enough for teachers, and not only are the objectives unclear, but teachers also seem to experience confusion between aims and practices: when asking about teachers' aims for entrepreneurship education, they replied by describing some practices; and when answering about the aims, teachers presented aims for the student, not for themselves. Teachers' reflection on entrepreneurship education also seems to be limited, which is probably based on the aforementioned lack of in-depth understanding of entrepreneurship education.

Teachers highlighted how collaboration between schools and businesses, and cooperation between subjects, is essential when aiming to steer the working community in a more entrepreneurial direction and developing entrepreneurship education as such. Interestingly, in teachers' answers, the practices, goals, and results of entrepreneurship education are kept separate. The results also show that there were no clear and unquestionably visible links between the objectives and the results of entrepreneurship education. Interestingly, many teachers commented on how difficult they felt it was to evaluate or measure the success of entrepreneurship education.

The study suggests that as a student-centred approach has gained ground, it may be time to highlight the central role of teachers as a key factor, as implementer and promoter of entrepreneurship education, and therefore the teachers' role needs to be "rediscovered". In addition, the study concludes that more focus should be given to learning by the teachers. Therefore, a more straightforward and accessible code system to describe the goals and results of entrepreneurship education is needed, and most of all, the need to create a platform to understand the processes of entrepreneurship education was highlighted. Understandably, if there are no common definitions of entrepreneurship education, no idea about the content and processes of education, and no frames for evaluating results, there will be no progress in the guiding role of entrepreneurship education. Therefore, one of the main findings was the observation concerning what kind of evaluation system would be of use. The findings show the important role of teachers' development and reflection processes, and highlight how an evaluation system should be structured as something that improves teachers' reflection.

The study summarises the findings into two aspects. First, there is a need for the development of teachers' learning in terms of their reflection and the development of practical tools for self-reflection; and second, the objectives and results of entrepreneurship education need to be connected.

3.2. Creating a Measurement Tool for Entrepreneurship Education – a Participatory Development Approach

3.2.1. Overall objective

The second publication (Ruskovaara, Pihkala, Seikkula-Leino & Rytkölä, in press) aims to illustrate and model the construction of a measurement tool for entrepreneurship education, where the tool itself is targeted at Finnish teachers working in basic and upper secondary education.

The article aims to picture the creation stages and overall shape of the self-evaluation system. That is important in the sense of validating the structure and content of the tool, which is used as a data-gathering system in three attached publications (Articles 3, 4, and 5). The article also aims to describe the usefulness of participatory action research in such a process, and highlights the crucial role of the deeply involved end users. The article is based on triangulation and aims to present the theoretical and conceptual framework for entrepreneurship education. It also aims to highlight the important role of administrative guidance documents.

The overall objective is, on a larger scale, to show and validate the usefulness, reliability, and validity of the created measurement system from teachers', decision-makers' and researchers' points of view.

3.2.2. The main findings

The article presents the need for an entrepreneurship education evaluation system and highlights the role such a system might have. The findings enhance the understanding of the phenomenon of entrepreneurship education and its assessment, by combining practices and materials provided by teachers into theories linked to entrepreneurship, entrepreneurship education, meaningful education and learning, curriculum studies, and so on.

On a practical level, the aforementioned enhanced understanding was used when creating the measurable entrepreneurship education items, which later on were the basis of the measurement tool.

The article is based on the development of teachers, and the findings emphasise the importance of teachers' learning. In that sense, the main finding was the creation of a measurement tool that enhances teachers' learning by measuring related practices, and giving feedback and ideas on how to develop further. A teachers' self-evaluation system can also be used as a guiding tool by decision-makers, which brings an addition to the main finding.

3.3. Teachers implementing entrepreneurship education – classroom practices

3.3.1. Overall objective

Teachers' entrepreneurship education practices and related teaching and working methods are important in many respects, but research has primarily focused on higher education, where the transferability of the results to basic and upper secondary education seems vague. Publication number three (Ruskovaara & Pihkala, 2013) concentrates on the teachers' teaching practices at lower education levels, and aims to explore and open dialogue in this area.

There seems to be limited knowledge about teachers' entrepreneurship education practices and the teaching and working methods. Therefore this article aims to examine the overall picture of entrepreneurship education practices and then highlight the practices that teachers use in their work. The aim was also to analyse how these practices differ, based on a number of factors in teachers' background characteristics.

3.3.2. The main findings

The findings provide information on the methods that appear to be used most frequently in basic and upper secondary education, and how these practices vary between different school levels. In a more concrete way, the findings show that a wide variety of methods is applied to entrepreneurship education. The most frequently used methods are discussions and other easily organised practices, whereas games and related competitions are used fairly seldom.

The results show that school level has a great impact on how entrepreneurship education is carried out, and teachers in vocational educational and training are very active compared to their colleagues in both basic and general upper secondary education. The results also show that teachers' participation in training and an active approach to entrepreneurship education are clearly connected, and it can be summarised that the participating teachers use a minimum of three times more different entrepreneurship education methods and practices than those teachers who have not participated in any training. The results also show that teachers' own perceptions of their skills in entrepreneurship education are directly correlated with how actively they use different methods and practices, and also how demanding the practices are that they utilize.

The article introduces possibilities for how to use the Measurement Tool for Entrepreneurship Education, empirical evidence, and related findings in the development of entrepreneurship education. The article concludes, for example, that entrepreneurship education skills can be promoted efficiently with targeted teacher training. It also presents evidence on resource discussions by highlighting which practices are used in entrepreneurship education and how to fully utilise those practices that are used less.

3.4. Entrepreneurship Education in Schools – Empirical Evidence on the Teacher's Role

3.4.1. Overall objective

Publication number four (Ruskovaara & Pihkala, in press) aims to study the elements that seem to play a role in targeting entrepreneurship education in basic and upper secondary schools. The research question is: *What are the methods and practices that teachers apply in their entrepreneurship education, and how are teachers' background characteristics related to the entrepreneurship education practices in schools?*

Generally, the article aims to contribute to the related literature by providing quantitative evidence on the use of a variety of entrepreneurship education methods in schools. By focusing on the analysis of teachers, the aim was to provide understanding on the role of different background characteristics in the teaching.

3.4.2. The main findings

The results show that a large number of methods are applied to entrepreneurship education and that the practices are wide-ranging. The most frequently used methods were different kinds of discussions about the economic effect of different actions, current financial news, and entrepreneurship related to the subject taught. In addition, the inclusion of local businesses in teaching seems to be popular. Therefore, it seems that discussions and other fairly easily organised methods are an easy, low-threshold way for teachers to include entrepreneurship regularly in their education.

Different entrepreneurship-related exercises also seem to have established their position in the respondents' range of entrepreneurship education measures. For example, stories about entrepreneurs seem to be applied rather frequently, but in contrast, learning games and entrepreneurship-related contests, or participation in them, do not appear to be very common. It is, perhaps, somewhat surprising that, although arranging study visits to enterprises and especially inviting entrepreneurs to the school do not require great effort, these approaches are taken rather seldom.

A comparison of teachers' background variables shows that a teacher's gender does not seem to be an explanatory factor for the level of entrepreneurship education in schools. Furthermore, the teacher's professional teaching experience has no significance in terms of entrepreneurship education. However, a teacher's training in entrepreneurship education seems to be the most effective way of promoting entrepreneurship education. The analysis also shows that a teacher with a business background gets higher values in used practices. On that basis, it seems that teachers should be exposed to businesses, not only during their studies but also while working.

3.5. Broadening the Resource-Base for Entrepreneurship Education through Teachers' Networking Activity

3.5.1. Overall objective

The main aim of publication number five (Ruskovaara, Pihkala, Seikkula-Leino & Järvinen, 2014) is to answer the question of the vocational education and training (VET) teachers' network activities and which teachers' background characteristics and participation activities determine the level of network activity. The focus was on the teachers as the main actors involving different outside partners in the formal school activities.

In order to answer the questions concerning which teachers use externalities in their entrepreneurship education, who they are using, and whether a specific pattern can be identified, four propositions were generated. The propositions were about teachers' business enterprise backgrounds, their work experience, teacher training, and teachers' participation in planning processes.

3.5.2. The main findings

The results point out the limited number of network partners that VET teachers used in their work during the last six months. The analysis shows that female VET teachers are more active in using outside externalities, but there are no differences between younger and older teachers. However, those teachers who have experience in business seem to be more active in networking. Interestingly, teachers' conceptions of their own skills in entrepreneurship education are strongly and positively related to the observed level of networking activity. In addition, teachers' participation in entrepreneurship education planning seems to be a very strong determinant, as those who participated in such planning roughly triple their networking activity.

With regression analysis, some understanding can be found about how teachers' background characteristics and participation measures are connected to their use of externalities. The analysis shows that a VET teacher's business background does not determine the teacher's entrepreneurship education practices. The analysis suggests that a teacher's gender and conception of their own capability contribute to the explanation of the teacher's network activities, but teachers' participation in regional and school-level entrepreneurship education planning and their participation in teacher training related to entrepreneurship education are also strong determinants. In general, the analysis suggests that teachers' involvement in planning entrepreneurship education is important in explaining the level of use of externalities.

4. CONCLUSIONS

This chapter aims to answer the research question and present the contributions and implications of this study. The limitations are also discussed, and the chapter ends with suggested ideas for future studies.

4.1. Answers to the research question

Next, the aim is to answer the following research question: "What are teachers' entrepreneurship education practices and how to utilise this knowledge in the development of entrepreneurship education?"

To answer the research question, the following five sub-questions were generated:

1. **What kinds of aims are set for entrepreneurship education?**

The findings show that there are many levels of aims connected to entrepreneurship education, and the aims are set by different stakeholders. Although teachers easily name plenty of aims, most of the aims are connected to students' learning or are goals for the students, instead of being aims for the teachers themselves as entrepreneurship educators.

2. **How to evaluate and measure entrepreneurship education?**

The findings show that teachers were quite motivated to develop entrepreneurship education, but they lacked a clear vision and understanding of it. Based on teachers' self-reflection, the aforementioned aspects can be achieved, and the teaching itself can be developed through reflection. Therefore, it was suggested that a measurement system would be useful that would enhance both teachers' vision and understanding. In line with this, the findings suggest the usefulness of a self-evaluation tool that improves teachers' reflection and highlights the important role of teachers' development.

Based on the findings, teachers are confused between the aims and results of entrepreneurship education. Therefore, entrepreneurship education actions should be concretised and, when applicable, formulated together with teachers to make sure that the wording and phrases are understood and accepted by teachers. By doing this, the objectives and results of entrepreneurship education would be connected. Similarly, teachers have not set any aims for themselves, and therefore concrete actions where teachers could reflect on their own actions would help with that as well. When measuring entrepreneurship education, the use of these aforementioned notions would be important.

Teachers seem to accept that their actions are divided into methods, practices, and contents of entrepreneurship education. The findings show that it is possible to measure teachers' entrepreneurship education practices. On that basis, goals set for entrepreneurship education

become measurable and possible to follow and develop. At the same time, when the goals set for entrepreneurship education become measurable, this also creates a link between policy-level goals and teacher-level practices.

Based on the aforementioned findings, a self-evaluation tool was constructed together with end users like teachers and policy-makers. The aim was to create an easy-to-use tool, and therefore many rounds of testing and recoding were performed. To be able to provide the users with concrete, research-based feedback, a database solution was chosen. The feedback loop was seen to be an important part of teachers' development and reflection processes. The measurement items were carefully checked together with end users, and then coded into a web page. The aim was to develop teachers' entrepreneurship education practices and also to develop related reflection. Therefore, the feedback element consists of texts, numerical results, and comparisons that teachers can follow during their development, but that can also be used to compare and develop their actions in that sense.

3. What kinds of entrepreneurship education practices are used in Finnish schools?

The data shows that there is a wide variety of practices used in Finnish schools in the context of entrepreneurship education. The rich selection of used entrepreneurship education practices was compressed into five sum-variables, and they were named as classroom teaching; business projects; company visits; joint projects; and entrepreneurship games. The analysis shows that the most used methods are different kinds of discussions concerning entrepreneurship and economic life, and a significantly smaller number of, for example, entrepreneurship-related games and competitions. It also seems that easily organised practices organised in the classroom are the ones that are repeated most often, and in contrast, the practices that need more pre-work and that take place outside the school are used less.

Practices used in schools seem to vary significantly on the basis of school level. It seems that VET teachers are the most active ones in terms of the number of used practices, followed by general upper secondary teachers. The only exception was "joint projects", which were used more in basic education than in general upper secondary.

4. How are teachers' background characteristics related to entrepreneurship education practices?

The attached studies suggest, on a general level, that there is no statistical differences between male and female teachers in terms of entrepreneurship education. However, for example, male teachers seem to be more bound to classroom teaching, and when studying VET teachers, female teachers are more active in using different outside resources. As for teachers' work experience, this does not produce any difference in terms of using different practices.

Teachers' business background seems to determine their use of different practices, as those teachers with earlier experiences in business seem to be more active in almost all measures. Teachers who have participated in entrepreneurship education teacher training are significantly different from those who have not participated in any training. Those who have participated in related training get higher scores in all measures. It can also be seen that the more teachers have participated in training, the more challenging practices they use. In addition, VET teachers seem to be more active in all measures. Amongst VET teachers, participation in the curriculum development process, schools' entrepreneurship education plans, and regional entrepreneurship education also seems to be a determinant, as those who participate use more different external network partners. Teachers' conceptions of their own skills for entrepreneurship education are also strongly related to the observed level of different entrepreneurship education practices.

5. How to utilise empirical data in the development of entrepreneurship education?

The study suggest that training related to entrepreneurship education seems to be the best possible way to promote the implementation of entrepreneurship education in schools, and therefore this finding could be used when allocating resources for participating in training, but also when highlighting the importance of related training. The findings, for example, also suggest some possible content for teacher training. For example, different pedagogical solutions where teachers could familiarise themselves with the playful side of teaching and learning would be useful. Training that develops teachers' competence as a mentor, enabler, or coach should also be included in entrepreneurship education practices. The findings also underline the growing importance of continuous school-business cooperation.

The findings can be used when deciding in which direction teacher education should be developed. On a more general level, using the findings when allocating resources for entrepreneurship education would also be useful. The findings highlight the relationship between teachers and the "world out there", and therefore it seems to be useful to create and encourage more in-depth cooperation between teachers, companies, and other external stakeholders.

The findings provide teachers, head-teachers, and policy-makers with ideas on how to develop entrepreneurship education as such, but also on how to develop teaching, the teachers' role, and related resources. The findings highlight how guidelines for teacher training would be useful in order to implement related policies. Participation in the development of regional planning or school-level curriculum processes also promotes entrepreneurship education in schools. This brings an opportunity for school management to empower and encourage teachers to participate in such actions. For school management, it would also be important to realise the possibilities of external and internal networks. External networks could easily provide new resources for entrepreneurship education practices, and cooperation among teachers, using internal networks, would offer a range of possibilities for

organising novel approaches to teaching. In turn, data could provide interesting findings and important knowledge for decision-makers to both follow and steer the actual practices that teachers are using.

4.2. Contributions of the dissertation

This chapter presents the methodological, empirical, and theoretical contributions of this study.

4.2.1. Methodological contribution

The methodological contribution builds on the difficulties of operationalising the international and national strategies and curricula. The aforementioned documents set aims for entrepreneurship education, and the contribution is related to the operationalising processes where the aims were formulated and translated into understandable, concrete, and measurable practices for basic and upper secondary level teachers. The aims were operationalised, but a self-evaluation system for teachers was also created, in order to provide teachers with possibilities to reflect on, follow, and develop their entrepreneurship education practices. The aims for entrepreneurship education needed to be translated from strategic documents and studies, the majority of which were concentrated at a higher educational level. In order to do that, and to be able to end up with wording and concepts familiar and understandable for end users, the participatory action research was very useful.

The chosen method seems to be accepted by researchers, as articles based on the related findings and the creation process itself have been published and will be published in respected forums, journals, and books. In turn, one very encouraging comment was found in Tiikkala's thesis (2013, 106). She studied values related to entrepreneurship education amongst teachers, head-teachers, teacher educators, and other stakeholders. According to Tiikkala's findings, this particular self-evaluation system helps teachers in their practices and every-day work as entrepreneurship educators.

Therefore, the methodological contribution is bridging the gap between the conceptual aims of entrepreneurship education and the teachers' operations in practice. However, in spite of the above-mentioned contribution, this study does not evaluate the quality, effectiveness, and compatibility of those practices.

4.2.2. Empirical contribution

This study has also made empirical contributions. There has been a lack of evidence and evidence-based research in the field of entrepreneurship education. In order to contribute to these challenges, rich data was gathered. The analyses provide us with understanding of and new knowledge about what is happening at basic and upper secondary level school. With

empirical findings, it is also possible to create an understanding of the practices taking place in the field, and furthermore of the ways to promote the pursuit of objectives for entrepreneurship education, and later on to follow how the objectives are reached.

The contribution seems to be fairly highly valued, as now there is growing knowledge describing what is happening in the field of entrepreneurship education. The empirical findings are used by policy-makers, regional developers, school principals, and teachers when developing and allocating resources to entrepreneurship education.

The Finnish basic education curriculum is changing fairly soon, and the new one will take effect in 2016. This study could bring useful findings for the development process of the new curriculum, but it could also bring empirical evidence in the sense of how important teachers' participation is to the curriculum process, while embedding the new curriculum. In addition, before the new curriculum comes into operation, findings from this study could expose the current state of entrepreneurship education and contribute by taking part in the discussion of how the current curriculum performed.

4.2.3. Theoretical contribution

The theoretical contribution relates to knowledge of the teachers' important role in entrepreneurship education; it sheds lights onto who is an entrepreneurship educator, and what kind of a role teachers' characteristics play in the sense of their entrepreneurship education practices. The contribution highlights that it is not enough to know about students' learning, but teaching and teachers' practices used in entrepreneurship education are also crucial. Most studies lean on learning, whereas this study's contribution emphasises the crucial part of the teacher and teaching.

This study suggests that teachers' demographic characteristics, like gender and tenure, do not affect teachers' entrepreneurship education practices. However, the study emphasises that teachers' targeted training and participation in school-level or regional planning are significantly important factors in explaining teachers' entrepreneurship education practices. Those who have participated in such planning or training use both more frequently and more challenging practices compared to their non-participating colleagues.

One other very important finding was the role of the teachers' own capabilities. The findings suggest that teachers' skills are directly correlated with how actively they use different entrepreneurship education practices.

It should be borne in mind that this study concentrated on the role of teachers' backgrounds, but in other respects, the teachers' role remains largely unexplored.

4.3. Implications of the study

This study implicates that there are many aims connected to entrepreneurship education, but teachers have not set any aims for themselves; aims and results seem to mix; it is possible to develop teachers' target orientation by supporting their reflection skills, and by measuring and evaluating their practices.

In line, it is possible to measure entrepreneurship education practices. The operationalising process for teachers' entrepreneurship education practices seems to benefit from a practice-oriented approach (participatory action process). The operationalising follows segmentation of entrepreneurship education into methods, practices, and contents, which seem to be easily accepted and used by teachers.

Teachers' demographic or tenure-related background characteristics do not affect their entrepreneurship education practices, but their training related to entrepreneurship education, participation in different school-level or regional planning, and their own capabilities support entrepreneurship education.

The main findings can be summarised into following 14 points:

1. A teacher's gender does not affect the practices used.
2. Experience as a teacher does not have an influence on their inclination towards entrepreneurship education.
3. A teacher's business background positively affects practices in some contexts.
4. There is a very positive influence and strong connection between teacher training in entrepreneurship education and the entrepreneurship education practices applied: allocating resources to training gives strong support to entrepreneurship education.
5. A teacher's perception of their own capability is very realistic. Their own conception of their skills in entrepreneurship education is directly correlated with how actively they use different practices in entrepreneurship education: teachers who state that they have no entrepreneurship education skills use lightweight methods such as discussions and ready-made materials.
6. Teachers who participate in entrepreneurship education training apply more demanding methods, such as projects, compared to colleagues who have not taken part in such training.

Also, most of the entrepreneurship education practices take place in a classroom:

7. A large number of methods are applied to entrepreneurship education.
8. Entrepreneurship education differs between education levels statistically significantly, and school level has a great impact.
9. Most often, the used methods were different kinds of economics-related discussions and entrepreneurship discussion related to the subject taught. Discussions seem to be an easy, low-threshold way for teachers to include entrepreneurship education regularly in their teaching.

10. Stories about entrepreneurs and other entrepreneurship-related material are applied fairly frequently.
11. Field trips to business enterprises or inviting entrepreneurs to present their work in schools are used fairly seldom. Interestingly, visits outside the school are more common than visitors invited to the school. These practices need preparations beforehand and are both used by and useful for advanced teachers.
12. It seems to be useful to create and encourage teachers towards more in-depth cooperation with companies (e.g. via joint projects) and to network systematically. These kinds of external school activities in general could be encouraged more.
13. Taking part in competitions or using learning games involving entrepreneurship are not very common, and therefore the playful side of entrepreneurship education could fairly easily expand the practices used.
14. Internal networks such as cooperation among teachers can offer a range of possibilities to organise teaching in novel ways. This would bring new approaches to develop the school's operating culture to be more entrepreneurial.

There are plenty of resources, like ready-made materials, external stakeholders, support organisations, and learning games, but they are not fully used by teachers. More attention should be paid to the question of how the use of these resources could be enhanced.

Participation in the development of regional planning or school-level curriculum processes promotes entrepreneurship education in schools. This is a challenge for the school culture and school management, as participation is actually part of the target setting processes for teachers and schools.

4.4. Limitations and suggestions for further research

This study and its' methodological approach also has limitations. As this study is strongly based on participatory action research, the approach as such and its findings would be different if repeated in a different place, time, or context. As the findings are based on Finnish data, they are not necessarily comparable with data gathered outside Finland. In addition, the generalisability of the results outside Finland remains unknown. However, the empirical findings are partly supported by previous studies, and partly they enhance the knowledge on the field. The findings seem to be accepted by practitioners and decision-makers, and quoted by other researchers, so therefore the findings presented here seem to gain ground. This is also illustrated as studies attached to this thesis are published in respected forums, journals, and books.

There are also limitations connected to the researcher. The researcher had serious involvement in participatory action research and, in that sense, limitations need to be taken into account. Furthermore, for example, an educationist or an expert in evaluating studies would probably choose different approaches and have different findings.

This study concentrates on the role a teacher's background plays, but in other respects, the teachers' role remains largely unexplored. In turn, this study does not evaluate the quality, effectiveness, and compatibility of entrepreneurship education practices. Additionally, as the focus is on teachers, it does not provide information concerning, for example, students' learning.

There are still many elements of entrepreneurship education that need more in-depth studies. For example, practices, methods, and contents used in entrepreneurship education need a more profound approach, as they are not all empirically tested at lower education levels. In addition, what remain fully undiscovered are studies testing what is a good or recommended number of different used entrepreneurship education methods, practices, or contents. It seems that knowledge concerning very crucial parts of entrepreneurship education is missing. For example, is the more the better, or is there some turning point where the full advantage of a particular element of entrepreneurship education is captured? Then, what is the best possible combination of different entrepreneurship education practices? Similarly, the role of the schools' operational culture seems to be an undiscovered field of research. Most of the entrepreneurship education practices take place in classrooms, so a study of how to enlarge the learning environment outside the school would be very interesting. Publication number five presents the findings related to networking and VET teachers. However, there is no knowledge concerning the theme related to basic and general upper secondary education teachers. In turn, teachers' pedagogical solutions connected to entrepreneurship education would be of interest, and there is still a lack of knowledge concerning how teachers network and use external or internal stakeholders. It would also be of interest to explore how to create an entrepreneurial school culture, and what kind of management best enhances such development.

In Finland a new basic education curriculum takes effect in 2016. The development process for the new curriculum and its embedding process seem to be very interesting, and there would be a place for future research. Before the new curriculum comes into operation, it would also be very interesting to contribute to evaluating how the current curriculum performed. In turn, the new curriculum highlights the current emphasis of education, and therefore it presumably brings new challenges to the development of schools, where new needs for studies probably emerge.

Regional comparisons would also be interesting content for future study. There are studies reporting entrepreneurial cultural differences between regions, and also studies related to how inhabitants' attitudes towards entrepreneurship differ between regions, but there are no studies explaining whether different areas differ in terms of entrepreneurship education, or whether the entrepreneurship education practices differ between areas within a more or less entrepreneurial culture.

There is also a very limited number of studies comparing basic and upper secondary level entrepreneurship education practices internationally, so that would be a definite aim for one of

the future studies, as I feel that it would be interesting to compare the same elements internationally. A study of how teachers in different countries realise entrepreneurship education would also be an interesting field of study.

There are many interesting approaches for future research. Studies on how to best use the aforementioned findings and how to measure entrepreneurship education at a higher education level, and studies related to students' learning in entrepreneurship education, also need to be made.

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ARTICLE 1

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8. Teachers' reflections on entrepreneurship education: their understanding and practices

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INTRODUCTION

The strategy of the European Union highlights the importance of the development of an entrepreneurial culture by fostering an entrepreneurial attitude, entrepreneurship skills and an awareness of career opportunities (Commission of the European Communities, 2006).

In Finland, entrepreneurship education has a central role in the national core curricula at all education levels. Since teachers are key players in promoting it, we stress their point of view as promoters. However, there is a very limited amount of research concerning the teachers' role in entrepreneurship education, and where such exists, the focus is on higher education (for example Fiet, 2000a, 2000b; Klandt, 2004; Shepherd, 2004; Béchard and Grégoire, 2005; Henry et al., 2005a, 2005b; Backström-Widjeskog, 2008; Neck and Greene, 2011). Moreover, from the theoretical point of view there is a lack of entrepreneurship education theories focusing on its pedagogy. As Honig (2004) argues, given the importance of entrepreneurship education in the academic and public sectors, and given the increasing sums of money allocated for the various promotional activities, the need for detailed pedagogical analysis and design is both immediate and critical. Entrepreneurship education requires its own specific body of empirical literature. Rather than accepting standardized activities and routines at face value, we should begin examining our learning interventions in order to identify those activities most suitable for the present and future entrepreneurs we hope to assist. Therefore, in this chapter we would like to open the discussion from this perspective as well. This field needs more in-depth research and development. There are studies about evaluating

entrepreneurship education programmes and their impact upon new venture creation (for example Hytti and O'Gorman, 2004; Barr et al., 2009; Boni et al., 2009), students' changing entrepreneurial attitudes (for example Frank, 2007; Degeorge and Fayolle, 2008), opportunity identification (DeTienne and Chandler, 2004), and teachers' attitudes towards entrepreneurship education (Peltonen, 2008; Backström-Widjeskog, 2008), but at this point, the development of teachers lacks an evaluation system (for example Matlay, 2005; Seikkula-Leino et al., 2010). This will serve as a basis for the analysis of teachers' learning in entrepreneurship education. We consider that learning from a reflection point of view, as Shulman and Shulman (2004) argue, forms a critical basis in the learning phenomenon.

We argue that since learner-centred education has been in focus in the past, teachers could strengthen their role as learners in order to meaningfully develop education. As Shulman and Shulman (2004), Schwartz (2006), Seikkula-Leino (2006, 2007, 2008, 2010), Westbury et al. (2005), and van der Akker (2003) argue, educational changes, such as curriculum reforms, are focused on teachers' learning. We propose the view that teachers are at the crossroads of a transformation process in entrepreneurial education. As teachers transform the general aims of entrepreneurship education into concrete teaching activities and learning outcomes, they actually make the whole journey from common objectives to actual conclusions, that is increasing entrepreneurial activities in society.

The concept of learning, as presented in the Finnish core curricula, is based on lifelong learning, constructivism and socio-constructivism (Finnish National Board of Education, 2003, 2004), and is connected closely to the pedagogy of entrepreneurship education (Seikkula-Leino, 2007). According to Gibb (2005), the pedagogy of entrepreneurship education is focused on the students' levels of activity in learning. The learning situations are flexible, interactive, and based on multidimensional knowledge development. Knowledge is built together and mistakes are regarded as a part of the learning process.

The Finnish National Core Curriculum defines cross-curricular themes which emphasize general educational goals. In formulating the curriculum, cross-curricular themes are to be included in the subjects and in joint events such as assemblies, and are to be apparent in the school's operational culture. Entrepreneurship education is one of the cross-curricular themes for basic and upper secondary education (Finnish National Board of Education, 2004, 2003). Intrapreneurship and enterprising attitude especially are considered as a main target in the school context (Finnish National Board of Education, 2003, p. 25; 2004, pp. 40–41). During the

years 2007–10 vocational education curricula were updated and every study programme contains studies in entrepreneurship.

However, despite the core curriculum, there is a long way to go from the international and national policymaking level to the actual establishment of business enterprises. The journey consists of at least two different stages: first, from the goal-setting in the education system, starting from EU strategies and national curricula, to the altered daily teaching work of all teachers, and secondly, from the teaching to the altered behaviour of the students in the years to come.

Nevertheless, teachers have at times had difficulties in identifying contents and means by which to respond to challenges posed by entrepreneurship education (Seikkula-Leino, 2006, 2007, 2008, 2010; Fiet, 2000a, 2000b; Backström-Widjeskog 2008). We propose the view that teachers are at a crossroads of several transformation processes embedded in entrepreneurial education. Teachers make the journey from the general objectives of entrepreneurship education to their actual outcome, that is increasing entrepreneurial activities in society as they transform the objectives of entrepreneurship education into teaching activities and into learning outcomes.

Not only do teachers have a "hands on" approach to entrepreneurship education, but they are also in the best position to evaluate the objectives, actions and outcomes of entrepreneurship education since they are the initial implementers of entrepreneurship education strategies and curricula. Teachers always receive the most recent and detailed feedback about entrepreneurship education and the success of the education and the desired implementation highlights teachers' perceptions and actual behaviour. *Therefore, this research aims to describe teachers' perceptions of entrepreneurship education. We aim to find out how they have realized entrepreneurship education in practice. Moreover, we study their understanding of entrepreneurship education*.

CONCEPTS AND THEORETICAL BACKGROUND

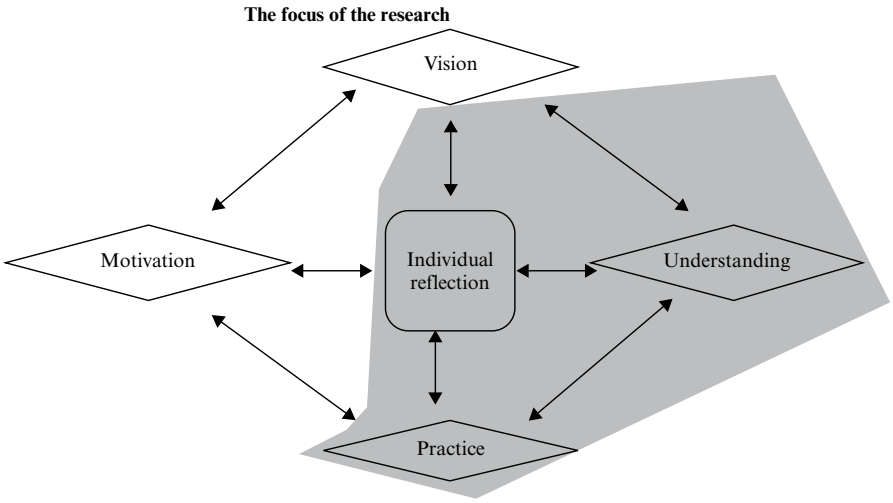
Teachers' Learning Processes

As the target of this chapter is to present the teacher's role as an entrepreneurship educator, and as we present teachers' perceptions of entrepreneurship education, the key issue is to concentrate on teachers' learning process which is an essential element in the development of education. Therefore, to enhance entrepreneurship education among students, it is fundamental for teachers, too, to become more entrepreneurial (Peltonen,

2008). We build our approach on the model of teachers' development and reflection processes by Shulman and Shulman (2004). Thinking about the learning theories which could be used in the context of entrepreneurship education, like Dewey's (1902) pragmatism and instrumentalism theory and Kolb's (1984) experimental learning theory, we consider Shulman and Shulman (2004) could add some value, especially from the perspective of teachers' learning, since the aforementioned theories are formulated around describing elements of general learning and would be applied primarily to students. Therefore, using Shulman and Shulman's (2004) work could be a suitable decision in terms of giving a more precise understanding of teachers' learning processes. Other curriculum research points out this aspect of the teacher's role and reflection as well (see for example Schwartz, 2006; Westbury et al., 2005; van der Akker, 2003). In fact, Schwartz (2006) stresses that educational change, like curriculum reform, is more about educating teachers than educating students.

Thus we may assume that implementing entrepreneurship education is based on the idea of teachers' learning and their reflection, and in consequence, teachers are central factors in terms of developing entrepreneurship education. The theoretical framework of our chapter is presented in the image in Figure 8.1.

Shulman and Shulman (2004) state that an accomplished teacher should be a member of a professional community and be ready, willing and able



Source: See Shulman and Shulman (2004).

Figure 8.1 Model of a teacher's development and reflection process

to teach and learn from his or her teaching experiences. They suggest that an accomplished teacher should be ready to pursue a vision of the classroom or school that forms a "learning community" where teachers *understand* the content they are teaching and have motivation to further develop the forms of pedagogical and organizational *practices* needed in transforming their visions, motives, and deductions into a functioning, pragmatic reality. When teachers form learning communities and work as members of such communities, they are capable of learning from their own and others' experiences through active *reflection*. Shulman and Shulman (2004) stress vision and motivation in reflection but in this research we focus on understanding and practice when we study the reflection process. Shulman and Shulman (2004) summarize that an accomplished teacher smoothly integrates these elements into the teaching and learns to improve teaching through active reflection. They believe that reflection is the key to a teacher's learning and development. In fact, this has been stated in earlier studies. A teacher's reflection does not have the scope for developing visions (referring to a general deficiency of realizing entrepreneurship education and advancing teaching objectives) even though minor elements for enhancing motivation for implementing entrepreneurship education are discernible. A poor understanding of entrepreneurship education and an undeveloped implementation of practices restrict the development of teachers' reflection and, consequently, the development of entrepreneurship education (see Seikkula-Leino, 2007, 2010).

Our focus in this study was solely on teachers' understanding and practices, and we did not concentrate on their vision or motivation. Even though our approach is limited in this sense, it will still enable us to draw conclusions about the teachers' reflections, and in consequence, what they have learned about entrepreneurship education. Thus we may conclude this chapter with findings that deal with the crucial elements of entrepreneurship education focusing on teachers as its developers and on their learning.

Entrepreneurship Education

To define entrepreneurship education, we may consider terms such as "enterprising" and "entrepreneurial". The only major distinction between these two is that entrepreneurial traditionally refers to business activity, whereas enterprising can be used in any context (for example Gibb, 2005). In order to avoid confusion and for the sake of precision, this chapter uses both concepts explicitly: entrepreneurial (referring to the business context) and enterprising (referring to general education and learning processes).

According to Kyrö (1997), entrepreneurship education deals with

three main components: (1) self-oriented; (2) internal; and (3) external entrepreneurship. Self-oriented entrepreneurship refers to an individual's self-oriented behaviour. Self-oriented entrepreneurship is the basis for developing internal and external entrepreneurship (Remes, 2004). Internal entrepreneurship is concerned with entrepreneurial and enterprising behaviour and external entrepreneurship is about doing business (Ristimäki, 2003). Self-oriented entrepreneurship basically focuses on an individual's development. In terms of self-oriented entrepreneurship, Kyrö (2005, p. 89) argues: "In general, entrepreneurial and enterprising behaviour involves the idea that the human being, looking around him and combining different elements, creates holistic realities, which have their consequences in action. His ideas can spring from anywhere and this combines different elements and this enhances the creation of something new."

Entrepreneurship education is considered here through three objectives: learning to understand entrepreneurship, learning to become entrepreneurial, and learning to become an entrepreneur (for example Hytti, 2002). Therefore, entrepreneurship education should be considered both as a method of learning and a subject of learning (Remes, 2003). Both Backström-Widjeskog (2008) as well as Neck and Greene (2011) argue that learning a method, entrepreneurship, is often more important than learning specific content. Moreover, teachers play a central role in implementing entrepreneurship education (Backström-Widjeskog, 2008; Seikkula-Leino, 2007, 2008, 2010; Sobell and King, 2008). The concepts we use in our research are internal entrepreneurship, which deals with entrepreneurial and enterprising behaviour, and external entrepreneurship, which is about doing business. We deduce that internal entrepreneurship in education is about learning to become entrepreneurial, and external entrepreneurship is to understand entrepreneurship and become an entrepreneur.

When contemplating Shulman and Shulman's (2004) views on learning in this context we should assume that all of the elements of entrepreneurship education ought to be developed through the teachers' reflection processes. Thus, for example, in order to enhance external entrepreneurship, they should understand what external entrepreneurship means in school life as well as in the business world, and in order to implement external entrepreneurship in practice they would have to learn it through experience.

This chapter aims to present teachers' perceptions of entrepreneurship education. Nevertheless, it is not stated in our questionnaire that we analyse how teachers present their views about entrepreneurship education in the context of concept definition and a literature review

of entrepreneurship education. Regarding the research that has been conducted on this topic, there is no literature available that focuses on this kind of prospect. Therefore, we assume there is a definite need for research of this type for further developing entrepreneurship education. As stated earlier, implementing entrepreneurship education is based on the idea of teachers' learning and their reflection, and in consequence, teachers are crucial factors in terms of developing entrepreneurship education. Therefore, we need research from the implementers' perspective – not only from that of the students. Moreover, we need to know about the content and processes of entrepreneurship education. Next we present the data-gathering process and methods used when analysing the teachers' answers.

METHODOLOGY

Qualitative research relies on data consisting of documents, either previously written or specifically collected for the purposes of the research at hand. Here the data was collected during the project and consists of the teachers' responses to an email questionnaire conducted in September 2008 concerning entrepreneurship education activities. The content of the questionnaire is discussed in more detail in the following section.

We realized the research in the context of the Measurement Tool for Entrepreneurship Education,[1] a four-year (2008–12) research and development project with two objectives. One goal was to develop a self-evaluation tool for primary and secondary level teachers in order to support the implementation of entrepreneurship education, thereby providing a pedagogical aid for the planning, assessment and development of teaching. Another goal was to ascertain as well as further develop the effectiveness of national entrepreneurship education support systems through the use of the measurement tool.

As researchers, we are interested in what is being said, aiming at a deeper understanding of entrepreneurship education in a specific context and also being part of reproducing local interpretations of it (see Silverman, 2001, pp. 12, 97). According to the epistemological position on social constructivism adopted, teachers' views on, and underlying assumptions about, entrepreneurship education can be accessed through studying documents produced by them.

We see entrepreneurship as a socially constructed phenomenon (Berger and Luckmann, 1969; for entrepreneurship see, for example, Bouchikhi, 1993) taking its forms in language practices. Language is an instrument for mediating among past, present and future action (Hansson, 2002, p. 427).

By way of communication we produce different "pictures" of the world, which makes language our primary means of construction. However, there is always a wide variety of versions, each telling a different story about the object in question. Some versions tend to become more dominating, fixed and implicit than others (Berglund and Johansson, 2006, p. 79). In order to grasp the reality of the entrepreneurship education that the teachers produce, reproduce and share, it is necessary to adopt a qualitative research methodology approach.

Content Typing

Content analysis, or more specifically content typing, was used in interpreting the data. Qualitative content analysis is defined as a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns. Content analysis is generally used with a study design intended to describe a phenomenon (Hsieh and Shannon, 2005, pp. 1278–9). The aim here was to find answers to the question of what was being said and to identify similarities from the data with regard to the teachers' views on entrepreneurship education.

Content typing involves grouping the data into parallel types according to similarities identified. It is based on theme categorization and grouping, and is efficient in terms of providing examples to illustrate the research problems (Eskola and Suoranta, 1998, pp. 174–81). Content analysis is used for the systematic and objective analysis of documents (Silverman, 2000, p. 128; Kyngäs and Vanhanen, 1999; Latvala and Vanhanen-Nuutinen, 2001). In this research, the reading was guided by the structure of the email questionnaire and the theoretical framework. In order to elicit the teachers' points of view and their perceptions of entrepreneurship education, the categories were also allowed to emerge inductively from the data without any preconception.

First, the data was read several times in order to build an overall picture of the responses which incorporated descriptive elements. Secondly, it was read more reflectively and analytically, the goal being to organize it in terms of the teachers' responses to the questions. The responses were grouped. Thirdly, the responses were mirrored against our literature review and concept definitions. Fourthly, they were analysed on the basis of Shulman and Shulman's (2004) framework for teacher reflection, which in our situation involves, as mentioned above, the elements of practice and understanding. The fifth and final step was to integrate all the data analysis described above, which facilitated the analysis of the teachers' reflections in the context of entrepreneurship education.

Research Questions and Data Gathering

The questions of this research were:

1. How do teachers understand entrepreneurship education?
2. How do they realize entrepreneurship education in practice?
3. How do teachers reflect entrepreneurship education?

In order to answer these research questions we undertook the following procedure: the data was collected from 29 teachers representing different levels of education and nominated by their respective organizations. The group of teachers was called a "trial group". Sixteen of them worked at the basic education level (elementary and upper levels of comprehensive school), six at the upper secondary level, and seven in basic vocational training. They represented ten different municipalities and educational organizations, and came from different parts of Finland. Seventeen of them were women and 12 were men. The average age was 40 years, and they had an average of 10–15 years of teaching experience. In terms of background information they were also asked to assess how long they had worked as an entrepreneurship educator. Eleven of them had worked in that capacity for between one and five years, three for between six and ten years, and ten for more than ten years. The responses were analysed by the entire research group. In forthcoming articles, we will compare the differences between variables such as school levels and age.

Although there was variation in the respondents, we do not claim that they are representative of all Finnish professional teachers. Also, as volunteers, these teachers might show interest in the entrepreneurship theme and therefore the results are likely to display excessively positive figures. The aim of this assignment was to give some orientation for the "trial group" and to illustrate a starting point for the researchers for the forthcoming development work.

As a first assignment the trial group received an email with four questions, which are given below:

1. What kinds of aims do you have for entrepreneurship education?
2. How do you put entrepreneurship education into practice?
3. What kinds of results have you achieved in entrepreneurship education?
4. How is entrepreneurship education manifest in your local education and business strategies and curricula?

The teachers had four weeks (September 2008) to answer the questions, and they all did so. Without any specific directions most of the

respondents answered each question with an average of three to five sentences, the shortest being one sentence and the longest two pages.

The questions were derived from Shulman and Shulman's (2004) "Individual level of analysis" model which consisted of understanding and practice. The first question about the aims ("What kinds of aims do you have for entrepreneurship education?") deals with the understanding. The second ("How do you put entrepreneurship education into practice?") and the third ("What kind of results have you achieved in entrepreneurship education?") were about practices. The fourth question ("How is entrepreneurship education manifest in your local education and business strategies and curricula?") was about understanding.

RESULTS

In this section, we present the results derived from the questions given to the teachers.

Question 1: What kinds of aims do you have for entrepreneurship education?

Of all the respondents (29), four did not answer this question. The most common terms used in describing the aims are "taking initiative" (including the capability to act independently, being active), "enterprise" (including attitudes and actions with entrepreneurial characteristics), "responsibility" and "teamwork" (including cooperation skills). Altogether, the teachers mentioned approximately 120 separate or similar aims for entrepreneurship education.

The responses were categorized into three groups: curricula-related goals, pupil/student-related goals, and teacher or school community-related goals. The most popular type was the pupil/student-related goal.

> To develop the pupils' ability to act independently, take initiative, and carry responsibility of their own work. (Teacher 3, upper level of comprehensive school)

Only two respondents pointed out curricula-related aims, such as:

> In my opinion, the fundamentals of the elementary school curriculum give outlines for fostering a positive attitude towards entrepreneurship. (Teacher 6, upper level of comprehensive school and upper secondary education)

Four respondents mentioned goals related to teachers or the school community, such as:

> I try to create an enterprising attitude in our school. (Teacher 9, elementary level of comprehensive school)

Next we looked more closely at the aims directed to pupils/students. According to Seikkula-Leino (2007), the aims of entrepreneurship education are directed towards strengthening pupils'/students' knowledge, skills, attitudes and readiness.

In the responses, the aims related to knowledge were in one way or another connected to understanding entrepreneurial activities, which can be illustrated with the following example:

> One wants to provide pupils with basic information about entrepreneurship, starting a business, and acting as an entrepreneur [. . .] (Teacher 2, upper level of comprehensive school and upper secondary education)

Most of the respondents mentioned goals related to skills, attitudes and readiness, whereas a minority mentioned knowledge-related goals. Interestingly, the goals are either related to the present time and pupils'/students' current schoolwork or oriented more towards the future.

Altogether, the teachers mentioned "internal entrepreneurship" seven times and "external entrepreneurship" once.

> The aim is to evoke the internal entrepreneurship of the pupils. (Teacher 1, elementary level of comprehensive school)

> In the upper level of comprehensive school I consider that the emphasis is on internal entrepreneurship, but interested students will get a chance to become familiar with external entrepreneurship as well. (Teacher 7, upper level of comprehensive school)

Among other things, the teachers conceived of internal entrepreneurship as independent initiative, self-direction, self-esteem, commitment, the capability to adapt and cooperate, sustainability and diligence. According to the responses, the terms "enterprising" and "entrepreneurial" refer to internal entrepreneurship, and were used more often than internal entrepreneurship.

Question 2: How do you put entrepreneurship education into practice?

For the second question we received 28 responses, one respondent did not reply. Altogether, the teachers mentioned 239 different or similar methods and ways of teaching entrepreneurship education, and 36 presented examples of their entrepreneurship education practices. Of all respondents, only three teachers linked their teaching to the curricula.

The responses show that entrepreneurship education can be implemented in many different ways, such as in the form of different content and teaching methods. The content of entrepreneurship education was linked to the teacher's own subject, although they were much more often connected to individual entrepreneurship courses or studies. Entrepreneurship courses, studies, or club activities are mentioned frequently, altogether 20 times in data.

> Most clearly my own work for entrepreneurship education can be seen on the entrepreneurship course that is organized for the 7th graders as an optional course. During the course the students establish small companies for the school year. (Teacher 8, upper level of comprehensive school and upper secondary education)

> The Optional Design and Technology subject combines art, technical work, textile work, and entrepreneurship education. The optional subject consists of design education, handicraft education, and entrepreneurship education. (Teacher 29, comprehensive school)

> [. . .] entrepreneurship learning space for young people, where I work as an instructor. We get together every week for three to four hours. In addition, the students carry out their own projects related to the learning space, such as taking care of the coffee serving etc. (Teacher 20, basic vocational training level)

Business plans, marketing and general business theory are general content on these courses, as are studies or clubs, at the upper level of comprehensive school as well.

> As an example, the entrepreneurship course that I took part in . . . The course dealt with the basics of entrepreneurship, different forms of companies, examples of enterprises, and entrepreneurial people. (Teacher 28, upper secondary school)

The teaching methods of entrepreneurship education generally consist of various forms of collaborative teaching referring to a practice where all students participate actively in the education process. These teaching methods are implemented at all levels in schools:

> The best way to implement entrepreneurship education is to integrate the theme into your own everyday teaching. Trading and marketing games [. . .] etc. (Teacher, elementary level of comprehensive school)

> Learning by doing and participating. Team learning and project learning as methods of entrepreneurship education. (Teacher 21, upper secondary school)

In spite of the two experiences described above, the teachers' responses indicate that teaching methods of entrepreneurship education are more often connected to some course, club, or project than to the teacher's own everyday teaching. Whereas 24 teachers mentioned that entrepreneurship education was implemented in the form of separate courses, studies, or projects, nine teachers mentioned that entrepreneurship education is implemented in everyday teaching.

> I have twice been an instructor teacher for a class in this school and I have applied entrepreneurial action with them. During the three years with me the pupils learn and are also encouraged to act and take charge of their own matters themselves. (Teacher 26, upper level of comprehensive school)

> The everyday school day educates and guides the pupils to take responsibility, to follow the rules, to accomplish their goals [. . .]. This way entrepreneurship is a built-in aspect of the rules and the teaching in the school. (Teacher 27, comprehensive school)

The responses show that teachers implemented entrepreneurship education largely in the form of projects. There were variations between the projects, although all projects were implemented in a limited timeframe. Teachers rarely incorporated projects into their own subject and everyday teaching. Projects were often linked to a separate course or club or to school functions, such as Finnish Independence Day or Christmas festivities, or to special theme days such as the annual Entrepreneurship Day (5 September).

> The 9th graders of our school got in touch with entrepreneurship last May on a separate theme day. The timing was appropriate as it was the last school week and it was hard to motivate the pupils to do normal school work. (Teacher 25, upper level of comprehensive school and upper secondary education)

The implementation mostly focused on pupils/students, although entrepreneurship education strongly involved pupil/student collaboration. Parents were also included in the process.

> The parents of the second graders come to visit the class and present their own professions. There have always been some entrepreneurs as well. (Teacher 13, elementary level of comprehensive school)

However, the teachers did not seem to collaborate with each other; whether or not they did so is not mentioned in the data.

The responses show that the teachers implemented entrepreneurship education largely in the form of collaboration between the school and

businesses. There were different forms of collaboration. Often it was based on business visits. The responses show that currently collaboration is common in entrepreneurship education at all school levels, but highlighted especially in vocational secondary education.

> I try to share my own experiences of entrepreneurship when I teach. Entrepreneurs visiting and telling the facts [. . .]. (Teacher 14, basic vocational training level)

> On the course, we study (entrepreneurship) theory and students visit businesses and create their own fictitious enterprises. (Teacher 17, upper secondary school)

Internal entrepreneurship was mentioned 15 times and entrepreneurship three times. Among other things, the teachers perceived entrepreneurship as business knowledge and business collaboration.

> Since our school is an elementary level comprehensive school, entrepreneurship as an orientation towards the world of business is [. . .] highlighted much more. Christmas marketing is one way of getting acquainted with entrepreneurship. (Teacher 20, elementary level of comprehensive school)

Although the school project and collaboration between schools and businesses often combined internal entrepreneurship and external entrepreneurship, internal entrepreneurship was emphasized more. Particularly when teachers gave a good example of their entrepreneurship education practice, they strongly emphasized features like enterprising attitudes and enterprising capabilities. The terminology of internal entrepreneurship such as initiative, responsibility, and group work skills was once again highlighted.

Question 3: What kinds of results have you achieved in entrepreneurship education?

Altogether, results are mentioned approximately 77 times. Of all the respondents, four did not answer the question at all, and two responses were ambiguous. Of all respondents, only one teacher linked the results to the curriculum. The remaining teachers' responses indicated that entrepreneurship education yielded positive results.

> The ability to take initiative and use creative problem solving skills has clearly improved and the joy of action and learning has increased. (Teacher 20, elementary level of comprehensive school)

> I think there are positive effects from these actions. If the goal is viewed favorably collectively, the children can work hard with incredible enthusiasm. (Teacher 11, comprehensive school)

Eight teachers evaluated the results in relation to themselves, to other teachers, and to the school community as a whole. Among other things, entrepreneurship education reduced bullying and had a positive influence on teachers' attitudes and their personal development. In addition, the favourable results include positive course feedback and the popularity of entrepreneurship studies or courses.

> [. . .] according to the indicators for well-being in schools, our school is number one in the whole town and it is especially pleasing that the bullying indicator in our school was at zero level. [. . .] I believe that our determined work with entrepreneurship education has strongly supported reaching these results. (Teacher 20, elementary level of comprehensive school)

> To mention one great thing, now we really have a common understanding of what entrepreneurship education should be at the elementary level. (Teacher 15, elementary level of comprehensive school)

> There are many measurement criteria for the results. [. . .] [One is that] I have developed as a teacher and a person. (Teacher 24, upper secondary school)

Similarly to the aims and implementation of entrepreneurship education, the results focused on pupils'/students' knowledge, skills, attitudes or readiness. The results related to knowledge were associated with understanding entrepreneurship and business, and mostly confirmed by good grades. Numerically, there were few results related to knowledge, and only four teachers explicitly mentioned such results in their responses.

> You could of course draw the conclusion from the Starting a Company course that the one who has received a high grade has also succeeded in awaking the internal entrepreneur in him/herself, who actively seeks information and puts together pieces he/she has learned . . . (Teacher 14, basic vocational training level)

According to the respondents' answers there were considerably more results related to skills, attitudes and readiness, even though only nine teachers mentioned positive development in these areas.

> Surely after the entrepreneurship education "projects" I noticed the children "bonding" more tightly. Meaning the teamwork and, as such, it succeeds better. (Teacher 15, elementary level of comprehensive school)

> Increased self-confidence among students. Courage to take bold steps and step into the grey area. (Teacher 17, upper secondary school)

Similarly to the aims of entrepreneurship education, the most common terms used in describing the results were "taking initiative" (including

the ability to act independently, activity), "enterprise" (including the attitudes and actions with entrepreneurial characteristics), "responsibility and teamwork" (including cooperation skills). However, these terms were mentioned much less frequently than in the objectives. The teachers mentioned internal entrepreneurship or enterprise (which can be equated with the former) only once. External entrepreneurship was not mentioned at all.

As many as eight respondents mentioned that the evaluation of the results of entrepreneurship education was difficult. The difficulties mentioned by the teachers ensued from the time span of the evaluation and the difficulty to estimate the number of prospective entrepreneurs. As described by the teachers in the following two examples:

> The evaluation of the results is troublesome, for [. . .] the results may not be seen until the child approaches adolescence. (Teacher 21, elementary level of comprehensive school)

> I cannot measure the results. Usually those basic vocational training level students who have a history of entrepreneurship in their family become entrepreneurs themselves. (Teacher 26, basic vocational training level)

However, the evaluation of education is generally considered difficult, and teachers find it difficult to see the immediate results. While the aims of as many as 21 teachers were related to strengthening the students' sense of enterprise, only nine teachers were able to assess whether enterprise was actually strengthened.

Question 4: How is entrepreneurship education manifest in your local education and business strategies and curricula?

According to the responses, many teachers did not know enough about the curriculum and education strategy. Seven respondents said nothing about the curriculum, and 13 respondents did not mention the education strategy. Six respondents mentioned that they felt they knew too little about the curriculum and education strategy.

SUMMARY

As mentioned before, the questions were derived from Shulman and Shulman's (2004) model, which consisted of understanding and practice. The first question about the aims ("What kinds of aims do you have for entrepreneurship education?") is concerned with understanding. The second ("How do you put the entrepreneurship education into practice?")

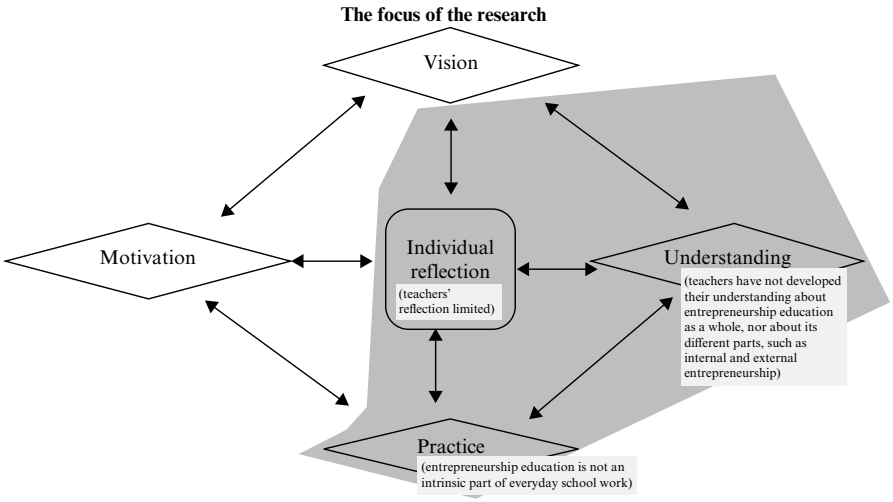
and the third ("What kind of results have you achieved in entrepreneurship education?") were about practices. The fourth question ("How is entrepreneurship education manifest in your local education and business strategies and curricula?") was about understanding. Next, we present the summary of our data in order to answer the main research questions:

1. *How do teachers understand entrepreneurship education?*
   We conclude that teachers' understanding of entrepreneurship education can be seen as rather limited. For example, teachers would describe the aims for the pupils, even though the question was about their own aims for entrepreneurship education. For teachers, internal entrepreneurship was considered to be the main goal. External entrepreneurship did not play a major role in their aims. Therefore, they had not developed their understanding of entrepreneurship education as a whole, nor of its different parts. In practice, entrepreneurship education was rather limited since it was not an intrinsic part of everyday work at schools. Instead, it was implemented through separate projects and theme days.
2. *How do teachers realize entrepreneurship education in practice?*
   In summary, teachers seem to have some, limited, knowledge of how to implement entrepreneurship education in practice. Practical entrepreneurship education seems to have few links to entrepreneurship education strategies or curricula. The responses show that teachers implement entrepreneurship education largely in the form of projects. Teachers rarely incorporate projects into their own subject and everyday teaching.
3. *How do teachers reflect entrepreneurship education*?
   In sum, we suggest that teachers' in-depth understanding of entrepreneurship education, and as a consequence the realization of it, is insufficient. Therefore, the reflection is likewise limited. Next, we present this summary of results through the model of Shulman and Shulman (2004), discuss our results further and draw conclusions.

DISCUSSION AND CONCLUSIONS

Finally we integrate our findings from the answers into the frame of teachers' reflection according to Shulman and Shulman (2004), in terms of understanding and practice (see Figure 8.2).

In short, this research claims that teachers have not developed their understanding of entrepreneurship education as a whole, nor about its different parts, such as internal and external entrepreneurship. Moreover,



Source: Based on Shulman and Shulman (2004).

Figure 8.2 Updated model of a teacher's development and reflection process

entrepreneurship education is not an intrinsic part of everyday school work. Therefore, we consider teachers' reflection to be rather limited, and there is room for improvement.

This research aims to present teachers' perceptions of entrepreneurship education and focuses on the content that teachers give to the main elements of entrepreneurship education. Therefore we stress teachers' understanding and practices in this context. The study focuses on the socially constructed reality of entrepreneurship education in Finnish basic, upper secondary and vocational secondary education. Even though this study only presents preliminary data from our project, we could perceive certain issues concerning the development of entrepreneurship education and of the teachers' role in the process. The findings include that the basic elements of entrepreneurship education, for example, its objectives and practices, are not clear or supportive enough for teachers. The curricula emerged as a central theme in both analyses.

Despite the basic guidelines in national entrepreneurship education and the national core curriculum, internal entrepreneurship and external entrepreneurship seem to be imbalanced in the goals, practices and results of teaching (see also Backström-Widjeskog, 2008). It also seems that the entrepreneurship education given by teachers is still fairly insignificant, and entrepreneurship education is not a prominent part of everyday

activities in schools as it mostly takes place on separate projects or theme days, to name a few. Also, the practices of entrepreneurship education are kept separate from the goals and results. There is no specific subject that includes entrepreneurship education, and the teachers cannot distinguish their roles in the context of entrepreneurship education. This is juxtaposed with the core of entrepreneurship and entrepreneurship education definitions, which emphasize the action and the responsible actor.

It seems that teachers' methods and content for entrepreneurship education are limited, and the most common way to implement entrepreneurship education is in the form of projects (see also Seikkula-Leino, 2007). Collaboration between schools and businesses is highlighted at every school level, and entrepreneurship education is usually implemented in the form of business collaboration, which links it to external entrepreneurship. This concurs with Backström-Widjeskog's (2008) findings. She argued that authenticity is an important component in entrepreneurship education, and a learning environment that enables activities connected to real and relevant everyday life is of great value.

The teachers' views on entrepreneurship education coincided more or less with Ristimäki's (2003) views, which include *internal entrepreneurship*, dealing with entrepreneurial and enterprising behaviour, and *external entrepreneurship*, which is about doing business – or as Hytti (2002) points out, to "understand and become an entrepreneur". Also, we could find some respondents arguing "entrepreneurship is a method of teaching", like Neck and Greene (2011).

The teachers implied that the terms and concepts of entrepreneurship education are familiar to them, but it is obvious that they have no specific theoretical basis and definitions to back up their statements. As one teacher commented: "The aim is to make the student independent, self-assured, committed, adaptable, cooperative, persistent and studious." This is mostly in line with scientific publications on entrepreneurship education (see, for example, Gibb, 2005, 2006), but it sheds little light on how the goals of entrepreneurship education are put into practice. Backström-Widjeskog (2008) argues that when teachers decide to include entrepreneurship education in schoolwork, it is fundamental that they personally have the opportunity to explain, for themselves, what their purpose is and how they plan to proceed practically. She continues that teachers need to reflect on which values and goals are their bases for either absorbing or dismissing the cross-curricular theme.

Teachers stated that cooperation between subjects is essential when aiming to steer the working community in a more entrepreneurial direction (see also Backström-Widjeskog, 2008). Teachers often described the goals of entrepreneurship education with an abundance of favourable

adjectives that could hopefully be connected to their students. Moreover, when describing the aims of entrepreneurship education, the teachers excluded themselves and described the aims set for the pupils/students. One of our findings concerns the objectives and practices: teachers seemed to have difficulties arguing their goals for entrepreneurship education; when questioned regarding the objectives, they provided their practices in reply. In the Finnish context, we may consider this is a rather exceptional situation since Finnish teachers are, overall, fairly familiar with the objectives of education. For example, in the last curricula reforms, comprehensive school and vocational education teachers took part in compiling new curricula and their goals (see for example Seikkula-Leino, 2010).

Even if there were no fundamental errors in the answers of the teachers, and they clearly described the situation as well as they could, one important notion became evident: there was no clear and unquestionably visible link between the objectives and the results of entrepreneurship education. Instead, there were many notions on how difficult the teachers felt it was to evaluate or measure the success of entrepreneurship education, which undermines the possibilities for any discussion about achieving the goals of entrepreneurship education. This means the crucial iterative element for learning about and improving education is missing. Individual teachers may have their own methods and ways for adjusting their teaching in accordance with the results, but nothing conceptually solid or discursively serviceable could be found in the comments. Therefore we concur with Honig (2004), who argues that the need for careful pedagogical analysis and design is both immediate and critical. Entrepreneurship education requires its own specific body of empirical literature. Rather than accepting standardized activities and routines at face value, we should begin examining our learning interventions in order to identify those activities most suitable for the present and future entrepreneurs we hope to assist.

As illustrated in the introduction, entrepreneurship education is a large and complex web with many parties involved. Teachers are one important element in the system, as they carry out the actual teaching, are in contact with the students and the environment, and accumulate a great deal of knowledge during the education. Teachers' own understanding regarding the objectives, methods and results, which make way for reflection, play a crucial role in the success of entrepreneurship education. Therefore we suggest that greater emphasis be placed on how teachers learn. Traditionally, the literature on entrepreneurship education deals only with students relying on general learning theories (such as Dewey, Kolb, and so on). What is the learning process of entrepreneurship and entrepreneurship education and how does it differ from other learning?

How do teachers learn to implement entrepreneurship education? This could be worth studying in order to enhance the pedagogy of entrepreneurship education.

Shulman and Shulman (2004) believe that reflection is the key to a teacher's learning and development. According to our results, teachers have no opportunity to meaningfully develop their reflection because they lack understanding of entrepreneurship education and practice. This could be explained by the fact that the goals of the education are unclear to the teachers (see also Seikkula-Leino, 2007). According to Peltonen (2008), it is essential to enable teachers to become more entrepreneurial. In addition, both team-teaching and utilizing the real-life context in learning and teaching would have positive results in entrepreneurship education.

In the introduction to this chapter, we emphasize that there is a long way to go from the international and national policy-making level to actual entrepreneurship. As mentioned before, it is a journey involving two different processes: first, from goal-setting in the education system, starting from the EU strategies and national curricula, to the altered daily teaching work of all teachers; secondly, from teaching to the altered behaviour of the students in the years to come. Therefore, if we wish to realize these international and national objectives, we ought to focus more on the learning of the teachers. We argue that since learner-centred education has been in focus in recent decades, the teacher's role in education may have been neglected and needs to be "rediscovered".

This, in our opinion, implies that there should be a more straightforward and accessible code system to describe goals and results, and most of all, to create a platform to understand the processes of entrepreneurship education. Our findings can be taken as a sign of uncertainty, of teachers not knowing what to do, or how to do it right. If there are no common definitions, no idea about the content and processes of education, and no frames for evaluating results, there will be no progress in the guiding role of entrepreneurship education.

Studying this phenomenon is warranted, as entrepreneurship education is the main focus in the development of social and economic well-being. This research takes an approach to teachers' learning and their reflection in the context of entrepreneurship education which has so far been an unexplored field. We argue that since learner-centred education has been in focus in the past, teachers could strengthen their role as learners in order to meaningfully develop education.

In order to approach the issue, we examined the basic concepts and introduced the data gathered during the project "Measurement Tool for Entrepreneurship Education". We used that data as an "acid test" to illustrate in a straightforward way the challenges in entrepreneurship

education. A group of teachers was asked to describe their aims for, and results from, entrepreneurship education. The teachers were familiar with entrepreneurship education, but, as the results indicate, there is a significant lack of cohesion in the definitions of basic concepts and, most of all, between the objectives and the results. We have observed that there is no clear and unquestionable link between the declared objectives and results achieved. Furthermore, we suggest that as entrepreneurship education is considered important at many levels in societies, and official guidelines are set for it, it is natural that the results achieved are taken into consideration in the targeting and shaping of future goals and actions. This is important both for policy makers and for individual teachers. However, our results seem to indicate that the missing clear conceptual and contextual links between objectives and results may affect the iterative processes of improving the education. Moreover, teachers do not seem to be able to generate any meaningful reflections in this context. How could we enhance this process in order to develop teachers' learning regarding entrepreneurship education?

Further research could be conducted on interventions which, in addition to focusing on teachers' understanding and practices, also emphasize their visions and motivation in entrepreneurship education. This would contribute to achieving an even more holistic view of teachers' learning regarding entrepreneurship education. In future, learning environments for teachers to develop their skills in entrepreneurship education should also be studied. The results of our study show that learning environments in which teachers learned entrepreneurship education were not supportive enough for reflection, and thus, did not contribute to developing skills in actual learning.

In summary, based on our findings, we would like to stress the need for (1) the development of *teachers' learning in terms of their reflection* and development of practical tools for self-reflection, and (2) *connecting the objectives and results* in the context of entrepreneurship education. Therefore, we suggest that there is a definite need for more systematic data collection, intervention development and discussion around issues concerning teacher training and development in entrepreneurship education.

NOTE

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Teachers implementing entrepreneurship education: classroom practices

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Abstract

Purpose – This study aims to highlight the entrepreneurship education practices teachers use in their work. Another target is to analyze how these practices differ based on a number of background factors.

Design/methodology/approach – This article presents a quantitative analysis of 521 teachers and other entrepreneurship education actors. The paper first examines the overall picture of entrepreneurship education practices. Then, after a factor analysis, the paper builds new sum measures of entrepreneurship education practices. Finally, the paper studies the teachers' background information to further analyze the entrepreneurship education practices.

Findings – The findings provide information on which methods appear to be used the most frequently in basic and upper secondary education, and how these practices vary between different school levels. The results also indicate that the perception teachers have of their own entrepreneurship education skills is closely connected to the implementation of entrepreneurship education. Moreover, the findings present the connection between teacher training and the implementation of entrepreneurship education.

Originality/value – Teachers' entrepreneurship education practices and related teaching and working methods are important in many respects. As research has primarily focused on higher education where the transferability of the results to basic and upper secondary education seems vague, this paper concentrates on the teachers' role and especially their practices in lower education. The authors consider that their article has a special value in exploring and opening dialogue in this area.

Keywords Entrepreneurship education, Enterprise education, Teachers,
Basic and upper secondary education, Teaching practices, Entrepreneurialism, Secondary education

Paper type Research paper

1. Introduction

The promotion and development of entrepreneurship and entrepreneurship education are themes of current interest throughout Europe (cf. European Commission, 2010). The fulfilment of both European Union and national goals requires functioning implementation models and practices for entrepreneurship education, especially in basic and upper secondary education. Obviously, teachers play a key role in the realisation of goals for entrepreneurship education (Birdthistle *et al.*, 2007; Deakins *et al.*, 2005; Seikkula-Leino *et al.*, 2010). Since there are no clear-cut pedagogical guidelines for entrepreneurship education, teachers are largely responsible for the integration of entrepreneurship education into their teaching and finding the best and most useful practices. Many researchers (Fiet, 2000a, b; Seikkula-Leino, 2008; Solomon, 2007) have found that teachers face difficulties in finding contents and methods to

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implement entrepreneurship education and thus in responding to the national and international strategies.

Entrepreneurship education and learners' activating methods have been studied quite extensively (e.g. Athayde, 2009; Fayolle, 2008; Heinonen and Poikkijoki, 2006; Jones, 2007; Jones and Iredale, 2010; Matlay, 2005, 2006; Neck and Greene, 2011). Entrepreneurship education research has significantly paid attention to learning results, and consequently, the teaching perspective (cf. Birdthistle *et al.*, 2007; Fayolle, 2008; Jones and Iredale, 2010) has largely been ignored. Research has primarily focused on higher education, and the transferability of the results to basic and upper secondary education seems vague. A large research gap can be identified relating to the teacher's perspective on entrepreneurship education and especially to the teacher's working methods in entrepreneurship education at the lower school levels (Birdthistle *et al.*, 2007; Deakins *et al.*, 2005; Draycott *et al.*, 2011).

The objective of this paper is to explore the entrepreneurship education practices teachers use in their work. We focus on teachers working in basic and upper secondary education, and the target group of the study consists of 521 teachers and other entrepreneurship education actors.

Research on teachers' entrepreneurship education practices and related teaching and working methods is important in many respects. First, the information available on teachers' entrepreneurship education practices and the teaching and working methods involved is insufficient. Second, there is a lack of tools to support the development of teachers as entrepreneurship educators. Third, not enough information is available on the connection between efficient teaching methods and results obtained through entrepreneurship education. Establishing this connection is essential to ensure resources for the future development of entrepreneurship education.

2. Entrepreneurship education in basic and upper secondary education

Research on entrepreneurship education is based mainly on a conceptual understanding of entrepreneurship and learning. According to Gibb (2005), entrepreneurship education is a question of learning for entrepreneurship, about entrepreneurship and through entrepreneurship. Entrepreneurship education enables career planning, provides an entrepreneurial way of examining and executing matters and can be used to characterise teaching and learning (Cooper *et al.*, 2004; Fiet, 2000a, b; Pittaway and Cope, 2007; Rae and Carswell, 2001; Steyaert and Katz, 2004).

Many different teaching and working methods have been connected to entrepreneurship education (Fayolle, 2008; Fiet, 2000a, b; Jones and Iredale, 2010; Neck and Greene, 2011; Seikkula-Leino, 2008; Solomon, 2007). The concepts of entrepreneurial pedagogy and entrepreneurial learning have gained ground (Jones and Iredale, 2010; Pittaway and Cope, 2007; Rae and Carswell, 2001). However, also criticism on the matter has been voiced (e.g. Gibb, 2011; Holmgren and From, 2005).

It seems that teachers are provided with relatively few tools to conduct their entrepreneurship education. As entrepreneurship education is not an established part of teachers' undergraduate and continuing education, it is no wonder that teachers consider it challenging (Seikkula-Leino *et al.*, 2010). Jones and Iredale (2010) claim that at least two changes are required for entrepreneurship education objectives to be met: curricula must be changed and teaching and learning methods developed. In the following, we briefly review the current perspective on the teaching methods of entrepreneurship education which can, in our opinion, be utilised in basic and upper secondary education.

2.1 Teaching and working methods in entrepreneurship education

Already Schumpeter (1934) and Kirzner (1973) recognised that intuitive activity and the identification of opportunities are connected to entrepreneurial learning. In addition, the experiential learning approach further developed by Kolb (1984) is strongly present in the practices of entrepreneurial learning (Cooper *et al.*, 2004; Heinonen and Poikkijoki, 2006; Pittaway and Cope, 2007; Rae and Carswell, 2001). Rae and Carswell (2001), among others, define entrepreneurial learning as an individual's ability to apply his or her skills to identify and develop surrounding opportunities. According to them, learning is a dynamic process which enables the activation of entrepreneurial behaviour. The purpose of the working methods chosen is to develop learners' knowledge and skills (e.g. Fiet, 2000b; Neck and Greene, 2011). The working methods should promote students' active participation, interaction and social skills and problem-solving abilities (see e.g. Cooper *et al.*, 2004; Jones and Iredale, 2010; Joyce and Weil, 1980).

Entrepreneurship education mostly takes very traditional routes. Solomon (2007) notes that educational institutions are moving towards more of a knowledge-sharing role where class discussions and guest speakers are becoming more popular. Gartner (2008) uses stories of entrepreneurship and suggests that more attention should be paid to the stories that entrepreneurs tell about themselves. Neck and Greene (2011) point out that a classroom discussion, as engaging as it may be, is not the same as a case study discussion, and it does not necessarily lead to the accomplishment of learning objectives.

According to Gibb (2005, 2011), the pedagogy applied to entrepreneurship education should be built on the active role of learners in the learning process, and thus, on non-traditional teaching methods. Information is created collaboratively, and failure is accepted as a part of the learning process. Methods for such purposes include, for example, cooperative learning, team learning, project work, learning by doing, learning journals, drama pedagogy, practice enterprises, workplace guidance and enterprise visits.

Shepherd (2004) has identified a wide range of teaching methods, such as role-play, learning diaries, guest speakers, case studies and simulations. All these methods were applied in the classroom. Solomon (2007) points out that it is extremely rare that entrepreneurship education takes place outside a classroom. He encourages exploring teaching pedagogies employed both inside and outside of the classroom setting.

Many researchers have reported positive learning outcomes and teaching experiences in projects carried out in close cooperation with businesses (Cooper *et al.*, 2004; Frank, 2007; Hynes and Richardson, 2007; Pittaway and Cope, 2007). These assignments are connected to real life and are prepared in cooperation with or on the commission of business enterprises. Similarly, activities outside of the classroom (Fayolle, 2008) are stated to have widened learners' perceptions of their possibilities to be active citizens and to operate, and also clarified the role of different actors in society.

Learning games that simulate the real world seem to be gaining ground in entrepreneurship education (Jones, 2007; Neck and Greene, 2011). Jones (2007) points out that learning games provide access to the entrepreneur's way of life. Neck and Greene (2011) concur and suggest that serious games and simulations allow students to play in virtual worlds that mirror reality playing, observing, creating and thinking about entrepreneurship.

Entrepreneurship education could also be guided by socially oriented goals. Blenker *et al.* (2011) suggest that the social entrepreneurship perspective could be included in

teaching. The initiatives could be based on, e.g., selling a product and using the proceeds to support socially disadvantaged groups.

In order to apply the working methods above and enable the successful implementation of entrepreneurship education in schools, researchers have highlighted the need for training: teachers and principals must obtain the required information already during their undergraduate education, and continuing education should offer up-to-date information on the possibilities and implementation of entrepreneurship education (see e.g. Birdthistle *et al.*, 2007; Deakins *et al.*, 2005; Hannon, 2006; Seikkula-Leino *et al.*, 2010).

3. Methodology

3.1 Context of the study

The empirical data were collected in Finland. In Finnish basic and upper secondary education curricula, entrepreneurship education is extensively present (cf. Ministry of Education, 2009). Entrepreneurship education is included in the curricula as a cross-curricular theme aiming to harmonise education and teaching, and its objectives and contents relate to all subjects taught. The goals of the theme are to help students understand the society at large from the perspective of different actors, to develop the skills required in active citizenship and to lay a foundation for entrepreneurial practices.

The research material was collected in an ESF-funded development project aiming to build a measurement tool for entrepreneurship education. The measurement tool operationalises the strategies and programmes of entrepreneurship education at a concrete level for teachers, and thus makes entrepreneurship education operations possible to see, measure and develop. The important aspect is what the teacher does or does not do and how the teacher, with the help of the measurement tool, perceives that his or her own activity merges with the objectives of entrepreneurship education.

The measurement tool was developed in cooperation with a group of teachers in basic, general upper secondary and vocational upper secondary education. The teachers tested the tool, reported about its usefulness, understandability and transferability, and their role was particularly important when testing the reliability of the tool. In October 2011, the measurement tool was launched for public use on the internet.

3.2 Collection and analysis of the data

The data of the research consists of 521 responses (see Table I). The respondents represent 18 provinces (of a total of 19), and 357 (68.5 per cent) of them are women and 164 (31.5 per cent) men. The average age of the respondents is 45.8 years. The respondents correspond well with the overall profile of Finnish teachers in primary and secondary education.

The measurement tool for entrepreneurship education is an online survey. The form consists of approximately 140 questions, 23 of which are studied in this research (see Table II). These 23 questions provide an idea of how teachers implement entrepreneurship education. For each statement, the respondents marked the numerical value that best described their entrepreneurship education activity in the preceding six months.

4. Results

In our analysis, we first examine the overall picture of entrepreneurship education practices. Then, we conduct a factor analysis and build new sum measures of

All	521
Average age	45.8 years
Gender	
Men	164 (31.48%)
Women	357 (68.52%)
Teaching experience	
0-5 years	104
6-10 years	85
11-20 years	194
21-30 years	104
Over 31 years	34
Organisational background	
Teachers	483
Basic education	253
General upper secondary education	95
Vocational upper secondary education	135
Municipal decision makers, other experts	38

Table I.
Description of the respondents

entrepreneurship education practices. Finally, we study the teachers' background information to further analyse the entrepreneurship education practices.

The questionnaire contained questions on different ways to carry out entrepreneurship education in practice (see Table II).

The results of Table II show that a wide-ranging number of methods are applied to entrepreneurship education. The most frequently utilised methods are discussions

My assessment of the number of times I have, during the past six months	Mean	SD
Discussed current financial news with learners	8.29	9.82
Introduced local businesses in my teaching	8.05	9.43
Discussed the economic effects of different actions with learners	8.02	9.50
Discussed entrepreneurship related to the subject with learners	7.23	9.23
Used other teaching material related to entrepreneurship	6.32	8.43
Guided learners to manage their own finances	6.31	8.38
Had students prepare entrepreneurship-related calculation exercises, presentations […]	5.85	8.15
Discussed entrepreneurship related to hobbies […]	5.78	8.27
Guided learners to consult different experts	5.64	7.62
Used stories about entrepreneurs as teaching material	4.44	7.40
Enabled a project created by the learners (presentation, event, newspaper, video […])	3.71	6.18
Had learners complete a business idea assignment	2.95	6.94
Arranged a field trip to a business enterprise	2.78	5.58
Invited entrepreneurs or representatives of the business world to take part in instruction	2.68	5.27
Enabled an enterprise or working world driven project by learners	2.49	5.89
Organised a theme day or study module related to entrepreneurship	2.22	5.47
Enabled learners to create marketing and other material for a business	2.21	5.72
Enabled learners to organise a jumble sale, hold a sales stand, etc.	2.20	5.05
Enabled learners to create a practice enterprise or a business of their own	2.19	5.96
Invited an entrepreneur to present his/her work in the school	1.69	4.41
Organised a voluntary work project with students	1.47	3.76
Had students play games related to entrepreneurship	1.27	3.35
Arranged or taken part in an entrepreneurship-related competition	1.23	3.56

Note: $n = 521$

Table II.
Entrepreneurship education practices of respondents

about current financial news, about the effects of different financial measures and about entrepreneurship related to the subject taught. In fact, it seems that discussions are an easy way for teachers to include entrepreneurship into their education. The average frequencies also indicate that discussions are carried out regularly – individual teachers had used this method more than seven times in the preceding six-month period. Also the fourth theme related to the discussions, "discussed entrepreneurship related to hobbies", seems to be rather frequent.

Stories about entrepreneurs and other entrepreneurship-related teaching material seem to be applied rather frequently. They were, on an average, used to aid teaching 4.44 times during the six-month period. Also different entrepreneurship-related calculations, presentations, texts, interviews, etc., seem to have established their position in the respondents' range of entrepreneurship education measures. In contrast, learning games involving entrepreneurship do not appear to be very common. On an average, games were played 1.27 times in the preceding six months. Very similar figures describe the organisation of entrepreneurship-related contests or participation in them.

Visits to business enterprises seem surprisingly rare – only 2.78 times on an average during the six-month period examined. Correspondingly, the respondents invited entrepreneurs to visit the school even more rarely. It is, perhaps, somewhat surprising that although arranging visits and especially inviting entrepreneurs to the school do not require great efforts, they are used rather seldom. It is particularly interesting that visits outside of the school are more common than visitors invited to the school. This may partly be explained by the teachers' desire to expand the learning environment beyond the school.

Next, we conduct a factor analysis of the responses on entrepreneurship education practices (see Table III).

The principal component analysis with varimax rotation produced four factors which together explain a reasonable 67 per cent of the overall variation. The first factor had seven variables, and the strongest loading was on the statement "enabled a project created by the learners" and the second strongest on "enabled learners to organise a jumble sale, hold a sales stand, etc.". These statements refer to an operating model involving one-time projects and campaigns. The statement with the third strongest loading, "organised a theme day or study module related to entrepreneurship", is also project-like, and the factor was labelled *Projects*.

Also the second factor included seven variables. The statement with the most strongly positive loading was "used stories about entrepreneurs as teaching material" and the second strongest was "had students prepare entrepreneurship-related calculation exercises, presentations etc.". In this factor, the utilisation of different entrepreneurship-related materials appears to be characteristic. Consequently, the factor was named *Materials*. The variables with the third and fourth strongest loadings were related to the presence of enterprises and entrepreneurs in education.

The third factor contained five variables, including one double loading. The variable "discussed current financial news with learners" had the strongest positive loading, and "guided learners to manage their own finances" had the second strongest loading. Consequently, the factor is given the name *Economy*, which is supported also by the third and fourth strongest variables.

The fourth factor included three variables. The strongest loading was on the statement "had students play games related to entrepreneurship". The playful side of entrepreneurship is reflected also in the second strongest positive loading on "arranged

Table III.
Entrepreneurship education practices – factor analysis

	1	2	3	4	com.
Enabled a project created by the learners (presentation, event […])	0.772				0.691
Enabled learners to organise a jumble sale, hold a sales stand, etc.	0.745				0.689
Organised a theme day or study module related to entrepreneurship	0.738				0.637
Enabled an enterprise or working world driven project by learners	0.720				0.667
Enabled learners to create a practice enterprise […] of their own	0.705				0.678
Organised a voluntary work project with students	0.675				0.573
Enabled learners to create marketing and […] material for a business	0.645				0.616
Used stories about entrepreneurs as teaching material		0.743			0.707
Had students prepare e-related calculation exercises, presentations […]		0.672			0.575
Introduced local businesses […]		0.659			0.657
Invited entrepreneurs […] to take part in instruction		0.653			0.710
Used other teaching material related to entrepreneurship		0.639			0.688
Arranged a field trip to a business enterprise		0.604			0.624
Discussed entrepreneurship related to the subject with learners		0.570	0.521		0.714
Discussed current financial news […]			0.842		0.799
Guided learners to manage their own finances			0.783		0.711
Discussed the economic effects of different actions […]			0.779		0.742
Discussed entrepreneurship related to hobbies […]			0.525		0.549
Had students play games related to entrepreneurship				0.813	0.764
Arranged or taken part in an entrepreneurship-related contest				0.697	0.659
Invited an entrepreneur to present his/her work in the school				0.543	0.688
Eigenvalue	9.62	2.21	1.24	1.05	
Percentage	45.80	10.51	5.91	5.02	
Cumulative percentage	45.80	56.31	62.22	67.23	
KMO 0.925					

or took part in an entrepreneurship-related competition". Finally, the third statement, "invited an entrepreneur to present his/her work in the school", introduces the true entrepreneurship perspective to the factor. The fourth factor was labelled *Entrepreneurship games*.

Four new sum variables were created from these factors, and their internal consistency was confirmed with Cronbach's α (see Table IV). In the following, the behaviour of each sum variable was examined against the teachers' school level. The basic group (Ba) includes respondents who are teachers or principals in basic education, grades 1-9. The general upper secondary group (Ge) includes teachers and principals in general upper secondary schools, and teachers and principals who teach in both upper secondary school and classes 7-9 in basic education. The vocational upper secondary group (Vo) consisted of teachers and principals in vocational upper secondary schools. The group of 38 municipal decision makers and other experts was excluded from the material, leaving 483 teacher respondents in the analysis.

Table IV shows that teachers implement different entrepreneurship education practices in very different ways and at different frequencies. The school level has a great impact on how entrepreneurship education is carried out. This impact can be seen throughout the sum variables. In vocational upper secondary education, teachers are very active compared to their colleagues in both basic and general upper secondary education. Teachers in vocational upper secondary education had economy-related discussions over ten times during the six-month period examined, whereas the frequency for teachers at the basic level was only half of that. In vocational upper secondary schools, entrepreneurship education materials are well utilised – nearly three times as actively as in basic or general upper secondary education. Project-based entrepreneurship education is also more common in vocational upper secondary schools, as are entrepreneurship games. These differences are all statistically significant. In contrast, teachers in basic and general upper secondary education are very similar in the statistical sense, although presumably the lower activity in these groups is due to different reasons.

It is likely that a teacher's expertise has an impact on how entrepreneurship education is implemented in schools. To study this claim further, we analyse the connection between professional training on entrepreneurship education and teachers' entrepreneurship education practices (see Table V). Teachers are divided into three groups based on how much training they have received in entrepreneurship education: no training, some training and much training. According to the material, 196 teachers have not had any training in entrepreneurship education. A majority of the respondents, that is, 216 teachers, stated that they have attended some training sessions, and those with a great deal of training were the minority with 71 teachers.

	Mean values								
	All	Basic	General	Vocational	Duncan's *post hoc* test				
	$n = 483$	$n = 253$	$n = 95$	$n = 135$	Ba-Ge	Ba-Vo	Ge-Vo	*F*-value	Significance
Economy ($\alpha = 0.87$)	7.01	5.51	5.82	10.68	ns	**	**	25.10	0.000
Material ($\alpha = 0.89$)	5.28	3.71	3.32	9.61	ns	**	**	59.72	0.000
Project ($\alpha = 0.89$)	2.25	1.67	1.17	4.08	ns	**	**	19.89	0.000
Games ($\alpha = 0.72$)	1.27	1.08	0.72	2.01	ns	**	**	6.90	0.000

Note: $^{**}p < 0.05$

Table IV.
School level and entrepreneurship education practices

The results show that participation in training and an active approach to entrepreneurship education are clearly connected. Those who had not taken part in training had economically oriented discussions with learners less than five times in the semester examined, whereas those with some training conducted economic discussions nearly eight times and those with even more training nearly 11 times in the semester. These discrepancies are statistically significant. A similar observation can be made concerning all methods – those who took part in training were three to four times more advanced in their use of entrepreneurship education methods. These results unequivocally support the notion that teachers' entrepreneurship education skills and possibilities can be promoted very efficiently with targeted training.

Finally, we examine the relation between teachers' entrepreneurship education practices and the teachers' own conception of their skills in entrepreneurship education. The skill levels were: no skills, poor, moderate, good and excellent. The results are very clear (see Table VI).

	Mean values								
	All $n=483$	None $n=196$	Some $n=216$	Much $n=71$	no-so	no-mu	so-mu	F-value	Significance
Economy ($\alpha=0.87$)	7.01	4.69	7.88	10.80	**	**	**	21.94	0.000
Material ($\alpha=0.89$)	5.28	3.04	5.97	9.37	**	**	**	35.47	0.000
Project ($\alpha=0.89$)	2.25	1.10	2.37	5.06	**	**	**	26.06	0.000
Games ($\alpha=0.72$)	1.27	0.043	1.49	2.91	**	**	**	22.27	0.000

Notes: Duncan *post hoc* test. $^{**}p<0.05$

Table V.
Participation in training and impact on practices

	n	Project	Materials	Economy	Games
All	483	2.25	5.28	7.01	1.27
1 – No skills	72	0.79	2.13	3.89	0.17
2 – Poor	183	1.29	3.73	5.22	0.61
3 – Moderate	134	2.95	6.56	8.07	1.72
4 – Good	71	3.70	8.14	10.91	2.49
5 – Excellent	23	5.79	11.27	12.93	3.51
1-2 (=no skills-poor)		ns	ns	ns	ns
1-3		**	**	**	**
1-4		**	**	**	**
1-5		**	**	**	**
2-3		**	**	**	ns
2-4		**	**	**	**
2-5		**	**	**	**
3-4		ns	ns	**	ns
3-5		**	**	**	**
4-5		**	**	ns	**
F-value		13.00	22.33	17.02	13.86
Significance		0.000	0.000	0.000	0.000

Notes: $n=483$. Duncan *post hoc* test. $^{**}p<0.05$

Table VI.
Teacher's own assessment of entrepreneurship education skills and relation to practice

Table VI demonstrates that the teachers' skills are directly correlated with how actively they utilise different techniques in entrepreneurship education. Teachers who state that they have no entrepreneurship education skills used lightweight methods such as discussions and ready-made materials, whereas the application of more demanding project work and entrepreneurship games was nearly non-existent. Also those who evaluate themselves as being at an excellent level seem to base their entrepreneurship education on economy-related discussions and materials on entrepreneurship. Nevertheless, it is clear that these two teacher groups utilise the methods in question at frequencies that differ significantly from the rest of the respondents. Furthermore, it is noteworthy that teachers' ability to apply more demanding methods, such as projects, has clearly improved. The discrepancies between teachers at different skill levels are, almost without exception, statistically significant.

5. Discussion

Relatively little research results have been available on the entrepreneurship education practices of teachers in basic and upper secondary education. The objective of this paper was to highlight the entrepreneurship education practices teachers use in their work. We also aimed to analyse how these practices differ based on a number of background factors.

It seems that entrepreneurship education is applied quite extensively and in many different ways. The variety of methods can be considered a positive feature (cf. Fayolle, 2008; Fiet, 2000a; Heinonen and Poikkijoki, 2006). Traditional practices such as classroom discussions that require less effort and different ready-made materials have been welcomed by teachers. Understandably, extensive projects and more demanding methods that require greater efforts and background work from the teacher are carried out less frequently.

Learning and teaching aim at the development of entrepreneurial characteristics, the understanding of entrepreneurship and knowledge and skills required in entrepreneurship. The results demonstrate that even though all school levels discuss matters involving the world of economy and business and the learners' knowledge in these areas is likely to grow, learners more rarely have the opportunity to practice the concrete skills they would need as entrepreneurs. It appears that discussion about entrepreneurship and the building of entrepreneurial skills are more emphasised, whereas learning through entrepreneurship receives less attention. At the vocational upper secondary level, games and projects dealing with external entrepreneurship and supporting materials for entrepreneurship are applied frequently.

It also seems that the school level of the teacher has a considerable impact on the implementation of entrepreneurship education: at the vocational upper secondary level, a wide range of approaches are taken to entrepreneurship education. The question is, how could this be achieved in basic education and general upper secondary education?

Our research results indicate that the perception teachers have of their own entrepreneurship education skills is closely connected to the implementation of entrepreneurship education. In practice, a teacher's personal experience of self-efficacy has significant implications concerning teacher education: it should support the teacher's perception of being capable of carrying out entrepreneurship education and of knowing the field relatively well. Training also appears to result in greater frequency and wider variety in the implementation of entrepreneurship education. Obviously, providing teachers with training related to the topic area is the best possible way to promote the implementation of entrepreneurship education in schools

(e.g. Birdthistle *et al.*, 2007; Deakins *et al.*, 2005; Hannon, 2006; Seikkula-Leino *et al.*, 2010). Therefore, it can be presumed that training could also result in the increased use of less frequently applied, more demanding methods.

Our analysis suggests that the respondents have access to a wide range of teaching methods that activate learners and can quite easily be applied in the classroom. Nevertheless, a number of studies advocate the expansion of learning environments and networks (Cooper *et al.*, 2004; Frank, 2007; Hynes and Richardson, 2007; Pittaway and Cope, 2007). Entrepreneurship education is considered to include different projects carried out by learners, especially when the teacher has been a facilitator rather than a controlling instructor (Draycott *et al.*, 2011; Fiet, 2000b; Gibb, 2011; Solomon, 2007). Obviously, from this perspective, entrepreneurship education practices in the respondent group are still developing. It seems that entrepreneurship education can be categorised into practices that can be integrated into everyday teaching and the classroom, and practices that require networking with actors outside the school.

Our study lends support to the findings by Jones and Matlay (2011). In their study, Jones and Matlay (2011) suggested a conceptual framework for entrepreneurship education which strongly emphasises the dialogic relations between different components of entrepreneurship education, such as the student, the teacher, the institution and the community. Based on our findings, it seems evident that entrepreneurship education is characteristically a contextual phenomenon and in this perspective, the educator's relevant context and background are central factors for understanding their personal background and the teaching infrastructure available for entrepreneurship education.

Our research presents many possibilities to develop entrepreneurship education: first, which methods appear to be used the most frequently in basic and upper secondary education, and second, in which direction teacher education should be developed. Third, the results can be utilised to decide the allocation of resources for entrepreneurship education, and fourth, the material introduces possibilities for the measurement of entrepreneurship education.

This study faces some limitations: the results indicate to what extent the different entrepreneurship education practices have been applied, but the results do not indicate the actual learning that has taken place. Furthermore, the results do not specify whether classes or teaching groups collaborate and what types of networks are available. It would also be interesting to know more about how interfaces between the school and the world beyond it are utilised. Moreover, our material does not consider the possible division of work within the school in terms of entrepreneurship education.

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Entrepreneurship Education in Schools – Empirical Evidence on the Teacher's Role

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Abstract

Different approaches and methodologies for entrepreneurship education have been introduced for schools. However, a better theoretical and empirical understanding of the antecedents of entrepreneurship education is needed. The present study analyzes what entrepreneurship education practices are used in schools and what role the school and the teacher are playing in determining the entrepreneurship education practices. The data covers school levels from basic to upper secondary education. The findings indicate that the training teachers have received in entrepreneurship seems to be the main factor determining the observable entrepreneurship education provided by the teachers. Further studies on the antecedents of entrepreneurship education are encouraged.

Keywords: entrepreneurship education, enterprise education, teacher characteristics, teaching practices, basic and upper secondary education

Introduction

The promotion and development of entrepreneurship and entrepreneurship education are themes of current interest throughout Europe and they have been defined as a Europe-wide development target. In the policy of the European Commission (2012), entrepreneurship has been considered as a central factor in activating people to build the new basis for European competitiveness, growth and innovation. Entrepreneurship has been stated as a key competence of European citizens and a special attention should be focused on the development of entrepreneurial skills. The fulfillment of both European Union and national goals requires functioning implementation models and practices for entrepreneurship education, especially in basic and upper secondary education. (European Commission, 2012; 2013). This study builds on the ongoing process of introducing entrepreneurship education in schools. We analyze the role of the teacher in the absorption of the new pedagogical perspective and set of educational practices especially relevant for entrepreneurship education.

The theoretical development of entrepreneurship education has largely been looking for answers to the question of whether entrepreneurship could be taught and learned. (For

example Anderson & Jack, 2008; Fayolle, 2008; Fiet, 2001a, 2001b; Haase & Lautenschläger, 2011; Henry, Hill & Leitch, 2005a, 2005b; Solomon, 2007.) The question stems from the need to understand the essential issues that should be promoted in terms of entrepreneurship education, which issues are associated with or decisive in entrepreneurship education and which are not.

So far, most of the research analyzing the reality of teaching entrepreneurship focuses on the contents and methodology of entrepreneurship education. The research builds on case studies, process studies and analyses of entrepreneurship programs (Gibb, 2011; Gorman, Hanlon & King, 1997; Hytti & O'Gorman, 2004; Matlay, 2008; Vesper & Gartner, 1997). Seemingly little research has been undertaken on the effect of the teacher and his or her background in the teaching of entrepreneurship education. Yet, the role of the teacher as the operator, central decision-maker and facilitator is likely to be important. The early evidence suggests that the teacher's background and context would be related to the level and contents of entrepreneurship education (e.g. Bennett, 2006; Birdhistle, Hynes, & Fleming, 2007; Draycott & Rae, 2011; Löbler, 2006). However, a wider understanding of the relationship between the teacher and the variety of methods, approaches and the continuity and frequency of the teaching seems yet to be reached.

In this article, we take a closer look at the teachers and study the elements that seem to play a role in targeting the entrepreneurship education in schools. The research question in this study is: What are the methods and practices that teachers apply in their entrepreneurship education and how are the teacher's background characteristics related to the entrepreneurship education practices in schools? We provide empirical data into the discussion on entrepreneurship education, as there are still a limited number of empirical studies available on the topic area (Dickson, Solomon, & Weaver, 2008; Matlay, 2005, 2006;

Ruskovaara & Pihkala, 2013) and very few studies concerning the basic and general upper secondary levels.

With this analysis, we contribute to the literature of entrepreneurship education in three ways: First, we provide quantitative, comparable evidence on the use of a variety of entrepreneurship education methods in schools. Second, by focusing on the analysis of teachers, we provide understanding on the role of different background characteristics on the teaching and thus we create new possibilities to develop entrepreneurship education further. Finally, we present teaching and working methods which can, according to our data, be utilized also at lower educational levels. In the majority of entrepreneurship education studies, the target group and context include university students, mature students or entrepreneurs – not students in lower education levels.

In the following section of this article, we first generate and test propositions concerning teachers' different background variables. We then present the methodology and analyses. After presenting and discussing our empirical results, we conclude by outlining the implications for policy and practice. We point to the need for new research on entrepreneurship education that could provide understanding of the relationship between entrepreneurial learning, entrepreneurial and entrepreneurship teaching, teachers of entrepreneurship, and the learning environment for entrepreneurship education.

Theory and Proposition Development

Entrepreneurship Education Practices

It is often proposed that learning in entrepreneurship education should take place through entrepreneurial processes – similarly to how entrepreneurs learn (Birdthistle et al., 2007; Cooper, Bottomley, & Gordon, 2004; Fiet, 2001b; Richardson & Hynes, 2008). Also, the concepts of entrepreneurial pedagogy and entrepreneurial learning have gained ground (Jones

& Iredale, 2010; Pittaway & Cope, 2007; Rae & Carswell, 2001). According to Gibb (2005), the pedagogy applied to entrepreneurship education should be built on the active role of learners in the learning process, and thus, on non-traditional teaching methods. Information should be created collaboratively, and failure should be accepted as a part of the learning process. Working methods should activate the learners' shared learning process and reflection (for example Cooper et al., 2004; Jones & Iredale, 2010; Joyce & Weil, 1980; Keedy, 1995). However, these changes would require major development to take place in both the curricula and learning methods (Jones & Iredale, 2010).

A wide range of different teaching and working methods have been connected to entrepreneurship education (Fayolle, 2008; Fiet, 2001a, 2001b; Jones & Iredale, 2010; Neck & Greene, 2011; Seikkula-Leino, 2006, 2007; Solomon, 2007). Methods for such purposes include, for example, cooperative learning, team learning, project work, learning by doing, learning journals, drama pedagogy, practice enterprises, workplace guidance, and enterprise visits (Seikkula-Leino, 2007). Also learning games that simulate the real world seem to be gaining ground in entrepreneurship education (Jones, 2007; Neck & Greene, 2011; Solomon, 2007).

Different projects carried out in close cooperation with business enterprises have been found useful for creating positive learning outcomes and teaching experiences (Cooper et al., 2004; Kickul, Griffiths, & Bacq, 2010; Pittaway & Cope, 2007; Richardson & Hynes, 2008, Solomon, 2007). Projects provide a good way to build a connection between the school and "real life" and are often prepared in cooperation with or on the commission of business enterprises. They are suggested to develop the learners' range of interaction and planning skills needed in team work, ability to withstand uncertainty, problem-solving skills and understanding of controlled risks (Koh et al., 2009). Also assessment practices that include peer and self-assessment have brought new depth into assignments and their completion.

Similarly, activity outside of the classroom (Fayolle & Gailly, 2008; Kickul et al., 2010; Shepherd, 2004; Solomon, 2007) is stated to have widened learners' perceptions of their possibilities to be active citizens, and to also have clarified the role of different actors in society. In addition to the above, Rae and Carswell (2001) utilize entrepreneurship cases to analyze how the self-confidence and self-awareness of learners have grown.

Fiet (2001a) presents a group of methods and argues that both teachers and learners may become bored in the classroom if the teaching is predictable and the learners encounter no surprises. Therefore, Fiet (2001b) encourages teachers to adopt a wide variety of working methods. Studying should take place in pairs or groups, and the teacher should take part in the discussion, guide and be an enabler. According to Fiet (2001a), theory or problem based learning guides the teacher more towards the role of a coach or mentor than a "traditional" lecturer. Authentic learning processes, field experience, consultancy projects and projects where students obtain first-hand experience on company operations are highly valued (Fiet, 2001b; Kickul et al., 2010). According to the objectives of entrepreneurship education, the purpose of the working methods chosen is to develop learners' knowledge and skills (for example Fiet, 2001a, 2001b; Neck & Greene, 2011).

Solomon (2007) has presented an extensive review of entrepreneurship education literature and highlights many useful methods for entrepreneurship educators. He brings forward an interesting methodology exploring teaching pedagogies employed inside and outside of the classroom. Solomon (2007) suggests that connecting entrepreneurs as role models to practical methods has many possibilities worth considering, such as entrepreneurs serving as coaches or mentors, visiting schools and inspiring students through stories and by giving practical advice. Also, classroom discussions, classroom speakers, and field trips are recognized to be an effective way of transferring knowledge when the objective is to offer students hands-on experience on different aspects of entrepreneurship. Furthermore, Solomon

(2007) highlighted the possible positive outcomes of utilizing interdisciplinary teaching, process-oriented approaches and theory-based practical applications. Kickul et al. (2010) emphasize the important balance between the classroom curriculum and hands-on learning. In 2007, Solomon's article, one interesting approach to entrepreneurship education was to present frequencies in teaching methods. In his findings, different discussions, business plan assignments, guest speakers, and case studies were the most popular teaching methods, used at least in fifty percent of entrepreneurship courses during the 2004-2005 academic year.

Gibb (2002, 2011) and Deakins, Glancey, Menter, and Wyper (2005) have argued that the learning culture of schools is often opposed to entrepreneurship education. While there are studies that suggest that a beneficial learning culture would be a result of successful entrepreneurship education (for example Kothari and Handscombe, 2007), the learning culture could rather be seen as an antecedent for entrepreneurship education. Whilst the majority of entrepreneurship education in schools is dependent on the school and the teacher, the resources available from the related networks have their impact on entrepreneurship education. The networks may include local companies, associations, and national and international initiatives. The use of these resources has a direct impact on the level of entrepreneurship education in schools. (Deakins et al., 2005; Jones & Iredale, 2010) Finally, the teacher is the central actor in entrepreneurship education and the teachers' role in defining the time, frequency, contents and methods of entrepreneurship education is decisive. (Fiet, 2001a; Jones, 2010; Löbler, 2006; Seikkula-Leino, Ruskovaara, Ikävalko, Mattila, & Rytkölä, 2010; Ruskovaara & Pihkala, 2013).

The operation of the teacher has been analyzed carefully from the point of view of teaching and working methods (Fiet, 2001b; Löbler, 2006; Solomon, 2007), pedagogy and didactics (Fayolle & Gailly, 2008; Fiet, 2001a; Jones & Iredale, 2010; Neck & Greene, 2011). To the best of our knowledge, most of these conjectures have not yet been tested

empirically. We feel a wider understanding of the variety of methods and approaches is needed. In order to open up discussion concerning evidence, we will generate and test the following propositions. Subsequently, we will present rich empirical data and consequently attempt to draw a more concrete picture of teachers' entrepreneurship education practices.

Teachers' Gender and Entrepreneurship Education Practices

It seems that entrepreneurship education research assumes entrepreneurship independent of gender issues. In a careful literature survey, we could not find entrepreneurship education studies where especially educators' gender was the focus of analysis. So far, Birdthistle et al. (2007) seem to be the only ones suggesting that there could be differences related to the teacher's gender in entrepreneurship education. They reported that female teachers were very much the driving force behind the enterprise initiatives studied in their research. Even though we have found studies with a feminist approach to entrepreneurship education and studies concerning women entrepreneurs (Komulainen, Keskitalo-Foley, Korhonen, & Lappalainen, 2010; Korhonen, 2012), their findings do not show any indications of differences or similarities between women and men. According to Bennett (2006), a lecturer's gender does not play a significant role in inclining entrepreneurship education. On this basis, we formulate the following proposition:

> *Proposition 1: Entrepreneurship education practices do not differ between male and female teachers.*

Teachers' Business Enterprise Background's Positive Effect on Entrepreneurship Education

Some earlier studies suggest that in overall, the teacher's personal first-hand experience of business could be assumed important for entrepreneurship education. Weinrauch (1984)

wrote that it is difficult to find teachers with both suitable educational backgrounds and previous experience as entrepreneurs, as it is relevant to the matter. Sullivan suggested that the instructor's background, attitude and skills affect his or her teaching (Sullivan, 2000). Bennett (2006) has found that lecturers' definitions of entrepreneurship are influenced by their backgrounds and by the number of years they have worked in business enterprises. Bennett (2006) measured the impact of teachers' background characteristics, such as their business experience, business ownership, and academic background in business studies. He found out that the teacher's background has a clear effect on the way the teacher perceives entrepreneurship. In other words, the teacher's earlier work experience and business background connections are positively related to the execution of entrepreneurship education. Seikkula-Leino et al. (2010) reported a teacher suggesting that when putting entrepreneurship education into practice, one's own experience in entrepreneurship is shared, which is manifest especially when giving the facts concerning entrepreneurship. Gibb (2011) argues that entrepreneurial behavior is a core competence for an entrepreneurship educator and develops in real-life practice as an entrepreneur. Therefore, we propose:

Proposition 2: The stronger the teacher's business background is, the more he/she is bound to execute entrepreneurship education

Teacher's Work Experience and Entrepreneurship Education Practices

Entrepreneurship education is a fairly new area in the field of education. Therefore, there is quite a limited amount of research and evidence concerning the role of teachers' professional experience in entrepreneurship education. Kyrö (2005) points out that there is a lack of research concerning different entrepreneurship education learning paradigms, but mentioned that the teacher's length of service and position could play a role in what teaching practices are used. In a recent study, Polikoff (2013) supports the conclusion that teachers' pre-service

education and career experiences enhance their subsequent classroom instruction. In the context of entrepreneurship education, the teacher's work experience could simultaneously reflect positively on the teacher's professional development and learning (e.g. Desimone, 2009; Polikoff, 2013) and negatively on the new paradigms and methodologies that would require special learning processes. In that sense, the younger teachers (with less experience) could be more able to adopt new approaches to teaching than the older and experienced teachers. For example Löbler (2006) suggests that the teacher's age has an effect and that younger teachers would be more inclined towards entrepreneurship education. Contrary to previously mentioned studies, Bennett (2006) has presented an interesting finding that the business lecturer's age or the length of service do not affect their entrepreneurship education practices. However, there are contradictions, which lead us to the following proposition:

Proposition 3: The more the teacher has work experience, the more he/she is inclined to conduct entrepreneurship education.

Entrepreneurship Education at Different School Levels

Most of the research concerning entrepreneurship education is connected to the higher education level. However, Birdthistle et al. (2007) have focused especially on entrepreneurship education in secondary level schools in Ireland, and Draycott and Rae (2011) have studied the meaning of enterprise education for the 14-19 age-group. These studies, amongst others, have pointed out that the school level would be an important factor determining entrepreneurship education practices (see also Deakins et al., 2005). Also Dickson et al. (2008) have described different outcomes of entrepreneurship education between different education levels. It seems that wider understanding of the variety of methods, approaches and the continuity and frequency of the teaching seems yet to be reached. In this study, we cover the range from basic to upper secondary education and focus

not on the perception of entrepreneurship but on the practices undertaken in teaching. In Finland compulsory education begins at the age of seven. After nine years in *basic education*, it is possible to continue either *to general upper secondary education* or to *vocational upper secondary education and training*. We suggest that the characteristics of the teacher and the characteristics of the school have a direct impact on the observable entrepreneurship education in the school. Therefore, we propose the following proposition:

Proposition 4: Entrepreneurship education differs between education levels.

Effects of Teacher Training on Entrepreneurship Education

There seems to be quite a consistent understanding that, amongst students, there is a positive correlation between entrepreneurial education and entrepreneurial activity (Dickson et al., 2008; Frank, 2007). Birdthistle et al. (2007) as well as Frank (2007) have argued that there is a lack of enterprise-related teacher training in the education system. They have reported teachers' entrepreneurship education training having a positive effect on entrepreneurship education practices. Also Ruskovaara and Pihkala (2013) have made similar findings. Birdthistle et al. (2007) have commented that there exists a relationship between the lack of training and teachers delivering the entrepreneurship education. In Bennett's (2006) study, teacher training played a significant role and increased the number of practices applied to entrepreneurship education. Therefore we propose:

Proposition 5: Enterprise-related teacher training positively affects teachers' entrepreneurship education practices.

Methodology

Context of the Study

The study was conducted in Finland. Entrepreneurship education has been a vital ingredient of the basic education curricula for almost twenty years (Ministry of Education, 2009). The theme appears as a cross-curricular theme aiming to harmonize education and teaching. The goals of the theme are to help students understand the society at large from the perspective of different actors, to develop the skills required in active citizenship and to lay a foundation for entrepreneurial practices.

In the European context, the literature on entrepreneurship education deals with two parallel concepts: enterprising education and entrepreneurship education. Most commonly, enterprising education concerns the educational processes taking place within basic education, where the aims of the education are not as directly associated with start-up entrepreneurship, but rather with the development of the entrepreneurial mindset of children. However, in this study we apply the general concept of entrepreneurship education, as it has been adopted as the dominant term in scientific literature and Finnish official documents (Ministry of Education, 2009). (See also Fayolle & Gailly, 2008; Gibb, 2002; Haase & Lautenschläger, 2011.)

Collection and Analysis of the Data

The research data has been collected from Finnish teachers through the Measurement Tool for Entrepreneurship Education (Ruskovaara, Pihkala, Seikkula-Leino, & Rytkölä, forthcoming). The Measurement Tool for Entrepreneurship Education is an online survey. The survey is publicly available online at www.lut.fi/mittaristo. The measurement tool is a full-scale questionnaire helping teachers to identify the operations of entrepreneurship education at a concrete level. The survey focuses on the question of what the teacher does or

does not do when he or she is delivering entrepreneurship education. The form consists of approximately 140 questions, 21 of which are examined in this study (see Table 1).

The measurement tool was developed in cooperation with the authorities of the Finnish National Board of Education and especially with a group of teachers in basic education, general upper secondary education and vocational upper secondary education and training. The tool has been tested and cross-tested with teachers who reported about its usefulness, understandability and transferability, and their role was particularly important when testing the reliability of the tool. The theoretical and conceptual framework of the variables (see Table 1) has been generated by combining theoretical (see section Theory and Proposition Development) and scientific grounds with administrative documents, by following the action research (Cohen & Manion, 2007; Kemmis & McTaggart, 1988) and participatory development (Coughlan & Coghlan, 2002; Reason & Bradbury, 2008) approaches.

Measures

Dependent variables: entrepreneurship education practices. The teacher's usage of different entrepreneurship education practices was measured by a set of items, each depicting a practice that has been identified as a way to carry out entrepreneurship education. The items were formulated based on the literature of entrepreneurship education (see discussion in the Theory and Position Development section and Table 1), and their intelligibility, measurability, wording, clarity, and grammar have been analyzed (Ikävalko, Ruskovaara, & Seikkula-Leino, 2009; Mattila, Rytkölä, & Ruskovaara, 2009; Seikkula-Leino et al., 2010). For each statement, the respondents chose the numerical value that best described the frequency of the use of each entrepreneurship education practice in the preceding six months.

Item	**Source**
Had students prepare entrepreneurship-related calculation exercises, presentations, writings and interview	Fayolle & Gailly, 2008; Shepherd, 2004; Solomon, 2007
Used stories about entrepreneurs as teaching material	Fletcher, 2007; Gartner, 2008; Shepherd, 2004
Used varying enterprise related materials	Solomon, 2007
Had students play games related to entrepreneurship	Jones, 2007; Löbler, 2006; Neck & Greene, 2011
Arranged or took part in an entrepreneurship-related competition	Blenker, Korsgaard, Neergaard & Thrane, 2011; Gibb, 2002
Introduced local businesses in my teaching	Henderson & Robertson, 2000; Pittaway & Cope, 2007; Pittaway & Hannon, 2008
Invited entrepreneurs or representatives of the business world to take part in instruction	Cooper, Bottomley & Gordon, 2004; Pittaway & Cope, 2007; Solomon, 2007
Arranged a field trip to a business enterprise	Kickul, Griffiths & Bacq, 2010; Solomon, 2007
Invited an entrepreneur to present his/her work in the school	Pittaway & Hannon, 2008; Shepherd, 2004; Solomon, 2007
Guided learners to utilize experts	Fayolle & Gailly, 2008; Gibb, 2011; Solomon, 2007
Discussed entrepreneurship related to the subject with learners	Gibb, 2002; Neck & Greene, 2011; Solomon, 2007

Discussed entrepreneurship related to hobbies	Gibb, 2002; Solomon, 2007
Discussed current financial news with learners	Gibb, 2002; Shepherd, 2004; Solomon, 2007
Discussed the economic effects of different actions with learners	Gibb, 2002; Shepherd, 2004; Solomon, 2007
Guided learners to manage their own finances	Shepherd, 2004
Organized a voluntary work project with students	Blenker, Korsgaard, Neergaard & Thrane, 2011
Enabled learners to organize a jumble sale, hold a sales stand, etc.	Blenker, Korsgaard, Neergaard & Thrane, 2011
Enabled a project created by the learners (presentation, event, newspaper, video, book, etc.)	Gibb, 2002; Löbler, 2006; Pittaway & Cope, 2007
Enabled an enterprise or working world driven project by learners	Cooper, Bottomley & Gordon, 2004; Gibb, 2002; Pittaway & Cope, 2007
Had learners complete a business idea assignment	Blenker, Korskaard, Neergaard & Thrane, 2011; Gibb, 2002; Neck & Greene, 2011;
Enabled learners to create marketing or other material for a business	Cooper, Bottomley & Gordon, 2004; Pittaway & Cope, 2007; Solomon, 2007
Enabled learners to create a practice enterprise or a business of their own	Neck & Greene, 2011; Pihkala, 2008
Organized a theme day or study module related to entrepreneurship	Gartner, 2008; Pihkala, 2008; Shepherd, 2004

Table 1. Items and Their Theoretical Background

Independent variables: teacher characteristics. In the analysis, we include four different characteristics describing a teacher's education and background. Descriptive statistics for these variables can be found in Table 2. The teacher characteristics include following variables:

- Gender – a dichotomous indicator for the sex of the respondent. The indicator is coded in the data as male=0, female=1.
- Work experience – divided into groups of 0-5 years, 6-10 years, 11-10 years, 21-30 years and more than 30 years. The experience variable refers to the duration of the teacher's professional service in years.
- Business background – a dichotomous indicator of whether the teacher has gained experience in the business world. The variable is coded as no experience = 0, business experience = 1.
- Teacher training courses on entrepreneurship education – an indicator depicting the teacher training as the number of entrepreneurship education courses the teacher has taken. On a scale of no courses = 0, some training = 1, many courses = 2).

In earlier studies (e.g. Polikoff, 2013), the teacher's Master's degree was measured as one characteristic. However, since virtually all teachers in Finland gain their education at the Master's level, this indicator would have been futile in this context. (Seikkula-Leino, Ruskovaara, Hannula, & Saarivirta, 2012)

School characteristics.

- School level – an indicator depicting the teacher's school level. On a scale of basic education = 1, general upper secondary education = 2, and vocational upper secondary education and training= 3. Finnish basic education starts when the student

is seven years old and its duration is nine years. The structures of general upper secondary education and vocational upper secondary education and training vary, but they have been allocated to take approximately three years.

Respondents

In the present study, the data consists of 1359 teachers' responses (see Table 2). The respondents represent all 19 Finnish provinces, and 919 (67.6%) of the respondents are women and 440 (32.4%) men. The average age of the respondents is 46.1 years. From the perspective of work experience, the respondents cover the entire spectrum rather evenly. In the data, the teachers represent three school levels: basic education, general upper secondary education and vocational upper secondary education and training. In the survey, the teachers reported the amount of teacher training they have received in entrepreneurship education. The share of teachers who have had no training in entrepreneurship education is relatively high, 49.2%. In this perspective, it seems that the data is not severely biased towards teachers that would be positively cognizant about entrepreneurship. Overall, the respondent profile corresponds well with the general characteristics of Finnish teachers in basic and upper secondary education.

Characters of respondents	Category	N/Frequency	Percentage
All		1359	
Average age	46,1 years		
Gender	Men	440	32.4
	Women	919	67.6
Work experience	0-5 years	279	20.5
	6-10 years	245	18.0
	11-20 years	455	33.5
	21-30	280	20.6
	Over 31 years	100	7.4
School level	Basic education	662	48.7
	General upper secondary education	265	19.5
	Vocational upper secondary educat.	432	31.8
Number of entrepreneurship education courses the teachers have taken	None	668	49.2
	Some	552	40.6
	Many	139	10.2

Table 2. Description of the Respondents

For a study building upon self-reports of teachers, the common method bias needs to be taken into account. According to Kamakura (2010), the basic critique suggests that 1) the method of data collection directs the answers more than the real situation of the respondents, 2) the respondents may choose to provide socially desirable answers rather their real opinions and 3) familiarity of the questionnaire leads the respondents not to consider their position to the research items. In this study, we have taken special care to avoid the common method

bias. First of all, the method of data collection is completely new for the teachers and no such measurement has taken place before in regard to entrepreneurship education. The questionnaire has been carefully formulated together with a test group of teachers to improve the readability and clarity of the items. As a result, we can notice that the standard deviations for each item seem to be rather large, which refers to the low social desirability of certain answers.

Results

In our analysis, we focus on entrepreneurship education practices, and more particularly on their frequency and the factors behind them. The questionnaire contained questions on different ways to carry out entrepreneurship education in practice (see Table 3). In the analysis, we first examine the basic descriptive statistics of the measures, and then conduct a principal component analysis to formulate sum measures of the entrepreneurship practices. Next, we run an ANOVA of the sum measures in regard of a set of background measures that characterize the respondents' profile as persons and professionals. Finally, we examine how the teachers' background variable explains the level of their entrepreneurship education with a linear regression analysis.

	Items	Mean	Sd.
	My assessment of the number of times I have, in the past six months,		
1.	discussed the economic effects of different actions with learners	8.05	9.62
2.	discussed current financial news with learners	8.03	9.62
3.	introduced local businesses in my teaching	7.95	9.42
4.	discussed entrepreneurship related to the subject with learners	6.97	9.27
5.	had students prepare entrepreneurship-related calculation exercises, presentations […]	6.34	8.76

6.	guided learners to manage their own finances	6.31	8.50
7.	guided learners to utilize experts	5.55	7.80
8.	used varying enterprise-related materials	5.32	8.18
9.	discussed entrepreneurship related to hobbies […]	5.00	7.62
10.	used stories about entrepreneurs as teaching material	4.64	7.68
11.	enabled a project created by the learners (presentation, event, newspaper, video […])	2.86	5.44
12.	arranged a field trip to a business enterprise	2.84	5.89
13.	had learners complete a business idea assignment	2.60	6.50
14.	invited entrepreneurs or representatives of the business world to take part in instruction	2.55	5.48
15.	enabled learners to organize a jumble sale, hold a sales stand, etc.	2.09	4.99
16.	enabled an enterprise or working world driven project by learners	2.03	5.33
17.	enabled learners to create marketing or other material for a business	1.82	5.25
18.	enabled learners to create a practice enterprise or a business of their own	1.78	5.35
19.	organized a theme day or study module related to entrepreneurship	1.78	5.16
20.	invited an entrepreneur to present his/her work in the school	1.58	4.44
21.	organized a voluntary work project with students	1.50	3.77
22.	had students play games related to entrepreneurship	1.02	3.16
23.	arranged or took part in an entrepreneurship-related competition	1.00	3.29

Table 3. Entrepreneurship Education Practices (n=1359)

The results of Table 3 show that a large number of methods are applied to entrepreneurship education − the practices are wide-ranging. The most frequently utilized method was discussions concerning the economic effects of different actions; individual teachers had applied it 8.05 times during the preceding six-month period. Also other kinds of discussions about, for instance, current financial news (8.03), and entrepreneurship related to

the subject taught (6.97) were among the most frequently used methods. The inclusion of local businesses in teaching seems to be popular (7.95). In fact, it seems that discussions are an easy, low-threshold way for teachers to include entrepreneurship regularly into their education.

Different entrepreneurship-related exercises (6.34) seem to have established their position in the respondents' range of entrepreneurship education measures. Stories about entrepreneurs (4.64) seem to be applied rather frequently, but in contrast, learning games involving entrepreneurship (1.02) do not appear to be very common, and neither are entrepreneurship-related contests or participation in them (1.00).

On an average, teachers arranged field trips to business enterprises 2.84 times in a semester, and they invited entrepreneurs to take part in instruction 2.55 times and to present their work in the school (1.58). It is, perhaps, somewhat surprising that although arranging visits and especially inviting entrepreneurs to the school do not require great efforts; these approaches are taken rather seldom. It is particularly interesting that visits outside of the school are more common than visitors invited to the school. This could partly be explained by the teachers' desire to expand the learning environment beyond the school grounds. Next, we conducted a factor analysis of the entrepreneurship education practices to identify the relationships between the items. (See Table 4)

Items	Factors 1-5					
	1	2	3	4	5	com
discussed current financial news […]	.846					.749
discussed the economic effects of different actions with leaners	.841					.764
guided learners to manage their own finances	.750					.673

discussed entrepreneurship related to the subject with learners	.683				.703
introduced local businesses […]		.647			.693
discussed entrepreneurship related to hobbies […]		.611			.524
used stories about entrepreneurs as teaching material		.597			.696
guided learners to utilize experts		.566			.563
had students prepare entrepreneurship related calculation, exercises, presentations		.556			.568
used varying enterprise-related materials		.540			.698
enabled learners to create marketing or other material for a business			.794		.732
enabled learners to create a practice enterprise […] of their own			.749		.732
had learners complete a business idea assignment			.671		.720
organized a theme day or study module related to entrepreneurship			.667		.638
enabled an enterprise or working world driven project by learners			.582		.670
arranged a field trip to a business enterprise				.790	.794
invited an entrepreneur to present his/her work in the school				.741	.767
invited entrepreneurs […] to take part in instruction				.705	.744
enabled a project created by the learners (presentation, event, newspaper, video, book etc.)					.732 .686
enabled learners to organize a jumble sale, hold a sales stand, etc.					.723 .669
organized a voluntary work project with students					.708 .655

had students play games related to entrepreneurship					.781	.712
arranged or took part in an entrepreneurship-related contest					.655	.621
Eigenvalue	5.09	3.58	2.85	2.34	1.91	
Percentage	22.13	15.57	12.39	10.15	8.32	
Cumulative percentage	22.13	37.70	50.09	60.24	68.56	
KMO .946, Principal Components, Varimax rotation						

Table 4. Entrepreneurship Education Practices – Factor Analysis (n=1359)

The principal component analysis with Varimax rotation produced five factors which together explain a reasonable 68.56 per cent of the overall variation. The first factor has ten variables, and the strongest loading is on the statement "discussed current financial news" and the second strongest on "discussed the economic effects of different actions". These statements refer to an operating model based on *classroom teaching* (Cronbach's Alpha .923). The other statements in the factor refer also to the classroom-based method (for example Cooper et al., 2004; Gibb, 2002; Shepherd, 2004).

The second factor includes five variables. The statement with the strongest positive loading is "enabled learners to create marketing and other material for a business" and the second strongest is "enabled learners to create a practice enterprise of their own". In this factor, the teaching approach builds on the activity of students, and interaction with businesses is vital (for example Gibb, 2002, 2011; Kickul et al., 2010; Pittaway & Cope, 2007). Consequently, the factor is named *business projects* (Cronbach's Alpha .873). The third factor contains three variables. The variable "arranged a field trip to a business enterprise" has the strongest positive loading, and "invited an entrepreneur to present his/her work in the school" has the second strongest loading (for example Pittaway & Cope, 2007;

Shepherd, 2004; Solomon, 2007). Consequently, the factor is labeled as *company visits* (Cronbach's Alpha .867).

The fourth factor includes three variables. The strongest loading is on "enabled a project created by the learners" and the second strongest loading is on the item "enabled learners to organize a jumble sale, hold a sales stand". These items refer to the active role of the learners to jointly decide on tasks and perform them together (for example Fiet, 2001a; Gibb, 2002; Rae & Carswell, 2001). The factor is thus named *joint projects* (Cronbach's Alpha .755). Finally, the fifth factor includes two variables. The strongest loading is on the statement "had students play games related to entrepreneurship". The playful side of entrepreneurship is reflected also in the second strongest positive loading on "arranged or took part in an entrepreneurship-related competition". The fifth factor is labeled as *entrepreneurship games* (Cronbach's Alpha .664) (for example Anderson & Jack, 2008; Neck & Greene, 2011; Solomon, 2007).

The five new sum variables – the types of entrepreneurship education practices – were formed from these factors. The sum measures were analyzed against the background variables with ANOVA (see Table 5).

Variable		Classroom	Bus.proj.	Comp.visit	Joint proj.	Games
Gender	Men	7.60	2.27	2.89	2.19	1.25
	Women	5.85	1.88	2.05	2.13	.90
	F-value	20.881***	2.244	9.492**	.078	4.766*
Business background	No	4.69	1.16	1.45	1.67	.68
	Yes	7.56	2.56	2.90	2.46	1.23
	F-value	63.595***	32.107***	31.509***	13.424***	12.548***

Work experience	0-5 yrs	6.34	1.91	1.82	1.57	.74
	6-10 yrs	6.89	2.42	2.55	2.31	1.13
	11-20 yrs	6.59	2.14	2.59	2.44	.99
	21-30 yrs	5.99	1.76	2.32	2.18	1.19
	Over 31 yrs	5.85	1.30	2.02	1.95	1.10
	F-value	.863	1.478	1.396	2.345	1.067
School level	Basic	4.58	.90	1.30	2.14	.97
	General upper	4.84	1.13	1.53	1.51	.56
	Vocational	10.20	4.23	4.39	2.56	1.35
	F-value	120.113***	87.073***	66.499***	5.982**	6.664**
Teacher's EE courses	None	4.17	.85	1.29	1.58	.51
	Some	7.66	2.40	3.03	2.37	1.16
	Many	12.26	5.97	4.50	4.00	2.83
	F-value	118.383***	87.265***	39.205***	24.203***	43.723***

Note: *p<.05. **p<.01. ***p<.001.

Table 5. Entrepreneurship Education Practices – Background Variable Comparison

As the first proposition we suggested that entrepreneurship education practices do not differ between male and female teachers. The results of the analysis in Table 5 show a significant difference between male and female teachers in classroom teaching, organizing company visits and utilizing entrepreneurship-related games. Interestingly, male teachers seem to be more bound to classroom teaching. However, even though men seem to rate higher in their use of different kinds of projects in entrepreneurship education, there are no

statistical differences between male and female teachers in this regard. The first proposition gains only partial support.

The second proposition concerns teachers' business background: "The stronger the teacher's business background is, the more he/she is bound to conduct entrepreneurship education". The results presented in Table 5 show strong support in all the measures; that is, teacher's business background seems to give 1,5-2 times higher values in entrepreneurship education. This leads us to think that teachers should be exposed to businesses, not only during their studies but also while working.

In the third proposition we suggested that a teacher's work experience increases his or her inclination towards entrepreneurship education. Our analysis does not lend support for the proposition. The data shows that the entrepreneurship education practices teachers choose are not dependent on age or the teacher's years of service. Furthermore, the profile of the results does not refer to any specific tendency of behavior that would be dependent on the respondents' professional experience. Here we need to notice that the development of the proposition was very challenging, as there was very little earlier research concerning teachers' professional experience.

In the fourth proposition, we suggested that entrepreneurship education would differ between different education levels. The results show that the differences are statistically significant in all of the variables. Interestingly, joint projects and games have the lowest scores. The general upper secondary education has previously been found a difficult target for entrepreneurship promotion since the main role of the school has been seen to prepare the students for higher education rather than for the working world (see also Frank, 2007). Correspondingly, in vocational upper secondary education and training the need for hands-on entrepreneurial skills and knowledge is vital, and this can be identified in the teachers' entrepreneurship education practices. For all variables, the scores of vocational upper

secondary education and training are on a significantly higher level. We find strong support for the fourth proposition.

The fifth proposition, "Enterprise-related teacher training positively affects teachers' entrepreneurship education practices", gains strong support in all variables. The differences can be seen especially in executing so-called business projects when comparing teachers who have no training to those who have participated in many entrepreneurship education courses. Training seems to affect all variables evenly, and so-called classroom practices, such as different discussions, show the highest numbers.

Finally, we conducted a regression analysis to study the role of the school and the teacher in determining the use of different entrepreneurship education practices. (See Table 6) In the model, we included the same explanatory variables covered in Table 5. In general, the analysis suggests that the school and teacher are important factors in explaining the level of entrepreneurship education. In this study, the overall findings are perhaps the most interesting ones: it seems that only some elements play a decisive role in determining the level of entrepreneurship education in schools. For instance, the teacher's gender does not seem to be an explanatory factor for the level of entrepreneurship education in schools. For countries such as Finland with the majority of teachers being women, this is good news. In the analysis, we used a dummy variable to study the effect of gender (male=0, female=1). Furthermore, the teacher's professional teaching experience has no significance in terms of entrepreneurship education. These findings suggest that as a competence area, entrepreneurship education is not dependent on the teacher's experience as a teacher. Löbler (2006) suggests that the younger generation of teachers would be more inclined towards entrepreneurship education. Should that be the case, the question of promoting entrepreneurship education could be solved by waiting for the younger generation to take over. Our finding suggests that mere waiting would not suffice. Instead, the effective

elements of entrepreneurship education seem to be something other than the teacher's professional experience.

In all of the models, the teacher's training in entrepreneurship education seems the most effective way of promoting entrepreneurship education (See also Hahs-Vaughn & Yanowitz, 2009). The analysis shows consistently high and significant betas for the entrepreneurship education courses for all of the models. This finding is promising, as it provides us with useful tools to promote entrepreneurship education effectively.

Variable	Classroom	Bus.proj.	Comp.visit	Joint proj.	Games
Teacher's EE courses	3.397***	1.981***	1.345***	.988***	.922***
Business background	1.548***	.585*	.818**	.696**	.437**
School level	2.133***	1.374***	1.282***	.026	.010
Gender	-.470	.397	-.168	.074	-.238
Work experience	-.071	-.098	.178	.096	.057
Constant	-.52	-2.170***	-1.534***	.859*	.231
R-square	.260***	.187***	.126***	.040***	.062***

Note: *p<.05. **p<.01. *** p<.001

Table 6. Regression Analysis on Entrepreneurship Education Practices

Regarding the different types of entrepreneurship education, the analysis reveals some interesting findings. For classroom teaching, the teacher's business background, the teacher's entrepreneurship education courses and the school level seem to be strong determinants. The role of the school level is interesting, as it suggests that entrepreneurship education would take place in the classroom more frequently at higher educational levels. One reason for this might be, for example, the theory driven approach of general upper secondary education teachers towards teaching and their "traditional view" of the learning environment.

For business projects and company visits, the teacher's business background becomes less significant in explaining entrepreneurship education, but still remains in the equation. The school level and the teacher's entrepreneurship education related courses remain strong in the model. It is understandable that business projects and company visits are more applicable as pedagogical solutions for older students.

Finally, for joint projects and entrepreneurship games, the teacher's business background and own training in entrepreneurship education seem to be the only determining factors. In these cases, it must be borne in mind that the R-square remains fairly low, but the finding indicates that the promotion of specific types of entrepreneurship education is largely dependent on teacher training and the further education of teachers.

Discussion and Conclusions

In this study, we aim to bring empirical data into the discussion on entrepreneurship education, as there are still few empirical studies available on the topic area (Dickson et al., 2008), especially concerning the basic and general upper secondary education.

The analysis of the data results in many interesting findings and uncovers plenty of challenges and possible development steps required. One very clear need seems to be the relationship between teachers and the "world out there". It seems to be useful to create and encourage more in-depth cooperation with companies and to network systematically. For example, schools and students having assignments from companies, joint projects between schools and businesses, and other authentic learning processes and field experience are reported to have a positive impact on the development of learners' entrepreneurial skills (Fiet, 2001b; Kickul et al., 2010). Gibb (2011) argues that the capacity to create internal and external networks is an important competence for the educator. In order to develop entrepreneurship education practices − especially factors such as business projects and

company visits mentioned above − this seems crucial. Also internal networks, such as cooperation between teachers, can offer a range of possibilities to organize teaching in novel ways and develop the school's operating culture (see also Hietanen, 2012). For example, interdisciplinary teaching might be worth trying (Frank, 2007; Murata, 2002; Solomon, 2007). The questions then are how to build teachers' networking competences and what practices to introduce into teacher training to provide them with the skills needed? Also, these types of development measures might also offer a useful, broader view on the learning environment, where learning takes place beyond the school instead of in a classroom (Fayolle & Gailly, 2008; Kickul et al., 2010; Solomon, 2007).

Although it is understandable that the traditional teaching methods are deeply rooted, new ways of encouraging teachers to adopt a wide variety of working methods are needed (Fiet, 2001b). Most of the above-mentioned challenges, although needing a longer time span to become fully embedded in the school culture, could be addressed partly through teacher training (see also Lombaerts, Engels & van Braak, 2009). Bennett (2006) has analyzed the impact of the background of business lecturers and found out that it plays a multifaceted role in determining the lecturer's perception of entrepreneurship. It seems that teacher training is in a decisive role in terms of implementing entrepreneurship education policies; our data showed a very positive influence and strong connection between teacher training in entrepreneurship education and the entrepreneurship education practices applied. A large number of useful methods and practices have been discovered (Seikkula-Leino, 2007), and training concerning different pedagogical solutions could be of great value. For example, the playful side of teaching and learning (Solomon, 2007) as well as teacher training that develops the competences of a mentor, enabler or coach should enhance entrepreneurship education practices. When shifting the focus from Gibb's (2002) idea of developing students' understanding of entrepreneurship to the teacher, what are the ways for a teacher to see, feel,

do, think and learn entrepreneurship? How to provide teachers with the skills to cope with, create and perhaps enjoy uncertainty and complexity?

Löbler (2006) states that new and perhaps younger teachers − the next generation − provide an opportunity to develop entrepreneurship education. Our findings do not support this, as it seems that the teacher's age is not connected to practices applied. Dickson et al. (2008) have found that entrepreneurship education correlates positively with entrepreneurial activity, but admit the challenges of the long time span between the educational experience and the actual entrepreneurial behavior that follows. This, together with other findings, shows a great need for longitudinal research. What do we know about teachers as learners in the field of entrepreneurship education? Could teachers' professional experience in fields other than education be broader? Could teachers' knowledge be used outside of the school environment in consultancy projects to deepen their involvement with society? (Kickul et al., 2010)

This study has some obvious policy implications. In Europe, entrepreneurship education is clearly a tool of the policy of European Commission, and as such, the policy implications could be directed to the implementation of those policies. The results of the study clearly show the importance of teacher training in introducing new pedagogical perspectives in schools. In addition to the policy decision-making on the goals and principles of entrepreneurship education, the policy-makers would be wise to provide guidelines for training the teachers to implement the policies. Finally, our study underlines the growing importance of continuous school-business cooperation. It is evident, that this interaction not only provides pupils with better possibilities for experiential learning but it is playing a vital role in affecting the teachers that are responsible of conducting the entrepreneurship education in their schools. Should the teacher be well equipped with relationships with local businesses, it leads to good possibilities to target the goals of entrepreneurship education. It

seems that an effective way to promote entrepreneurship education policy would be to introduce models of good practice and powerful incentives to the teachers to engage into the outside-school activities.

Limitations and Further Research

Although we consider our findings very interesting, we can see some limitations: We have a wealth of data but it is gathered solely from Finland and from teachers working in basic, general upper secondary education and vocational upper secondary education and training. The respondent group corresponds well with the Finnish teacher profile, but the generalizability of the results beyond Finland remains unknown. The teachers have responded to the survey on a voluntary basis, which naturally may produce several biases in the response profiles. Moreover, the results do not tell us about the quality of the practices applied, nor about the number of students taught.

As Dickson et al. (2008) argue, there is a limited amount of evidence-based research and a lack of a clear definition for entrepreneurship education. These were the challenges we also faced, trying both to open up discussion on the matter and to find answers. Although we made some interesting findings, this field still needs deeper and wider research. In our analysis, we did not make a distinction between practices that require a longer or a shorter period of time. Obviously, our list of practices contains items that can easily take an entire school year, as well as items the teacher can organize and implement in fifteen minutes. More in-depth research is needed in order to categorize entrepreneurship education practices. For example, Haase and Lautenschläger's (2011) matrix could be useful when analyzing the degree of difficulty (easy or difficult to teach) and the relevance for entrepreneurship (low or high). We propose that further analyses be directed towards understanding the usefulness of different approaches in the longevity of teaching practices in entrepreneurship education. Our

data suggests there may be a connection between the teacher's background and experience and entrepreneurship education practices. For example, does the teacher's earlier professional experience outside of the school affect his or her practices? Moreover, does the teacher education in different universities provide different competences that can be seen as different levels of practices?

At least in Finland, teachers' effectiveness and impact as entrepreneurship educators have not been studied. Our data could provide interesting findings for decision makers to both follow and steer the actual practices teachers are utilizing. It could also shed light on the resources needed in teacher education. It seems that the teacher's role as an entrepreneurship educator is not yet fully defined, and perhaps as a consequence, entrepreneurship education may lack accurate goals. Have clear goals been set for entrepreneurship education, for an individual teacher, for schools or for municipalities or regions?

Do we already know whether academic experience, the school curriculum and hands-on learning are in balance? (Kickul et al., 2010) Should some methods and practices be encouraged more and some less? In any case, according to Jones and Iredale (2010), in order to meet the objectives of entrepreneurship education, the curricula must be changed and new teaching and learning methods must be developed. This is a great challenge to teacher training, which seems to be, according to our data, the most effective way to develop and diversify entrepreneurship education.

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Tables:

ARTICLE 5

Ruskovaara, E., Pihkala, T., Seikkula-Leino, J. & Järvinen M.R. (2014).

Broadening the Resource-Base for Entrepreneurship Education through Teachers' Networking Activity.

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Broadening the Resource-Base for Entrepreneurship Education through Teachers' Networking Activity

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Questions we care about: Who are the teachers using outside help for entrepreneurship education, who are they using in their activities and can specific patterns be identified?

The main interest in this study deals with the question of the teachers' network activities and those teachers' background characteristics and participation activities that would determine the level of network activity.
Approach: We present a quantitative analysis of 448 Finnish vocational education and training (VET) teachers. In the analysis we use measures of networking partners, teacher characteristics and participation measures. The paper examines the overall picture of how teachers use 11 different external stakeholders. We then run an ANOVA on network activities compared with teachers' characteristics and participation. Finally, we examine how teachers' background characteristics and participation measures explain the level of their use of externals with a linear regression analysis.
Results: The results show that teachers' business background or teachers' work experience don't lead to richer entrepreneurship education [EE] practices. However, the teachers participated on school or regional level EE planning or EE training utilize externalities significantly more than their colleagues.
Implications: This paper contributes to the literature on EE in three ways: 1) It develops further the discussion of engaging network resources in EE and pinpoints the role of the teacher as the key operator in this process. 2) It provides empirical evidence on the importance of the participation activities on the teachers' ability to widen their resource base to carry out EE. 3) Finally, it brings forward some central elements, through which the teachers' networking activities could be supported further.
Value: Teachers' networking practices are important in many respects. Our study aims at bringing empirical evidence on who are the educators using external stakeholders and are there any specific patterns than can be identified. The authors consider that this study has a special value in exploring and opening dialogue in the area of VET-teachers and the possibilities concerning external stakeholders.
Key Words: entrepreneurship education, vocational education and training (VET), teacher, external stakeholder, resources of entrepreneurship education, networks

1. Introduction

Entrepreneurship education has been developed rapidly during the last two decades. The need for entrepreneurship education stems from the overarching shift in the job market during the 21st century; a shift that has meant that new skills, capabilities for reorientation, multiple careers and active engagement in one's own success are now required. In other words, the current working environment calls for an entrepreneurial mind set for everyone. To meet these expectations, the development of curricula, pedagogical approaches, and rich content regarding entrepreneurship have been considerably targeted (see European Commission, 2006, 2010a, b). A more recent development has been to introduce new approaches for widening the learning environments (Henderson & Robertson, 2000; Cooper et al 2004; Pittaway & Cope, 2007; Fayolle & Gailly, 2008; Hytinkoski, Kiilavuori & Seikkula-Leino 2012; Seikkula-Leino et al 2012) and extending the resource base for entrepreneurship education (Hynes & Richardson, 2007; Pittaway & Hannon, 2008), and through this, open up new possibilities for learners to gain experience and insight.

The question of new resources for entrepreneurship education largely refers to engaging with of new experiential learning opportunities and in that sense, better knowledge, skills and experiences available for entrepreneurship education. Through teachers' active initiatives, entrepreneurship education would not be hampered by the scarcity of resources allocated by the school, but rather offer a wide range of opportunities for entrepreneurship education by means of different partners and stakeholders (see E.g. Katz, 2008, 559). However, the access to these partners for entrepreneurship education practices in schools is dominantly dependent of the knowledge, motivation, willingness and abilities of the teacher to engage in such activities.

In this paper we focus especially on the vocational education and training (VET) teachers and the stakeholders utilized by them. The main interest in this paper deals with the question of the teachers' network activities, those teachers' background characteristics, and participation activities that would determine the level of network activity. Additionally, we focus on the teacher as the main actor involving different outside partners into the formal school activities.

This paper contributes to the literature on entrepreneurship education in three ways: 1) It develops further the discussion of engaging outside school network resources in entrepreneurship education while also pinpointing the role of the teacher as the key operator in this process. 2) It provides empirical evidence on the importance of the participation activities on the teachers' ability to widen their resource base to carry out entrepreneurship education. 3) Finally, it raises some of the central elements, through which the teachers' networking activities could be further supported.

2. Prior evidence of teachers' educational networks for entrepreneurship education

In this section we take a close view on the relevant literature in question by discussing the studies dealing with stakeholder involvement in entrepreneurship education, the methods and contents associated with the inclusion of the external stakeholders in teaching, and especially the role of participation in creating commitment to new entrepreneurship education practices. Finally, we build four propositions on the association between the use of network partners and the teacher.

Stakeholder involvement in entrepreneurship education

From the point of view of the teacher and the school, local entrepreneurs and various non-profit organizations are part of the essential entrepreneurship education network. There may be a lot of businesses and other organizations close to the school that would not only be easily accessible but could also be very helpful in achieving the educational objectives. Cooperation between schools in different transitional phases could easily be connected to entrepreneurship education, as could the interaction with various research centers and universities.

Whilst the majority of entrepreneurship education in schools is dependent on the school and the teacher, the resources available from the related networks have their impact on entrepreneurship education. The networks may include local companies, associations, and national and international initiatives. It seems that the use of these resources has a direct impact on the level of entrepreneurship education in schools. (Deakins et al 2005; Jones & Iredale, 2010) However, Hynes & Richardson (2007) claim that engaging with external stakeholders requires commitment by both school and educator, and teacher needs to be ready to change knowledge and teaching perspective.

For involving outsiders in education, the school and the teacher should consider it worthwhile. In that sense, the advantages should outweigh the disadvantages of cooperation. The advantages could, for instance, include support for development of entrepreneurship education, enriched learning environment for students, new routes for financing learning projects, etc. Matlay (2009) reported that stakeholder involvement in entrepreneurship education is rich and influential on the ongoing development of the educational system. Matlay (2009) refers to Freeman's definition of stakeholder as "… any group or individuals who can affect or are affected by the achievement of the organization's objectives." Matlay suggests that the stakeholders expect improved entrepreneurial development of learners as a result of involvement. However, through their involvement, the stakeholders' views and expectations are likely to affect the operation of the school and the teachers. The effect could include expectations about, for example, the methods and contents of entrepreneurship education, timing and organization of entrepreneurship education in school. It is likely that for many schools, adapting to these expectations would be difficult or unwished, and it would symbolize losing of the school's independence.

For higher education institutes, the adoption of entrepreneurship education and thus new objectives for education is not easy – it seems that the largest obstacle for promotion of entrepreneurship is the image that people and institutions relate to entrepreneurship and enterprising. Bridge, Hegarty and Porter (2010) discussed the difficulties associated with the concept of entrepreneurship when promoting enterprise education within universities. They identified three different targets of enterprise education: employability, enterprise for life, and enterprise for new venture creation. Bridge et al (2010) suggested that 'enterprise for life'-concept would be the most appropriate approach to entrepreneurship education, but maintained that 'selling' the concept to the two sets of stakeholders – the funders and consumers – remains an issue. To enable the adoption of entrepreneurship education, different approaches to introduce entrepreneurship have been presented. The discussion on the institutional strategies supporting entrepreneurship (E.g., Pittaway & Hannon, 2008; Fayolle, et al 2006) underlines the importance of the cultural and structural conditions for undertaking entrepreneurship education.

Jones and Iredale (2010) claim that entrepreneurship and enterprise initiatives have been heavily dependent on public finance. However, there seems to be limited amount of resource

discussion (see also Pittaway & Hannon, 2008) but lack of resources have been mentioned by many (Hynes, 1996; Hynes & Richardson, 2007; Drakopoulou Dodd & Hynes, 2012). Resource allocation seems to be current topic in the field. Entrepreneurship education is characterized as being temporary and short-sighted, which stems from the nature of resourcing. The reason for that might be the great amount of different projects funded by local, regional, national or international development organizations. Despite of the project resources, the educator has to produce some of the resources himself. Therefore the resource challenge could be partially solved with wise co-operation with external stakeholders. At least in some institutions the decisions concerning utilizing different externalities are highly dependent on the choices made by the heads of the institution. Deakins et al (2005) emphasized the rectors' significance, not only as setting the guidelines for attitudes and culture, but also as key players in resource allocation, working relationships, and activation of the local community. Some resource allocation can also be solved by the school district or a higher instance.

Stakeholders and the methods and contents of entrepreneurship education

Pittaway and Hannon (2008) point out that the formation of outside cooperation is a strategic issue for a school and it plays a vital role in developing entrepreneurship education within HEIs. Pittaway and Hannon suggest that community engagement is important for entrepreneurship education in different ways. For instance, it demonstrates how the institution values its activities locally, and could raise its profile and credibility, especially in political terms. Carey and Matlay (2011) reported that in most of the institutes they studied, there have been attempts to develop enterprise education in sense of for example collaboration between different universities and disciplines, but they have often been met with internal problems.

The involvement of stakeholders in entrepreneurship education sets new requirements for the teacher and thus presupposes strong commitment and willingness from the teacher. E.g. changes in teacher's pedagogical approach to learning. In their study on creative industries in the UK, Carey and Matlay (2007) suggested that entrepreneurs or practitioners could be used more as educators. They argue that by recruiting entrepreneurs, the entrepreneurs could convey important world-of-work knowledge to students. Kourilsky and Carlson (1996) suggested that the experience would relate especially to bearing risks and making decisions under uncertainty. Lewis and Massey (2003) focused on enterprise education on vocational training. They pointed to the need for evaluated best-practices and models. In addition, according to findings by Care and Matlay (2011) in some cases university lecturers prefer using business mentors to protect the university. Lecturers may have difficulties in assessing students' business ideas and therefore they are happy to outsource these kinds of processes to externals.

The existent literature suggests (Dickson et al 2008; Jones & Iredale, 2010) a few routes or approaches to making use of network partners in entrepreneurship education. First of all, a majority of the partners provide useful materials, contents and experiental models for teachers to use in teaching. As such, the partners' would not take first-hand part in teaching, rather they would be back-office resources for the teacher. Second, through joint activities some partners could provide teachers and students first-hand knowledge, experiental knowledge and tacit understanding of the world outside formal school. These activities usually require someone to participate in teaching either in the school premises or for the teaching to take place outside the school. Some of these activities may appear as extra-curricular or semi-formal education.

Third, the presence of network partners may increase the perceived legitimacy of entrepreneurship education. The contents and methods may appear as more credible with the participation of entrepreneurial practitioners, and the teacher would appear more credible

because of these demonstrated contacts with outside school business life. Finally, the stakeholders may invest in time and money to support entrepreneurship education activities in schools. This may take place through special projects, theme days, company visits and participation in lecturing. (See E.g., Bell et al 2004; Cooper et al 2004; Deakins et al 2005; Bennett, 2006; Birdthistle et al 2007; Dickson et al 2008; Gibb, 2011)

Participation and commitment as the key to network activities

However, the teacher is the central actor in entrepreneurship education. In most of the cases it depends on the teachers to choose actual contents and methods of entrepreneurship education. (Fiet, 2001a; Jones, 2010; Löbler, 2006; Seikkula-Leino, Ruskovaara, Ikävalko, Mattila & Rytkölä, 2010; Ruskovaara & Pihkala, 2013). In line, the teacher decides which kinds of roles the different networks and externals play in school. In this sense, the teacher's commitment to adopt new activities into teaching becomes central. Earlier researches (E.g. Firestone and Pennel, 1993; Penuel et al 2007) have shown that teachers' participation in planning of future activities is likely to increase their commitment to the newly planned activities. This suggests that methods that would involve the teacher studying the new approaches and learning about the associated possibilities would support the building of the teacher's commitment. Additionally, increasing the teachers' possibility to participate in the decision-making about entrepreneurship education would be in line with this thinking. That is, methods to involve teachers in the planning of the entrepreneurship education in the school or the entrepreneurship curricula in general would bring positive results in terms of increased commitment by the teachers.

Hytti and O'Gorman (2004) claim that an effective entrepreneurship educator balances both the roles of teacher and coach, thus enabling action. His most important characteristic are allowing the right amount of freedom to the students and asking the right questions. Asking questions supports learning; it also makes the students feel that they are not alone in the learning process. For the teacher to be a successful entrepreneurship educator he/she will most likely need not only the support of the school board but also of regular supplementary education and insight into new teaching methods and materials. Providing up-to-date methods and new knowledge is imperative, as is providing effective teaching methods. For the demands to be met, the key resource allocation issue from a regional and facility aspect is making the educators available to take part in these courses.

Setting propositions on the teachers' characteristics and participation to network activity

Fiet (2001b) depicts a good entrepreneurship educator as someone who can efficiently combine theory and practice. In order to teacher been successful, he/she must be familiar with the most recent changes, be able to assess a situation, and be excited about the subject; most of all, he must have the know-how to bring a theory to life and offer practical examples that are in touch with the students' real world and experience.(Also van Dam, Schipper and Runhaar, 2010) For this task, the background of the teacher becomes an interesting issue – teachers' ability to utilize external networks is likely to differ and understanding these differences is vital for developing further those circumstances to support entrepreneurship education. Next, we develop a set of propositions to guide our analysis on the teachers' utilization of external network partners. We direct the analysis to the role of the teachers' background and activities in the school context.

<u>Teachers' Business Enterprise Background and Utilizing External Stakeholders</u>

Several years ago, Weinrauch (1984) wrote that it is difficult to find teachers with both suitable educational backgrounds and previous experience as entrepreneurs that is relevant to the matter. More recently, Bennett (2006) measured the impact of teachers' business experience

and found that teacher's earlier work experience and business background connections are positively related to the execution of entrepreneurship education (See also Sullivan, 2000). In line with this, Carey and Matlay (2007) suggest that more entrepreneurs should be recruited as educators. According to Gibb (2011), entrepreneurial behavior is developed in real-life practice as an entrepreneur and therefore teachers having a business background act more entrepreneurially. Similarly, Seikkula-Leino (2007) claims that co-operation with companies is easier for those teachers who have a business background. Therefore, we propose:

Proposition 1: The stronger the teacher's business background is, the more he/she is bound to utilize externals in his entrepreneurship education.

Teacher's Work Experience and External Stakeholders

Kyrö (2005) suggested that the teacher's length of service could play a role in what teaching practices are used. For example Löbler (2006) suggests that the teacher's age has an effect and that the younger the teacher (with less experience) the more he/she adopt entrepreneurship education practices into teaching. Contrary to previously mentioned studies, Bennett (2006) and Seikkula-Leino (2007) present that the business lecturer's age or the length of service do not affect the teachers' entrepreneurship education practices. More recently, van Dam, Schipper and Runhaar (2010) studied the teachers' entrepreneurial behavior in vocational education and in their analysis, monitored for tenure. However, their analysis showed no relationship to entrepreneurial behavior. Therefore, we propose:

Proposition 2: The teacher's work experience has no effect on the utilization of externals in his/her entrepreneurship education.

Teacher Training and Entrepreneurship Education Networks

According to Birdthistle et al (2007) and Frank (2007) there is a lack of enterprise-related teacher training in the education system. However they claim that the teachers' entrepreneurship education training has a positive effect on entrepreneurship education practices. In Bennett's (2006) study, teacher training played a significant role and increased the number of practices applied to entrepreneurship education. Recently, Ruskovaara and Pihkala (2013) reported on a large survey of teachers in basic and secondary education, and found that teacher training was one of the most influential factors explaining the teachers' activities in entrepreneurship education. It seems that supplementary training for teachers is useful for promoting specific themes or activities in education. Therefore, we propose:

Proposition 3: Enterprise-related teacher training positively affects teachers' entrepreneurship education networking practices.

Teachers' Participation on Planning Processes

Researchers (E.g. Harte & Stewart, 2012; Seikkula-Leino 2007) seem to agree that teachers' participation on any kind of strategic level actions and curricula processes have various positive effects. To be involved in the planning is likely to equip teachers with an understanding of the ratio, timing, methods, and expected results of the teaching activities, and thus, lead to increased performance. (E.g. Penuel et al 2007: 952) On the other hand, the teacher's ability to participate in the planning that concerns their own activities is likely create commitment in the activities and the expected results. (E.g. Firestone & Pennel, 1993) For example, teachers' participate on curricula process are more likely to utilize different out-side-school actors in their teaching. (Harte & Stewart, 2012; Seikkula-Leino 2007; Seikkula-Leino, et al 2012) On that basis, we propose:

Proposition 4: Participation on planning processes effect positively on teachers' networking activities.

The number of entrepreneurship education studies, where educators' gender was especially the focus of the analysis is rather limited. However, according to Birdthistle et al (2007) female teachers were very much the driving force behind enterprise initiatives. Partly to the contrary, Seikkula-Leino (2007) claims that gender does not affect teachers' co-operation with companies and in line with this Bennett (2006) argues that lecturer's gender does not play a significant role in inclining entrepreneurship education. We include gender as a control variable in the analysis.

3. Methodology

Context of the study

The empirical study was conducted in Finland. During the years 2007–2010 Finnish vocational education curricula were updated so that all vocational degrees require at least 5 study weeks of entrepreneurship education (Finnish National Board of Education, 2009). According to the national guidelines and curricula the conception of learning is emphasizing students' own active knowledge construction process, the aim is to create a study environment which will enable students to set their own objectives and learn to work independently and collaboratively in different groups and networks. Therefore in order to enrich the learning environment as such, different external stakeholders are of great help. In curricula, there actually aren't any concrete aims for utilizing externals but they are left up to teachers how to reach these kinds of objectives.

Collection and analysis of the data

The data has been collected through the Measurement Tool for Entrepreneurship Education, which is an online survey, publicly available online at www.lut.fi/mittaristo. The measurement tool is a full-scale questionnaire for identifying the operations of entrepreneurship education at a concrete level for teachers. The survey focuses on the question what the teacher does or does not do when he or she is doing entrepreneurship education. The form consists of 140 questions, of which 11 networking questions along with four participation questions are examined in this study.

The measurement tool has been developed in cooperation with the authorities from the Finnish National Board of Education and especially with a group of teachers in basic, general upper secondary and vocational upper secondary education. The tool has been tested and cross-tested by teachers who reported on its usefulness, understandability and transferability, and their role was particularly important when testing the reliability of the tool. The theoretical and conceptual framework of the variables has been generated by combining theoretical and scientific basis with administrative documents, and by following the participatory action research process (Reason & Bradbury, 2008; Cohen et al 2007; Argyris, 1993).

Measures

Networking partners. In the analysis, we use a measure of network partners covering the 11 different entrepreneurship development partners operating on the national level (see Table 2). The partners include the following organizations: *Development Centre Opinkirjo* – a non-profit organization (previously known as Kerhokeskus); *The Federation* of Finnish *Enterprises* – a non-profit organization; *Finnish 4-H* - the role of 4-H organization is rather under studied in spite of the age and popularity of the organization, especially in terms of rural areas entrepreneurship promotion; *Regional Entrepreneurship Education YES-centres* and *Junior Achievement Finland* both provide teachers' with materials and training and most of their

activities are free. *Economic Information Office's* product variety also includes promoting materials for teachers, whereas *FINPEC - Finnish Practice Enterprises Centre* organizes practice enterprise simulations, *INNOSUOMI i*s a consortium of different stakeholders promoting practice based Finnish innovation and organizing annual competitions for schools and companies. *Employment and Economic Development Office*, *Labour Market Organization*, *Management Consultancy* and *Universities* are public or state-owned organizations, providing information concerning entrepreneurship, etc. Most of the above mentioned organizations operate free of charge, they can be reached in all parts of Finland and most of the materials can be found on internet as well. Rather surprisingly, research concerning the aforementioned externals in sense of their role in entrepreneurship education seems very limited. The aforementioned network partners all operate in the field of entrepreneurship education, however it is noteworthy that not all the stakeholders have an exact focus on VET-level (for example, Opinkirjo's special attention has been more on general education).

In this study teachers were asked to choose an alternative of "yes" or "no" which best described their actions during the last six months in sense if they have or haven't done any co-operation with mentioned stakeholders. The measures were dichotomous (0= no cooperation; 1= yes cooperation).

Teacher characteristics. In the analysis, we include four different characteristics of teacher background. Descriptive statistics of these measures can be found in table 1. The teacher characteristics include following measures:

- Gender – a dichotomous indicator for the sex of the respondent. The indicator is coded in the data as male= 0; female=1.
- Working experience – on a scale of 0-5 years; 6-10; 11-10; 21-30; more than 30. The experience variable refers to the duration of the teacher's position in years.
- Business background – a dichotomous indicator of whether the teacher has gained experience in business life. The variable is coded as no experience = 0; business experience =1.
- Own capability – an indicator depicting teachers' own assessment concerning his/her entrepreneurship education capabilities, on a scale of 1-5 with weak =1; reasonable=2; quite good=3; good=4; excellent=5.

Participation measures. In the analysis, we study the role of teacher participation on the networks activities with the following four measures. Descriptive statistics of these measures can be found in table 1.

- Teacher training courses of entrepreneurship education – an indicator depicting the teacher training as an amount of entrepreneurship education courses the teacher has participated. On a scale of no courses =0; some training =1; many courses =2.
- Curricula development – a dichotomous indicator of whether the teacher has participated schools' curricula development process. The variable is coded as not participated =0; has participated =1
- School EE plans – a dichotomous indicator of whether the teacher has participated schools' entrepreneurship education planning. The variable is coded as not participated =0; has participated =1
- Regional EE plans - a dichotomous indicator of whether the teacher has participated on regional entrepreneurship education planning. The variable is coded as not participated =0; has participated =1

Respondents

In this paper the sample deals only with teachers operating at a vocational level (See Table 1). The data consists of 448 VET-teachers representing 18 Finnish provinces and 252 (56,3 %) of the respondents are women and 196 (43,7 %) men. The working experience of the respondents shows a large variance, ranging from some year to more than 31 years. Teachers also reported the amount of training they have received in entrepreneurship education, and a just over third (38,4 %) had no training at all. However, the majority of the respondents (78,1 %) reported having gained experience also in business. Overall, the respondents' profiles correspond quite well with the general characteristics of Finnish VET-teachers. Altogether, our sample covers roughly 2 % of the 21.000 Finnish VET teachers.

Table 1. Description of the respondents (n 448).

		N	%
Gender	Men	196	43,7
	Women	252	56,3
Working experience	0-5 years	142	31,7
	6-10 years	106	23,7
	11-20 years	116	25,9
	21-30 years	63	14,1
	over 31 years	21	4,7
Own capability	weak	53	11,8
	reasonable	152	33,9
	quite good	131	29,2
	good	82	18,3
	excellent	30	6,7
Business background	no	98	21,9
	yes	350	78,1
Particip. in EE courses	No	172	38,4
	Some	223	49,8
	Many	53	11,8
Particip. EE curricula development	no	231	51,6
	yes	217	48,4
Particip. in schools' EE plans	no	280	62,5
	yes	168	37,5
Particip. in regional EE plans	no	378	84,4
	yes	70	15,6

4. Empirical analysis

In our analysis, we focus on the teachers' use of 11 main Finnish network partners (See Table 2). The questionnaire contained question: "Have you utilized the following external stakeholder/s in your teaching during the last six months?" (Yes / No). In table 2, the share of the use of each partner is depicted. Of the different partners the local employment and economic office seems the most popular amongst the teachers. Some 37 % of the teachers reported to have been in cooperation with the employment office. The other well covered partners are JA-

YE (37,1 %), Entrepreneurship Association (30,1 %), Municipal Business Services (29,7 %) and local YES-centre (29, 0 %).

Table 2. Percentages of teachers using different network partners (n 448).

	% of teachers using
Employment and Economic Development Office…	37,9 %
Labour Market Organization…	37,9 %
Junior Achievement Finland…	37,1 %
Entrepreneurship Association…	30,1 %
Municipal Business Services	29,7 %
Regional Entrepreneurship Education YES-centre for teachers…	29,0 %
Economic Information Office	16,3 %
University's Unit of Entrepreneurship…	11,2 %
4-H Organisation	8,5 %
FINPEC - Finnish Practice Enterprises Centre…	7,8 %
INNOSUOMI - Promoting Finnish Innovation…	7,8 %
Development Centre Opinkirjo	4,2 %

Building on the frequencies of network partners, we created a new sum variable, labeled "Networks", to describe the level of the teachers' network activity. In terms of teachers' profile regarding the use of network partners, the frequencies varied between 0 and 11, where the mean was 2,2. In practice this means that an average VET-teacher utilizes 2,2 different stakeholders during the reported last six months and some respondents were reported doing co-operation with all 11 stakeholders and some haven't done that kind of co-operation at all. Next, we conduct an analysis of variance of the network measure in regard of a set of teachers' background measures that characterize the respondents' profile.

Table 3 provides interesting insights into the teachers' use of network partners. First of all, in terms of teacher characteristics, all but one of the background measures produce significant differences in the teachers' network activities. It seems that women are more active in using outside resources in entrepreneurship education within vocational education. This finding is somewhat surprising, as most of earlier studies have suggested that there are no differences between male and female teachers in entrepreneurship education (Bennett, 2006; Seikkula-Leino, 2007; Ruskovaara & Pihkala, forthcoming). On the other hand, teacher tenure does not produce differences in network activity – that is, young and older teachers are equally equipped for engaging outsiders. In terms of teachers' business background, those teachers with earlier experiences in business seem to be more active in networking with outsiders. An interesting notion is related to the teachers' capability or 'self-efficacy' of entrepreneurship education. The analysis suggests that the teachers' conception of their own skills in entrepreneurship education is strongly and positively related to the observed level of networking activity.

The role of participation in supplementary education and entrepreneurship education planning seems very strong. The analysis in table 3 below suggests that all participation measures produce statistically significant differences in the networking activity of teachers. In terms of group means, the effect of the teacher's ability to participate in entrepreneurship education [EE] planning in general roughly triples his/hers networking activity.

Table 3. Network activities compared with teachers' characteristics and participation.

	Group	means	F-value	Sig.
Gender	Male	1,93	5,423**	,020
	Female	2,40		
Work experience	0-5 years	2,01	,432	,785
	6-10 years	2,27		
	11-20 years	2,34		
	21-30 years	2,24		
	31- years	2,14		
Business background	No	1,63	9,059***	,003
	Yes	2,35		
Own capability	weak	,74	30,368***	,000
	reasonable	1,45		
	quite good	2,44		
	good	3,56		
	excellent	3,77		
Particip. in EE courses	No	1,16	70,326***	,000
	Some	2,44		
	Many	4,51		
Particip. EE curricula development	no	1,41	76,74***	,000
	yes	3,03		
Participated schools' EE plans	no	1,43	127,17***	,000
	yes	3,48		
Particip. in regional EE plans	no	1,79	110,49***	,000
	yes	4,39		

Note: * p<.05. ** p< .01. *** p<.001.

Finally, we examine how the teachers' background characteristics and participation measures explain the level of their use of externals with a linear regression analysis. (See Table 4) In the analysis, we test two models – the first with only the teachers' background characteristics and the second together with the participation measures.

The regression analysis suggests that only some of teacher's background characteristics have an impact on the teacher's network activity. The regression model 1 shows a moderate level of R-square, 0,227. It seems that the teacher's gender and conception of his/her own capability to conduct entrepreneurship education receive the only significant betas. This finding is in line with the statistical differences found in the ANOVA-analysis. However, in spite of the statistically significant group level differences in terms of teachers' business background, it seems that a business background does not contribute to the explanation of the teachers' network activities. Additionally, the teachers' working experience does not explain the network activity of the entrepreneurship education activities in the school.

Table 4. Regression Analysis on network activities.

Variable	Model 1	Model 2
Constant	,051	-,005
Gender	,488**	,342*
Working experience	,101	,023
Business background	,290	,296
Own capability	,865***	,349***
Particip. in EE courses		,688***
Participated EE curricula development		,319
Participated schools' EE plan		,853***
Particip. in regional EE plans		1,023***
R-square	.227***	.402***

Note: * p<.05. ** p< .01. *** p<.001.

The second model in table 4 introduces the participation measures in the analysis. Firstly, the explanatory power of the model almost twice as much as the first model. As in the first model, gender and own capability remain significant in the equation, even if with lowered betas. Teachers' sense of their capability is a very strong determinant for using networks. In addition to these, the participation measures seem to make a major difference. Teachers' participation in regional entrepreneurship education plans, participation in the school's entrepreneurship education plans, as well as participation in entrepreneurship education courses all receive strong and significant betas in the equation. In general, the analysis suggests that teachers' involvement in planning entrepreneurship education is important in explaining the level of using externalities. Interestingly, teachers' participation in the entrepreneurship curricula development does not contribute to the explanation of the network activities.

5. Discussion and conclusions

In general terms, the recent literature on entrepreneurship education largely emphasises on the importance of including new resources into the education. Doing so, the knowledge, skills and experiences about entrepreneurship would be more easily adopted and at the same time, the teacher would be supported by the external help available. In our study we have taken a close look at the teachers' network activities on the vocational level. In the vocational education, the aims and objectives of education are very closely related to the need of the working life and thus, bridging experiental models to teaching would be most suitable for the general aims of the curricula. In this paper, we have brought empirical data into the discussion of who is the teacher that uses external network partners in his teaching and we paid special attention to the role of teacher commitment on the use of network resources.

Our first proposition suggested that "*The stronger the teacher's business background is, the more he/she is bound to utilize externals in his entrepreneurship education*". Our analysis suggests that the teachers' business background does produce statistically significant differences in network activity, but nevertheless it does not contribute to the explanation of the network activity of the teachers. In this sense, the first proposition did not gain support. In the vocational institutes, the teachers very often have gained experience in the business environment before entering the education sector. Generally, this fact has been considered as one of the reasons to explain the strong commitment to entrepreneurship education within the

vocational institutes (Bennett, 2006; Sullivan, 2000). On the basis of our analysis, this thinking should be abandoned – the teachers' business background does not lead to richer entrepreneurship education practices.

The second proposition: "*The teacher's work experience has no effect on the utilization of externals in his/her entrepreneurship education.*" doesn't gain support and teacher's working experience doesn't seem to be an explanatory factor. Therefore, in line with Bennett's (2006) studies, we can conclude that, for example, recently graduated teachers are not different with regard to networking with externals. This is quite interesting finding, as at the same time we can see that many of the Finnish institutes providing vocational teacher training do emphasize entrepreneurship education in their initial training (E.g. Seikkula-Leino et al 2012). Entrepreneurship education has have its' role in Finnish education system about twenty years, but being as part of teachers initial training the role is only in the process of formation.

In earlier research, there is rather strong evidence on the role of the teacher training for entrepreneurship education (Birdthistle et al 2007; Frank, 2007; Ruskovaara & Pihkala, 2013). Our third proposition suggested that "*Enterprise-related teacher training positively affects teachers' entrepreneurship education networking practices*". Teacher' training in entrepreneurship education seems to be an effective way of promoting the utilization of network partners. Interestingly, the level of co-operation was twice as high among the teachers who had participated in training, compared to those who had not participated in any entrepreneurship education training.

The fourth proposition suggested that: *"Participation on planning processes effect positively on teachers' networking activities"*. In line with earlier studies (Firestone & Pennel, 1993; Penuel et al 2007; Harte & Stewart, 2012), our analysis strongly supports this proposition. Interestingly all but one measures concerning teachers' participation on school or regional level entrepreneurship education planning and participation on curricula development seemed to play a decisive role in determining network activity. It is noteworthy that those teachers who participated on mentioned planning utilize two to three times more externalities than their colleagues who had not participated in planning at all. In regard to curricula planning, our results are interesting. Whilst participation in the school's entrepreneurship education plans and the regional entrepreneurship plans gain strong explanatory power concerning networking activities, participation to schools curricula plans does not contribute to the network activity. This may stem from the more abstract and distant nature of curricula plans compared to the close and concrete entrepreneurship education plans. In this sense, the teachers would be more committed to the objectives set in the concrete plans and thus more able to adopt the ideas and mind set from the plans when those plan deal directly with in their own teaching. Additionally, it might be that, for example, the participants in regional planning are known been bellwethers in entrepreneurship education and therefore invited into that role. Nevertheless, we encourage more research to be undertaken on the issue.

The analysis of the data shows that, although there is considerable discussions concerning the lack of resources, teachers aren't fully utilizing the resource provided for them. On that basis a question, how to build teachers' networking competences rises. It still remains unsolved, why teachers aren't using the available and free external resources, are they any good or are there too big gaps between supply and demand. Furthermore, our data and analysis don't give us any answers what is the ideal amount of using outside stakeholders. However, it probably would be useful to take a full advantage of materials, help and other resources externals can offer for schools.

In Finland, all VET-teachers have annually some compulsory, in-service training days. Very often one or two of these trainings is organized by institute / school and are mandatory for the whole work community. Based on our findings, we would suggest that VET-institutes would organize annually entrepreneurship education related training for all teachers. In sense of training content, having reported the role of teachers' participation on planning, one idea would be engage teachers' during the training first planning the schools entrepreneurship education and later on provide them with materials, methods and solutions how to put the plans into action with students.

As teachers' involvement in planning and participating trainings seem to be so strong determinants those gives food for thought for principals: how to gather as many as possible teachers' to participate in the planning processes? How to encourage the new ones to participate training? Our results suggests that in this regard even small steps are decisive – participation in decision making creates commitment and eventually, good results. The approach to participate as many as possible is also a matter of school culture. In this sense, the development of an enterprising school is a step in the right direction.

6. Limitations and further research

As in any study, also our analysis faces limitations. The study focuses on the teachers' activities in Finnish vocational schools. As such, further data cannot be provided on the generalizability of the results in other countries. The teachers have responded to the survey on a voluntary basis, which naturally may produce several biases in the response profiles. Therefore, the possibility of common method bias should be noted, as the data was gathered with a self-report questionnaire. Moreover, the results do not tell us about the quality of the practices applied, nor their usefulness. Furthermore, the data does not give us any answers about the level of co-operation, nor how many students were involved.

Our results indicate some interesting findings that would be useful to study further. For example, methodologically, it would be interesting to gather qualitative data and study the themes further in that sense. Also, as teachers' participation seems to be so strong determinant, what kinds of processes create the commitment, why somebody got more involved, in which stage, and does the work community or management have a role there? Moreover, the implications concerning teacher training: Are there some contents that would be more valuable for teachers and for entrepreneurship education as such? And finally, the role of the curricula development in that sense would be an interesting field of study.

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