

Reviewing Entrepreneurship Education Projects and their Impact

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Abstract

Entrepreneurship education (EE) has often been evaluated from the perspective of students and teachers. Not many studies have been conducted from the perspective of convergent EE path models and broad target groups. It has been understood that the systematic evaluation of entrepreneurship education is still missing. The aim of this article is to review entrepreneurship education projects and their impact based on Gibb's entrepreneurship education framework including entrepreneurial behaviours, attributes and skills (BAS) using a large questionnaire survey, interviews and workshops with project participants. Based on a broad target group and extensive data, recommendations are made for EE from the perspective of the target groups and an EE path for all school levels, and for teacher training. The article contributes also to providing a methodology for the systematic evaluation of EE based on the BAS framework.

JEL classification code: I23, L26; M53

Keywords: Entrepreneurship education, evaluation, entrepreneurial pedagogy, levels of education

1. Introduction

The systematic evaluation of entrepreneurship education (EE) projects and actions is extremely important to understand and open up the real impact of EE projects. Projects and activities in EE have been occurring for a long time, albeit with rather minimal evaluation. Entrepreneurship education has often been evaluated from the perspective of students (e.g. Gibb, 2005b; Fayolle & Klandt, 2006) and teachers (e.g. Gustafsson-Pesonen & Remes, 2012; Ruskovaara & Pihkala, 2015). The problem is that there are few studies exploring a systematic EE path model considering a broad target group (e.g. Fayolle, 2007; Fayolle & Gailly, 2008; Fayolle & Klandt, 2006). According to Klapper and Farber (2016), a systematized evaluation of entrepreneurship education is still missing.

There are several other reasons why the evaluation of EE projects are necessary. For example, Patton (1982, 1997, 2002, 2013) has stated that: “if evaluation is not done, success cannot be distinguished from failure. If success or failure is not pointed out, we cannot learn from them, either. If the results are not evaluated and monitored accurately, it is difficult to achieve more wide-ranging support for the measures”. It has been said that the meaning of evaluation is defining of the value of the object or activity under examination through evaluative and interpretative analysis. Aims, demands and the criteria against which the issue under evaluation is compared, take a central position. The meaning of evaluation is to yield diverse information about the value, strengths and areas for improvement for the activity, and its aim is the development of the focal activity (FEEC, 2004).

In Finland, EE projects have been conducted since 1995 within EU membership. An extremely large number of EE projects have been produced with the help of EU financing. The projects have been used as tools for promoting EE research. The strategy of EE projects has crystalized into nine dimensions: government program policy definitions, central administration norm control and information control, teacher training and continuing education for teachers, developing EE pedagogy and EE readiness, and development projects for study and evaluation. When the EU financing season of 2007–2013 reached the halfway point, there was a need to make a systematic evaluation of ongoing EE projects carried out in the 2000’s. It was necessary to open up good practices and learn from practices so that developing EE projects and systematic EE paths were possible. Hence, in Finland, the evaluation of national level EE projects has been carried out through 2000–2010 based on the Ministry of Education and Culture and ESF needs. The wide and systematic EE project evaluation had not been carried out previously, which was the reason why the Finnish Ministry of Education and Culture commissioned systematic evaluation research (OPM, 2009).

The aim of this paper is, on the one hand, to unpack the best practices from the evaluated EE projects and to build a methodology for the systematic evaluation of EE projects, and on the other hand, to offer recommendations for teacher training and continuing teacher training and to create the systematic EE path for different school levels.

The research questions are: 1) what kinds of qualitative and quantitative best practices can be identified and systematically evaluated in EE projects, 2) what kinds of EE methods and EE pedagogy have been tested during the EE projects, and 3) what kinds of solutions are there to create systematic EE paths for teacher training and for all school levels.

The theoretical basis of this study has been built on Gibb’s (2005ab) EE framework including entrepreneurial behaviours, attributes and skills (BAS). This also creates the basis

for the development of the methodology; that is, a model for the systematic evaluation of EE projects based on the BAS framework.

With this article, we will discuss the systematic evaluation of qualitative and quantitative successes and permanent regional changes related to the theme of EE, and make recommendations in regard to EE methods, for teacher training and a path for EE for the different school levels in Finland. All data is based on a broad questionnaire survey, interviews and workshops on EE research in Finland (Gustafsson-Pesonen & Kiuru, 2012). The target groups for this evaluation are EE project staff, teachers and students who participated in EE projects and actions in primary, secondary, and vocational schools and in higher education through 2000–2010. Based on a broad target group and extensive study data, it is possible to systematize the evaluation and create a systematic EE path based on Gibb's framework of EE (Gibb, 2005b; 2006). It is possible to offer recommendations for EE projects, education and actions tailored for the perspective of the target groups. It is also possible to try to create an EE path for all school levels because of this broad target group and large study.

The contribution of this paper focuses on building a methodology (a model) for the systematic evaluation of EE projects and actions based on the BAS framework. This evaluation has opened up best practices in EE methods and the EE path to teacher training and for all school levels. The study is based on "Ideoita ja oivalluksia yrittäjyyskasvatukseen YKOONTI" research data (Gustafsson-Pesonen & Kiuru, 2012), which was a national level evaluative study on EE projects through 2000–2010. The study methodology was based on EU project evaluation and especially ex post evaluation. The research was carried out from September 2010 to October 2012. It is important to understand that the project was the first national level study of EE project evaluation in Finland. Prior to this study and since, no broad evaluative studies on EU EE projects in Finland have been conducted.

The paper is built around four sections. After the introduction, we present the framework of the evaluation research and the framework of the study. In chapter three, the methodology and research data for the study is described. Chapter four, presents the results of the study. At the end of the paper, there is a summary and recommendations for further study.

2. The Framework of the Entrepreneurship Education Evaluation Study

2.1. The Context of Entrepreneurship Education

The context of entrepreneurship education (EE) has been studied since the 1970s and 1980s. Gibb (1993) argued that EE and the term entrepreneurship should not only be used in business studies but entrepreneurship should be defined as the ability to operate confidently in situations of uncertainty. Arpiainen (2019) argues that entrepreneurship and EE should be included in all educational subjects through a wider understanding of EE. The wider understanding of EE should be seen as including opportunity recognition, learning from failures, risk-taking, learning by doing, getting feedback, borrowing ideas, inventing solutions, interacting with colleagues, personal interaction under pressure, and problem solving (Gibb, 2005ab, 2006, 2010). Quite often entrepreneurial pedagogy (e.g. Arpiainen, 2019; Fayolle & Gailly, 2008; Kajanto, Kyrö & Saarelainen, 2001) is seen as part of business studies and teaching for entrepreneurship is often used in business terminology and methods rather than according to this broader understanding. This is a problem if we are trying to

help and encourage our target group (students, teachers, potential entrepreneurs) to do things in an entrepreneurial way or to use entrepreneurial pedagogy (Arpiainen, 2019; Gibb, 2005ab, 2006).

The term “entrepreneurial pedagogy” began to emerge in EE research in the 1990s (e.g. Gibb, 1993; Deakins & Freel, 1998; Young & Sexton, 1997). After that, several EE scholars have studied entrepreneurial pedagogy and its expression (Arpiainen, 2019; Diensberg, 2008; Fayolle, 2007; Gibb, 2005ab, 2006, 2010; Harrison & Leitch, 2005; Hägg, 2011; Hägg & Kurczewska, 2016; Hytti & O’Corman, 2004; Kyrö, Seikkula-Leino & Mylläri, 2011; Lackeus, 2014, 2015; Politis, 2005; Rae, 2000, 2004ab, 2005; Rae & Carswell, 2001;). For example, according to Rae and Carswell (2001), human beings are the most important instrument when talking about entrepreneurship because people are the leaders of the entrepreneurship process. Diensberg (2008) argues that the growth and support of individualism when talking about entrepreneurship is the best approach to entrepreneurial pedagogy because it is important to learn to do things in an entrepreneurial way and self-confidently (Arpiainen, 2019; Fayolle, 2013; Gibb, 2005ab, 2006, 2010; Lackeus, 2014, 2015). Diensberg (2008) has also argued that classroom teaching should be forgotten because there is a need, for example, for learning by doing, learning from each other and learning from failures if we want to understand the breadth of EE.

Gibb (2005ab, 2006, 2010, see also Arpiainen, 2019; Fayolle, 2013; Lackeus, 2014, 2015) has stated, that entrepreneurial pedagogy grows from the essence of entrepreneurship, as entrepreneurship education is about: a) learning for entrepreneurship, b) learning about entrepreneurship and c) learning through entrepreneurship. He argued that entrepreneurial pedagogy is more action learning than simply listening. It is experimental learning, teamwork and learning by doing. According to Fayolle (2007, 2013), learning by doing is the best way to practice entrepreneurship. Scholars (e.g. Gibb, 2010; Hytti & O’Gorman, 2004; Lackeus, 2014, 2015; Seikkula-Leino, Ruskovaara, Ikävalko, Mattila & Rytölä, 2010) have argued that teachers should be able to offer students an environment where they can feel, see, communicate and learn how to organize things.

Entrepreneurship education and learning enables career planning, offers an entrepreneurial way of looking at and carrying out things, and with the help of this, we can characterize teaching and learning (Arpiainen, 2019; Berglund & Johansson, 2007; Fayolle, 2007; Gibb, 2010; Hägg, 2011; Hägg & Kurczewska, 2016; Hytti & O’Corman, 2004; Kyrö & Carrier, 2005; Kyrö et al., 2011; Lackeus, 2014, 2015). According to several researchers (Arpiainen, 2019; Fayolle, 2007, 2013; Gibb, 2005a, 2010; Hägg, 2011; Hägg & Kurczewska, 2016; Lackeus, 2014, 2015; Seikkula-Leino, 2007; Steyaert & Katz, 2006), the pedagogy used in entrepreneurship education must be built on the active role of the learners in the learning process, and through that, non-traditional teaching methods. For example communality, problem solving, learning from failures, creativity and reflection have to be visible in the realization of entrepreneurship education.

Recent studies in favour of further strengthening EE and entrepreneurial pedagogy assert that opportunity recognition, learning from failures, risk-taking, learning by doing, responding to feedback, borrowing ideas, inventing solutions, interacting with colleagues, personal interactions under pressure and problem solving should be emphasized over classroom teaching (Arpiainen, 2019; Fayolle, 2013; Hägg, 2011; Hägg & Kurczewska, 2016; Kyrö et al., 2011; Lackeus, 2014, 2015; Seikkula-Leino, 2007; Srivastava & Thomas, 2017). Recently, EE has been opened up in terms of not only being about creating business plans and starting new ventures, but it is also about creativity, innovation, and growth, a way of

thinking and acting relevant to all parts of the economy and society as well as the whole surrounding ecosystem (Volkmann & Audretsch, 2017).

Based on the EE and entrepreneurship pedagogy studies mentioned above, systematic EE evaluation and systematic EE path should include a deeper understanding EE. In this study, the author will try to connect these different opinions on EE with the systematic evaluation of EE projects and creating an EE path.

2.2. The Evaluation Experience of Projects

The report by the European Directorate General for Enterprise and Industry (European Commission, 2012) – “Effects and Impact of Entrepreneurship Programmes in Higher Education” – highlighted that it is important to understand the effectiveness of EE. The report mentions that from among the few studies connected to EE evaluation, many of them are from the US context. The report underlined that entrepreneurship in education can make a difference and it can potentially impact the intentions of target groups to create a new venture, as well as their entrepreneurial competence and employability. It also noted that EE will increase social inclusion by adding to the number of both commercial and social entrepreneurs, which, as the report suggests, creates positive spin-off effects for both society and economy. Fayolle and Gailly (2015) agree with these arguments and it is possible to see these in European Commission (2017) reports.

In the current study, which focuses on project evaluation, we also have to understand the reason for evaluating EU projects. At the Commission level, the briefing for the evaluation of EU projects states that the function of evaluation is to analyse how well the project answers the need it is carried out for, in other words to evaluate the results and effects of the project. The execution of the evaluation depends, at which stage evaluation is done, and who does the evaluating. The aim of evaluation is also to yield information for the planning of the project, to assist in the efficient distribution of resources and to improve the quality of the project (European Commission, 2004).

Evaluation and its effects can be examined at different times, according to whether it concentrates on ex nunc, ex ante or ex post evaluation (European Commission, 1997). Project evaluation focuses mainly on ex post evaluation because very often project evaluations are conducted after the project has ended. Ex post evaluation examines the project as a whole and concentrates on the results, effectiveness and efficiency of the project. Ex post evaluation also pays attention to the permanence of the results and the question of which factors have led to successes and/or failures (European Commission, 2004).

Ex post evaluation examines a completed project, but it can also have a significant role in the preparation of follow-up projects to be carried out in the future (Keränen, 2003). Ex post evaluation can therefore also be seen as a learning and teaching process to improve future activities. At best, the organization that carried out the project can learn from the evaluation because it yields generally applicable information that can also be utilized by others planning or carrying out similar projects. Consequently, by carrying out ex post evaluations, good practices can be identified and brought more extensively into use (Keränen, 2003).

Three factors are emphasized by Neuman et al. (2013) in the evaluation process. The first factor is the *commitment of the organization and its stakeholders to the evaluation process*. They refer to Patton (1982, 1997, 2002, 2013), who claims that stakeholder involvement during the different stages of an evaluation promotes the use of the evaluation and gives

them a sense of ownership. Patton's model therefore maintains that stakeholders should be involved in planning the evaluation, designing the tools to be used and planning its implementation. Neuman et al. (2013) also stated, referring to Chelmsky (1977) that it is not only the quality of the findings that affect their application, but also the involvement of a key decision-maker who is interested in the evaluation and committed to its application and implementation. The second factor, according to Neuman et al. (2013) is the *need for an evaluation in the organization and the information's degree of relevance*. The chances that the evaluation findings will be used increase in parallel with the increased relevance of the information and the way it meets the needs of the organization. In other words, if the organization does not see the evaluation as relevant, it is less likely to use its results, and vice versa (e.g. Cox, 1977). The third factor is the *quality of communications between the evaluator and the organization undergoing the evaluation*. As the quality of the communications between the two parties increases, the chance that the evaluation findings will be implemented will also increase (Greene, 1988; Weiss, 1999). Preskill, Zuckerman and Matthews (2003, cited in Neuman et al., 2013) argue that it is not only the quality of communication, but also the frequency and methods of communication that matter. The results of the evaluation should reveal recommendations for stakeholders and the quality of project actions, and it is possible to highlight recommendations for the development for future actions based on the evaluation results.

Fretschner and Weber (2013) have conducted evaluation research, and they argue that much work remains to be done. According to them, the first two predominant theoretical models in EE research evolved in the eighties. Fretschner and Weber (2013) refer to Shapero and Sokol's (1982) model of the entrepreneurial event and Ajzen's (1985) theory of planned behaviour. Furthermore, ever since then, these two approaches have been compared (e.g. Krueger, Reilly & Carsrud, 2000), combined (e.g. Krueger & Brazeal, 1994), and modified (e.g. Davidsson, 1995ab) by several researchers. Fretschner and Weber (2013) claimed that almost all publications used different evaluation models, constructs, and indicators. To overcome this, they discussed the need for a standard instrument for measuring EE. First, they found that Liñán and Chen (2009) have developed the "entrepreneurial intention questionnaire". Second, they said that different curricular and instructional designs of the "treatment" of entrepreneurship courses further reduce the comparability between studies. Third, according to Fretschner and Weber (2013) evaluation studies vary considerably in their methodological rigour regarding the use of pre-post designs, control groups, follow-up studies, and controls for self-selection of students into entrepreneurship programmes. In this context, a recent meta-analysis of the impact of EE related outcomes by Martin, McNally and Kay (2012) showed that a large number of studies do not meet their inclusion criteria due to methodological issues and the fact that studies with poorer quality standards overestimate the effects of EE. The evaluation of EE projects should focus not only on the perspective of the students in regard to EE, but also on that of teachers, staff, and stakeholders.

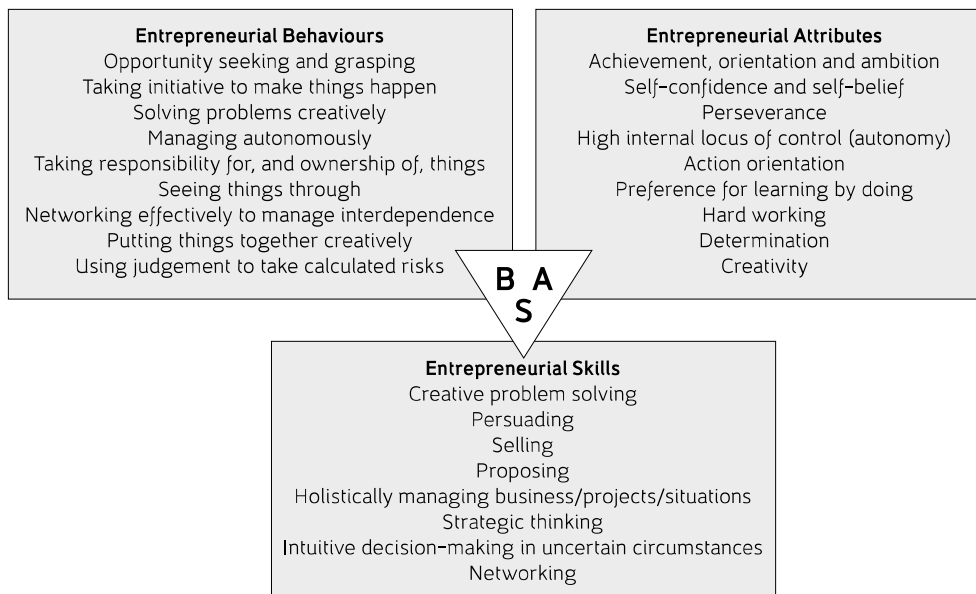
This study is based on EE project evaluation and focuses on ex post evaluation; therefore, it was possible to yield information for the planning of the project, to assist in the efficient distribution of resources and to improve the quality of the project. This study, has therefore, opened up the usefulness, feasibility and applicability concepts of evaluated EE projects. The results of this study provide recommendations to stakeholders and show the quality of EE actions and projects in Finland. The results also highlight recommendations for EE development at different school levels and teacher training based on the evaluation results.

The evaluation study of EE projects focuses not only on the student perspective on EE development, but also on that of teachers, staff, and stakeholders.

2.3. The Framework of Entrepreneurship Education Evaluation – Behaviours, Attributes and Skills

This study was built on Gibb's (2005ab) framework of entrepreneurial behaviours, attributes and skills (BAS), which is suggested as a better way to understand and develop EE if we want to support our target groups and their actions in a more active and entrepreneurial way (Gibb, 2005b). Klapper and Farber (2016) have also more recently confirmed that EE evaluation criteria should combine measuring knowledge, specific skills or tools, levels of interest, awareness or intention, degree of participation in the classroom, and motivation. The reason for the selection of Gibb's BAS framework for EE evaluation is that it is quite efficient and well tested (e.g. Arpiainen, 2019; Braun, 2008; Diensberg, 2008; Fayolle, 2007; Fayolle, Gailly & Lassas-Clerc, 2006; Fayolle & Klandt, 2006; Fayolle & Gailly, 2008; Gibb, 1993, 2005ab, 2006; Kyrö, 2005; Klapper & Farber, 2016; Kyrö, Speer & Gustafsson-Pesonen & Kiuru, 2012) and includes all three points of view for starting up a business or for achieving an entrepreneurial mindset when working as an employee. The BAS framework was tested and modified in a previous EE training evaluation study (Gustafsson-Pesonen & Remes, 2012). Gibb's BAS framework was presented and adapted by the author (see also Gustafsson-Pesonen, 2014) (see the Figure 1). Gibb's BAS framework has also subsequently been recommended by Klapper and Farber (2016) and Arpiainen (2019). The BAS framework collects all relevant deeper understandings of EE points of view and is justified when building up a methodology for EE project evaluation. In Finland, the EE guidelines which are used in practice and have been prepared by the Finnish Ministry of Education and Culture 2009 (OPM, 2009) are also based on the BAS framework by Gibb (2005ab).

Figure 1. Entrepreneurial behaviours, attributes and skills (BAS) by Gibb (2005b), compiled by the author (Gustafsson-Pesonen, 2014).



One goal of the Ministry of Education is to strengthen the entrepreneurial attitude of individuals and to increase the attractiveness of entrepreneurship as a career choice. The strengthening of entrepreneurship encompasses the entire education system. In the sphere of authority (the Ministry of Education and Culture), the aims of EE are related to developing a participative, active citizenship and strengthening creativity and innovation in education. It has also said that developing a nationally and regionally positive entrepreneurial culture and attitudinal atmosphere during leisure time and working life, as well as, starting new entrepreneurship, developing working entrepreneurs and their enterprises and supporting ownership changes, are important issues.

The research model based on the BAS framework is used for evaluating EE projects and actions. The questionnaire and thematic interviews were built using the BAS framework to help evaluate the impact of project activities on the entrepreneurial behaviours, attributes and skills of the target groups. The results of the research contribute to the development of EE in Finland.

3. Methodology

3.1. Study Design

The main idea of EE project evaluation was to gather and evaluate the qualitative and quantitative results of partly ESF-funded national projects related to the theme of entrepreneurship education. The reason for the study was to create a model and recommendations for linking entrepreneurship education to all school levels, to teacher training and teacher continuing education. The far-reaching aim was to find new innovative entrepreneurial pedagogies for use by teachers and educators. The contribution of this paper focuses on building up a methodology for the systematic evaluation of EE projects and actions in the years 2000–2010 based on BAS.

At the beginning of the project, a steering group was established, consisting of two EE professors from Finland, one representative of the Ministry of Education and Culture, one representative of the Federation of Finnish Enterprises and two researchers. It is important to note that during the years 2000–2010, altogether 154 projects on entrepreneurship education have been carried out (based on the information given by the Ministry of Education and Culture). Projects which supported a deeper understanding of EE were chosen for the study. The selection of projects was the task of the steering group members, who decided which projects to take as the object of the study and to identify the target group of the project. Altogether 52 national EE projects supported by the EU were chosen. The target groups were EE project staff, teachers and students who participated in the EE project actions in primary, secondary and vocational schools and higher education institutions, and other interest group/stakeholders.

A request was sent to the contact persons in the projects to supply the email addresses of the staff, representatives of the target groups, representatives of stakeholders and representatives of other interest groups. Altogether, a total of 1,374 email addresses were received from 30 different projects, of which 1,160 were active (appendix 1). No contact information was available from 12 of the selected EE projects. There were several reasons for this: project staff had left, contact information for some projects was not available, and in

some cases little to no information about the projects was available. As a result, it was only possible to evaluate 30 EE projects – an estimated 58% of all projects were included in the study. It is possible to say that these projects represented all the financed EU projects based on the BAS framework in Finland.

The quantitative data was collected at the beginning of the study using a survey in the webropol environment from February 2011 to May 2011. The number of respondents altogether increased after two reminder rounds to N=471 and the response rate was over 40%. The gathering of the answers can be considered rather successful. Whole study group was 1,160 and N=471. Appendix 1 presents the characteristics of the samples by project; Appendix 2 includes the webropol questionnaire. The research data was collected from national level EE EU project staff, participants, stakeholders, teachers and students.

After the webropol survey, qualitative research was carried out including 72 thematic interviews by phone. These 72 interviewees also previously answered the survey. Projects where there was more than one respondent on the webropol survey were selected for the thematic interviews. The study population consisted of project actors, target and interest groups/stakeholders from the EE projects. Thematic interviews, which were based on the BAS framework, were conducted by phone (N=72) from April 2011 to June 2011. The thematic interviewed projects as well as the thematic questions are listed in Appendix 3.

Evaluation workshops were organized three times during the EE project data gathering phase. These full-day workshops were in March 2010, May 2011 and December 2012. The workshop participants, working in team discussions, wrote their ideas and recommendations for/about the questions on blank pieces of paper.

Discussion themes were:

- How should Entrepreneurship Education be realized at all school levels?
- Ideas for teacher training and teacher continuing education
- Ideas for entrepreneurial pedagogy/methods (e.g. school – enterprise cooperation)

After the workshops, the written materials were collected, read and analysed. The themes which had received the most attention were included to the data. Altogether 90 people participated in the workshops, including members from the steering group and several other organizations. Participants included entrepreneurship teachers, entrepreneurship researchers, project staff, project managers, entrepreneurship developers from different regions, school rectors, education leaders from the regions, representatives of entrepreneurs and others. The list of organizations that participated in the workshops are listed in Appendix 4. The steering group recommended which and how many people should be included in the research, the interviews and the workshops.

3.2. Background of the Respondents

Project and respondent-specific background variables describe the projects in a versatile way (Table 1). In addition, separate projects were used as background variables (projects that got more than three answers). The answers had significant differences for both project and respondent-specific background variables and separate projects.

The results of the project survey are presented below, based on the weighted medians calculated from the distribution of answers attained for each question/question group. The most significant differences discovered in the medians were examined on the basis of project and respondent-specific background variables and projects. Significance was tested by

comparing the median of each background variable (e.g. “large national projects” or “representatives of project staff”) or the answers of a separate project with the background variable in the question or with answers not belonging to the project. The test method was the “Independent Samples T Test”. The significance levels were taken from the row with the supposition that groups that have been compared to each other have different variances (see Table 3 and Table 4).

The significance limits (sig. 2-tailed) were:

Extremely significant *** (0.000–0.001)

Significant ** (0.002–0.004)

Somewhat significant * (0.005–0.009)

Table 1. The background variables: projects and respondents

Project - Background variables	Number of Projects	Answers / projects	
		Respondents	%
The size and location			
Big national level	6	215	46
Big regional and local level	11	174	37
Small regional and local level	13	82	17
The timeframe of project			
Ended, the last period EU programme	14	170	36
Ended, this period of EU programme	5	70	15
Ongoing projects	11	231	49
The location of project management			
Southern Finland	9	156	33
Western Finland	8	174	37
Eastern Finland	9	128	27
Northern Finland	4	13	3
Background variables			
Gender			
Female		279	59
Male		192	41
Age			
under 35		45	10
35–44		146	31
45–54		157	33
55–		117	25
No info		6	1
The respondent's role on the project			
Project staff		65	14
Target group (teacher, student)		209	44
Steering group member		98	21
Interest group/Stakeholder		99	21

Source: author

The background variables of the study group are quite in balance. The study also included big national, regional and small local projects. The group included both projects that had ended and that were ongoing. Projects from everywhere in Finland were selected for the study. Gender distribution is moderately even and the views of representatives of both genders were obtained. The age distribution includes both young people and more

experienced participants. It is important that the majority of the respondents represented the target group but it is also very important that we got the views of project staff, a steering group and other interest groups/stakeholders.

4. Results

4.1. The Importance and Fulfilment of Entrepreneurship Education Project Goals

The evaluation of the importance and fulfilment of the goals of the EE projects was based on Gibb's BAS framework, and eight claims presented to the respondents. These eight claims were: 1. Developing participative and active citizenship, 2. Strengthening creativity and innovation, 3. Developing a pedagogic operations model of EE, 4. Developing a nationally and regionally positive entrepreneurship culture and attitudinal climate, 5. Starting new entrepreneurship, 6. Developing the know-how of participating entrepreneurs and enterprises, 7. Supporting owner changes and 8. Developing learning environments to guide activities in a responsible and entrepreneurial manner (Table 2). The evaluation of the projects examined them according to which goals were the most important and which projects best fulfilled or achieved their goals from the perspective of the interviewees. The projects were grouped according to the goals they considered most important. As a result, the goals "developing a pedagogic operations model of entrepreneurship education" and "developing the learning environments to guide activities in a responsible and entrepreneurial manner", were both considered the most important by seven projects (Table 2). Other objectives related to the content of entrepreneurship and EE were also considered most important by seven projects. Objectives related to the direct supporting/developing entrepreneurship/enterprises "starting a new business" and "developing the know-how of operative entrepreneurs and enterprises" were both considered most important by one project.

Table 2. The projects (marked by numbers), where the goals considered to be the most important and/or best fulfilled by the project according to the answers of the interviewees

	The goal that was considered the most important							
	Developing participative and active citizenship (2)	Strengthening creativity and innovation (1)	Developing a pedagogic operations model of EE (10)	Developing a nationally and regionally positive entrepreneurship culture and attitudinal climate (1)	Starting new entrepreneurship (-)	Developing the know-how of practicing entrepreneurs and enterprises (1)	Supporting owner change (-)	Developing learning environments to guide activities in a responsible and entrepreneurial manner (8)
The goal that was fulfilled best								
Developing participative and active citizenship (2)	21	17						
Strengthening creativity and innovation (1)								25
Developing a pedagogic operations model of EE (10)		23	3, 22, 16, 4, 14					13, 15, 9, 10
Developing a nationally and regionally positive entrepreneurship culture and attitudinal climate (1)				7				
Starting new entrepreneurship (-)								
Developing the know-how of participating entrepreneurs and enterprises (1)						27		
Supporting owner changes (-)								
Developing the learning environments to guide activities in a responsible and entrepreneurial manner (8)	20	30, 2	5, 24		11			8, 1

Note: there were 23 projects, which received more than three answers in the statistics; the names of the projects are in Appendix 1.

Source: author

A summary of table 2 indicates that ten projects considered the goal, “developing a pedagogic operations model of entrepreneurship education” the best fulfilled goal. “Developing the learning environment to guide activities in a responsible and entrepreneurial way” was considered best fulfilled by eight projects. Other goals related to the content of entrepreneurship and EE were considered best fulfilled by four projects. Of the goals related to the direct support/development of entrepreneurship/enterprises “developing the know-how of operative entrepreneurs and enterprises” was considered the best fulfilled by one project. Ten of the projects estimated that the project they considered the most important was also considered to have been fulfilled the best. Note that no project considered the goals “Starting new entrepreneurship” or “Supporting owner change” to be best fulfilled. The projects were implemented well according to the BAS framework. It is noticeable that they supported self-directed learning, learning by doing pedagogy and entrepreneurial know-how. The establishment of a company or change of generation was not the focus of the projects, and there were seven projects that could not answer this question. We did not ask why these projects did not answer these questions.

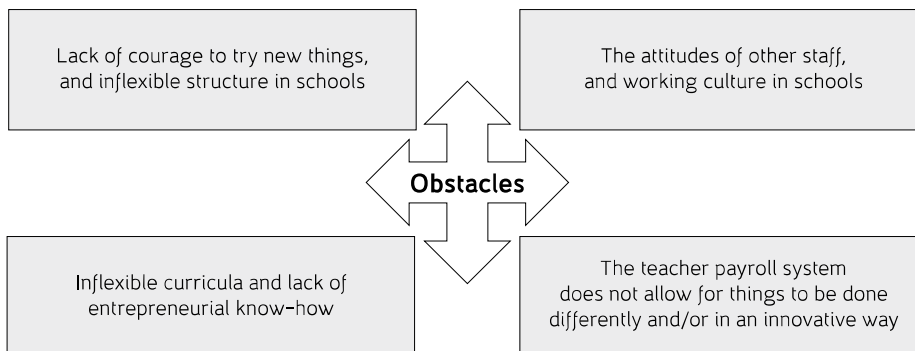
4.2. Obstacles to Using Entrepreneurial Pedagogy

The survey and interviews highlighted that it is quite common for the respondents in the projects to have faced obstacles in their organization or region when they attempted to do things in a new entrepreneurial way. More than 50% of the respondents said that they faced some obstacles.

It is possible to find four main thematic obstacles to using entrepreneurial pedagogy from the survey based on the interview and thematic workshop data (Figure 2). As we can see in Figure 2, it is possible to notice that key elements of the BAS framework are repeated. Flexibility, self-confidence, working together/networking, doing things creatively, problem solving and taking the initiative to make things happen among others are at the heart of the BAS framework. It could be argued that if the obstacles were removed from the schools it might be easier to use and produce EE in the schools based on the BAS framework.

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Figure 2. Main obstacles to using entrepreneurial pedagogy, compiled by the author



When the main obstacles were discussed in the workshops, it could be seen that teachers are not supported in applying an entrepreneurial approach or linking these ideas to their teaching (inflexible curricula and lack of entrepreneurial know-how, working culture in schools). According to the interviewees (e.g. teachers and EE researchers), the rectors and directors wanted to link the new entrepreneurial teaching methods to teaching, but they could not get enough resources (money, time or flexibility) for the teachers (inflexible structure in schools, lack of entrepreneurial know-how). Another issue that was commonly brought up based on the qualitative data and workshop meetings, was that cooperation between teachers of subjects is difficult (the attitudes of other staff and inflexible curricula). Very often respondents stated that they met the idea that they had done things alone in the past so why should they have to do things with other teachers of subjects now (the attitudes of other staff and inflexible curricula). Collaboration, information sharing and learning from each other is difficult (the attitudes of other staff, lack of entrepreneurial know-how). Interviewees and people who have participated in the workshops also reported that cooperation between different teachers was not working (inflexible curricula). They said entrepreneurship is also often part of business studies and only recommended and intended for people who want to start their own business (lack of entrepreneurial know-how). Interviewees and participants in the workshops said that the payroll system for teachers does not support entrepreneurial learning (payroll system). To apply the development work necessary to take the new teaching methods into account, their salary (and total remuneration) should be based on overall working hours, and not on the number of teaching, lecturing and preparation hours.

Therefore, a more open and deeper understanding of the BAS framework of entrepreneurial pedagogy is necessary in practice. It might be said that it would be possible to remove the obstacles if there was a deeper understanding and greater use of the BAS framework for developing EE and EE practices in schools.

4.3. The Development of Entrepreneurial Readiness and Skills and Entrepreneurial Pedagogic Know-how

According to the results, the fairly high medians for the propositions related to the development of entrepreneurial readiness and skills indicate that the respondents think that the EE projects that have been evaluated have supported them fairly well (Table 3). This is an interesting and important result when we consider the BAS framework. Quite a number of the evaluated projects have been built around BAS. Significant differences emerged in the answers related to respondent-specific background variables and separate projects. The differences between project-specific background variables remained quite significant, apart from a few exceptions.

Table 3: The propositions related to the development of entrepreneurial readiness and skills and the extremely significant deviations in respect to background variables and specific projects

Propositions about the development of entrepreneurial readiness and skills (medians)	Agree significantly more	Disagree significantly more
My will to experiment with new operational models has increased (3.92)	Female respondent***, Representative of project staff**, project 13***, project 23***	Large provincial and local projects***, Male respondent***, Representative of the instruction group***, Representative of the interest group***
I am still more eager to seize the opportunity (3.86)	Female respondent***, Representative of project staff***, project 13***	Large provincial and local projects***, Male respondent***, Representative of the instruction group***
Marketing and sales know-how add preparedness for working life (3.81)	Ended, this period of EU programme***, Representative of project staff***	
My networking skills have developed (3.76)	Representative of project staff***	
I have obtained tools for creative problem solving (3.70)	Representative of project staff***, Representative of target group***, project 13***, project 23***	Large provincial and local projects***, Representative of the instruction group***, Representative of the interest group***
My skills for making proposals have developed (3.63)	Representative of project staff***, project 13***	Representative of the interest group***
My tolerance of uncertainty has improved (3.57)	Representative of project staff***, project 13***	Representative of the instruction group***, Representative of the interest group***
My comprehensive leadership know-how for projects, business and situations has developed (3.55)	Representative of project staff***	
I understand the importance of the management of the entity of business (3.51)	Ended, the last period EU programme***	project 3***, project 5***
My business know-how skills have developed (3.17)	Representative of project staff***	
My skills for governing a business plan have developed (3.16)		Representative of the interest group***, 3***
I can interpret a profit and loss account and balance (3.13)	Respondent's age 55-***, project 25***	

Note: The median for each statement is in brackets. A 5-point scale is used as follows: 1 = fully disagree; 2 = partly disagree; 3 = cannot say; 4 = partly agree; 5 = fully agree. Separate projects are in italics. See Appendix 1 for the names of the projects.

Source: author

The “representatives of project staff”, female respondents and those from the “HOPE (n=13)” and “YPEDA (n=23)” projects usually agreed significantly more than average with these propositions. The “representatives of the instruction group”, “representatives of an interest group” and male respondents and those from the project “the measurement tool of entrepreneurship education”, disagreed significantly more than average.

Table 4. Propositions related to the development of entrepreneurship pedagogy know-how and extremely significant deviations in respect to background variables and projects

Propositions for the development of entrepreneurship pedagogy know-how (medians)	Agrees significantly more	Disagrees significantly more
I let the students use their initiative (4.01)	Female respondent *** Representative of the target group ***	Large provincial and local projects*** Male respondent*** Representative of the instruction group*** Representative of an interest group***
I allow myself and my students to fail (3.94)	Representative of the target group ***	Representative of the instruction group*** Representative of an interest group***
I trust the students to act responsibly (3.87)	Representative of the target group ***	Representative of the instruction group***
My teaching and instruction supports the development of the social networks of learners/students (3.83)	Representative of the target group ***	Male respondent*** Representative of the instruction group*** Representative of an interest group***
New learning environments supporting EE have been tested and taken into active use (3.83)	Representative of project staff ***	Male respondent*** Representative of the instruction group*** Representative of an interest group***
I have adopted new methods in my teaching (3.79)	Female respondent *** Representative of project staff*** Representative of the target group ***	Male respondent*** Representative of the instruction group***
I use methods that develop the attentiveness to perceive and create possibilities in my teaching (3.77)	Female respondent *** Representative of project staff Representative of the target group ***	Male respondent*** Representative of the instruction group*** Representative of the instruction group***
I have learned to survive uncertainty (3.66)	Female respondent *** Representative of project staff	Male respondent*** Representative of the instruction group***
My teaching material supports entrepreneurial behaviour (3.66)	Representative of project staff***, project 23 ***	Representative of the instruction group***
My risk management and evaluation skills have improved (3.58)	Female respondent *** Representative of project staff	Male respondent*** Representative of the instruction group***
My teaching material has been renewed (3.52)	Projects of the previous EU programme phase *** Female respondent *** Representative of project staff	Male respondent ***

Note: The median for each statement is in brackets. The 5-point scale is used as follows: 1 = fully disagree; 2 = partly disagree; 3 = cannot say; 4 = partly agree; 5 = fully agree. See Appendix 1 for the names of the projects.

Source: the author

With regard to entrepreneurship pedagogy know-how, the high medians indicate that the results of the projects have been quite successful when considering the BAS framework or in relation to the BAS framework. In general, representatives of project staff and of the target group, as well as female respondents agreed significantly more than average with these propositions. The representatives of the instruction group, representatives and of an

interest group as well as male respondents, in turn, disagreed significantly more than average.

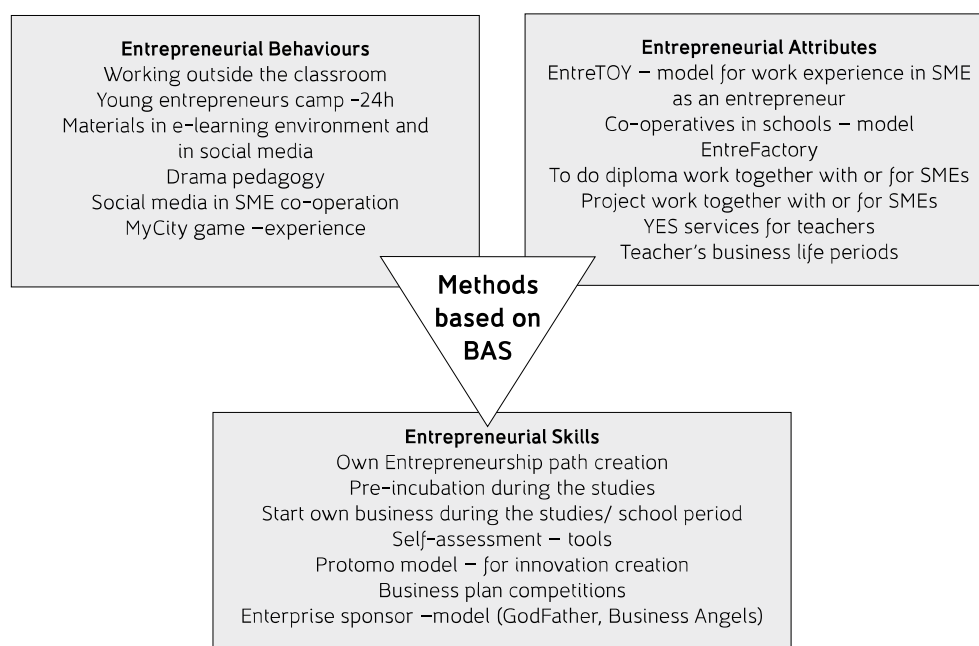
Table 4 illustrates how the respondents of the webropol survey experienced that the BAS framework came through in the project activities. One can notice that female interviewees in particular significantly agreed that the claims were true. On the other hand, male respondents did not perceive the effects as having been realized or coming to fruition in several sections. A significant difference can be perceived in the claim “I let the students use their initiative”. Many respondents did not feel this claim was realized, especially when referring to large projects. We can explain these differences by considering the different points of view held by project interest group/stakeholders and/or project staff and how they see the effectiveness of the projects.

It is possible to conclude from Table 4, that the BAS framework is being realized and, one might say, that it performed well among the evaluated EE projects. Respondents brought up: allowed students to use their own initiative, allowed themselves and students to fail, trusted student responsibility, social networks are developed, new environments have been adopted, new EE methods have been adopted, have learned to survive uncertainty, teaching materials support entrepreneurial behaviour and have been renewed, and risk and management skills have improved. It is important to note that respondents especially highlighted that if they allowed their students to use their own initiative, and the students allowed themselves to fail, they learned from mistakes and trust. We could also say that the EE projects have had a positive effect on the target groups, and the behaviour, attributes and skills of the teachers and students.

4.4. New Learning Methods

New entrepreneurial learning methods and best practices used during the EE projects at the national level could be identified. It could be said from the point of view of the interviewees, that the main idea of the new entrepreneurial learning methods tested in the projects was to carry out entrepreneurial teaching tasks in a new and encouraging way. The summary of the practices about recommended pedagogical methods was based on the data from the survey's open questions, the interviews and the workshops on entrepreneurial pedagogy. It can be said that the tested methods and best practices are the same as the entrepreneurial learning methods that have been recommended in the EE literature presented earlier in this paper in the section describing the framework for the study (e.g. Arpiainen, 2019; Diensberg, 2008; Fayolle, 2007; Fayolle & Gailly, 2008; Fayolle & Klandt, 2006; Gibb, 1993, 2005ab, 2006; Gustafsson-Pesonen & Kiuru, 2012; Klapper & Farber, 2016; Kyrö, 2005; Kyrö et al., 2008; Srivastava & Thomas, 2017).

Figure 3. The recommended methods for entrepreneurial pedagogy, compiled by the author



It is possible to compile the recommended methods under behaviours, attributes and skills. When unpacking the details based on the content of the BAS framework, it is preferable to list the recommended methods and understand if these can be used to make EE more effective. It is possible and logical to see that methods that are active and student-centred – more doing and less listening/sitting in the classroom – are closer to the BAS framework. Therefore, the use of the BAS framework in action could encourage the target group to do and act more entrepreneurially when working as employees or starting their own business.

4.5. Recommendations for Further Development of Entrepreneurship Education for all School Levels

Based on the qualitative data and the workshops new practices in EE can be used in practice at all schools levels. A significant proportion of the respondents believed that EE is being included in the school curricula, and new pedagogical models are part of the school’s culture. The situation also seemed to be very good for networking activities between practitioners. The majority of the respondents believed that cooperation has strengthened, and that it will continue. To some extent, according to the respondents of the study, there might be some need to develop EE in some regions. The situation has developed; however, effort is still needed to include EE at all school levels and in every region. The respondents also recommended that there should be some basic funding for developing EE at every school level and in every region.

The summary of the qualitative data and the outcomes of the workshops, which should be added to curricula, indicated developing entrepreneurial skills, team working, internal entrepreneurship skills, cooperative knowledge in educational institutions, willingness to

take risks and developing business competence. The importance of developing teaching environments so that they more resemble entrepreneurial environments should be emphasized when striving towards self-direction and discipline and cross-border entrepreneurship learning.

The interviewees and workshop participants recommended that, with respect to teacher training, the basic ideology should include practical orientation, entrepreneurship and business cooperation, a positive attitude towards entrepreneurship and creating a positive atmosphere for EE. Concrete ideas which could be implemented for developing teacher education included the idea that teaching methods should emphasize learning by doing and problem-solving ability, EE should be a compulsory part of teacher education, the learner's own strengths should be the focus, courage and creativity should be encouraged and failures should not be punished. It was also recommended by the respondents that there should be entrepreneurs participated in the teacher training and teachers should have an entrepreneur mentor to support them. Entrepreneurial learning environments in teacher education were mentioned to be very important. Career cooperation should be intensified, and training should be included in working life cycles. Entrepreneurship should be seen as an interdisciplinary theme and entrepreneurial pedagogy should be included in all subjects in teacher education (Figure 4).

Structures and resourcing of EE should be highlighted in future plans for rollouts of EE. Entrepreneurship should be increased in curricular and pedagogical reforms. For example, the EE path, cooperative enterprises and other training companies should become a part of studies. In addition, teachers highlighted plans to apply for an EE programme in order to address and eliminate skill shortages (Figure 4).

Figure 4. Ideas for developing teacher training and new EE projects, compiled by the author

Ideas for developing teacher training	Ideas for developing new EE projects
<ul style="list-style-type: none"> - EE based on BAS should be a compulsory part of teacher training - Business/SME/entrepreneur co-operation should be included in training - Practical information about real business should be included - Entrepreneurial behaviours, attributes and skills should be presented - Testing entrepreneurial methods/pedagogy should be included 	<ul style="list-style-type: none"> - Business/SME co-operation during EE projects - Student engagement for developing business/SMEs - Commitment from top management to develop EE in schools - Develop entrepreneurial platforms / environments in schools - Encourage students to take more responsibility for their learning and future - Apply EE across all subjects - Develop EE materials for teaching/learning - Increase co-operation between teachers - Increase e-learning development

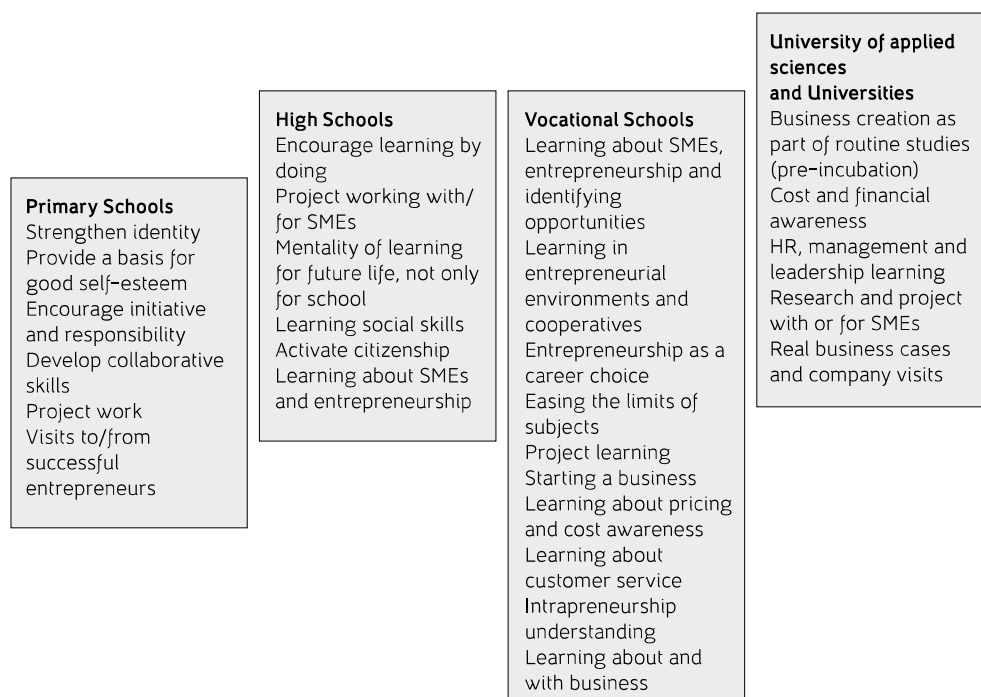
As can be seen, the ideas for the development of teacher training include more cooperating with SMEs and testing methods than only listening and learning in schools. The same ideas could be applied to developing EE projects. Other recommendations that could be highlighted were the commitment of top managers and developing the learning environment. These are necessary for EE development in schools because without commitment from the top level or without activating environments, it could be difficult to do things in an entrepreneurial way.

According to the interview respondents and the workshop material, some recommendations could be implemented to promote entrepreneurship at different school levels. It is possible to connect these ideas to the BAS framework (e.g. recognising and seizing opportunities, solving problems creatively, taking responsibility, networking, self-confidence and self-belief, learning by doing, persuading). The board members, as well as project actors, teachers and entrepreneurs supported the idea that entrepreneurship could be part of all levels of education from early childhood education to university. In early childhood, EE based on BAS can be seen as teaching self-direction, acting in a group, and stimulating ideas. It should highlight why we have to work, and why parents are busy at work. The balanced growth of children as individuals and their increased ability to act in groups should be seen as an investment. Business games and visits to companies, as well as small-scale rewards for new and good ideas were mentioned as possible methods of achieving these goals.

EE based on BAS in primary schools could encourage entrepreneurship by having students start up their own business (Figure 5). Lower grades could stick to identifying the pupils' own strengths, achieving and strengthening a good sense of self-creation, taking responsibility for one's own initiatives, project work, and the methodologies of visiting representatives of business and entrepreneurship. Higher levels could focus on learning how to create their own business opportunities.

In high schools and vocational training EE based on the BAS framework could aim to set up a company while studying. Business creation and innovating new ideas should be an integral part of education. In the applied sciences and in universities, entrepreneurship could clearly be part of the studies, and teaching as well as ongoing research projects should serve the needs of working life. Necessary methods include real business cases and corporate and enterprise visits. See Figure 5, which presents tips for developing EE at all school levels.

Figure 5. Path and tips for developing EE at all school levels, compiled by the author



When thinking about the important aspects of the BAS framework which are to see opportunity, make things happen, problem solving, autonomy, working responsibly, deeper understanding, networking, creativity, activating, testing, modelling, student centring, risk-taking, selling, marketing and others, it could be underlined that the tips for developing EE in all school levels could come true if we let it happen. The base for that is created but it needs a support for that things could happen.

5. Discussion and Conclusions for Future Systematic Entrepreneurship Education Evaluation Studies

Based on the results of this study it is possible to say that the situation for developing and utilizing EE in Finnish projects and schools is at a rather good level of development. The evaluated EE projects helped the participants to fulfil the goals based on the BAS framework, which is important for a deeper understanding of EE development in all schools. But EE development work has not been systematically evaluated or disseminated very much prior to this study, in which EE projects from 2000–2010 were collected and systematically evaluated.

This study used Gibb's EE framework including entrepreneurial behaviours, attributes and skills (BAS) as part of a systematic EE evaluation for developing an EE path for all school levels. Like many other research projects before and since this study (e.g. Arpiainen, 2019; Diensberg, 2008; Fayolle, 2007; Fayolle & Klandt, 2006; Gustafsson-Pesonen & Kiuru, 2012; Kajanto et al., 2001; Rae & Carswell, 2001; Seikkula-Leino et al., 2010), it is a delight to see and understand that the BAS framework really works as the basis for systematic EE evaluation and a path for EE development.

However, the evaluation also showed that some of the earlier problems of EE development still exist (e.g. Arpiainen, 2019; Diensberg, 2008; Fayolle, 2007; Fayolle & Gailly, 2008; Fayolle & Klandt, 2006; Gibb, 1993, 2005ab, 2006; Gustafsson-Pesonen & Kiuru, 2012; Klapper & Farber, 2016; Kyrö, 2005; Kyrö, Speer & Braun, 2008). For example, teaching staff could not access sufficient resources (money, time or flexibility) for the development of EE (inflexible structure in schools, lack of entrepreneurial know-how). Furthermore, cooperation between teachers of subjects is difficult because staff attitudes vary and curricula are often inflexible. As teaching staff are used to working alone, it is difficult to learn to teach together, meaning collaboration, information sharing and learning from each other is difficult (the attitudes of other staff, lack of entrepreneurial know-how). The interviewees and workshop participants also reported that cooperation between different teachers of subjects does not work (inflexible curricula).

Entrepreneurship is often seen as part of business studies and often only recommended and intended for people who want to start up their own business (lack of entrepreneurial know-how). The interviewees and participants in this study also raised the idea that the payroll system for teachers does not support entrepreneurial learning. There are still people among the teaching staff who consider EE too complicated and time consuming. The reality is that the situation would be just the opposite. When the target group was asked to talk about life after the project, it could be observed that the project's aims are quite alive. An extremely important point in the study was detecting whether the projects helped the target groups develop entrepreneurial readiness and skills, and if new entrepreneurial learning methods tested during the period of the projects were successful. Fortunately, in both cases

the answer was clearly yes. It could be confirmed that entrepreneurial learning and entrepreneurial pedagogy, described at the beginning of the paper, really work when one wants to support entrepreneurial thinking and action in the school context.

Some commentary on the development of EE can be mentioned also considering EE as a strong broad-based and holistic concept and practical activity, which includes both areas of life management and self-direction, creativity and the courage to do things differently, not just for business start-ups but in functions across a whole spectrum of life. When EE is seen and implemented as a framework based on BAS, everyone can apply it in their own work, behaviour and activities, such as promoting entrepreneurship and developing entrepreneurial skills, teamwork, internal entrepreneurship skills, cooperative knowledge in educational institutions, willingness to take risks and developing business competence. The importance of developing teaching environments are mentioned and entrepreneurial environments should be emphasized when striving towards self-direction and self-discipline and cross-border entrepreneurial learning.

This study is valuable for teacher training in the sense that the basic ideology should involve practical orientation, cooperation between entrepreneurs and businesses, a positive attitude towards entrepreneurship and creating a positive atmosphere for EE. Concrete ideas which could be implemented to develop teacher education included: teaching methods that emphasize learning by doing and problem-solving ability, EE as a compulsory part of teacher education, focus on the learner's own strengths, promote courage and creativity and the freedom to fail without penalty. It was also recommended by respondents that entrepreneurs should participate in teacher training and teachers should have an entrepreneur mentor to support them. Entrepreneurial learning environments in teacher education were mentioned as very important. Career cooperation should be intensified and training should be included in working life cycles. Entrepreneurship should be seen as an interdisciplinary theme and entrepreneurial pedagogy should be included in all subjects in teacher education.

It can be said that based on this study the recommended methods and best practices in support of EE based on BAS are the same as the entrepreneurial learning methods that have been recommended in the EE literature (e.g. Arpiainen, 2019; Diensberg, 2008; Fayolle, 2007; Fayolle & Klandt, 2006; Gibb, 1993, 2005, 2006; Gustafsson-Pesonen & Kiuru, 2012; Klapper & Farber, 2016; Kyrö, 2005; Kyrö, Speer & Braun, 2008; Srivastava & Thomas, 2017).

It is possible to compile the recommended methods under a framework of behaviours, attributes and skills (BAS). When unpacking the details of BAS, it is preferable to list the recommended methods and understand whether these can be used to make EE more effective. It is possible and extremely understandable to see that methods that are activating and student-centred – doing less listening/sitting in the classroom – are closer to the BAS framework.

It might be possible based on this study to recommend that EE based on the BAS framework can be part of all levels of education from early childhood education to university. In early childhood, EE can be seen as teaching self-direction, acting in a group, and stimulating ideas. It should highlight why we have to work, and why our parents are busy at work. The balanced growth of children as individuals and their increased ability to act in groups should be seen as an investment. Business games and visits to companies, as well as small-scale rewards for new and good ideas were mentioned as possible methods for achieving these goals. In primary schools, EE could encourage entrepreneurship by having students start up their own business. The lower grades could focus on identifying the

students' strengths, encouraging and strengthening a good sense of self-creation, taking responsibility for one's own initiatives, project work, and learning from the methods of visiting business representatives and entrepreneurs. Higher levels could focus on learning how to create their own business opportunities. In high schools and vocational training, EE could focus on setting up a company while studying. Business creation and the innovation of new ideas should be an integral part of education. In the applied sciences and universities, entrepreneurship could clearly be part of the curriculum, and teaching as well as ongoing research projects should serve the needs of working life. The necessary methods include real business cases and corporate and entrepreneur visits.

This study has shown that the practical work of EE based on the BAS framework in schools seems to be time consuming. Work started in the middle of the 1990s and still needs to continue. The development of EE has become an important part of school development. For example, EE has been strongly implemented in curricula and teaching involves the students to help develop entrepreneurial characteristics. EE has given meaning and goals, and it will change practices. EE terms, coverage, definitions, methodologies and practices seem to be rather familiar, but still these require further work. This work will continue and it will need the development of study materials, a deeper understanding of EE based on the BAS framework, teacher training and networking and knowledge of best practices from different actors and cooperation throughout the different levels of education.

In summary, the development of EE is progressing and the work will continue in cooperation with the excellent EE expert network. Co-development should include public actors, financiers, industry, schools, entrepreneurs, businesses as well as students, so that user voices can be taken into account. Previously, the experiences and know-how of real entrepreneurs and students have been neglected in the development of EE.

Among the limitations of this study is the fact that some of the EE projects evaluated here had ended quite a long time before commencing the study. It was quite difficult for the respondents to remember what changes had really happened, what kinds of methods were tested and so on. It was also quite difficult to get the right people to participate in the study because many of the project staff, students or teachers were no longer working at the same place.

Future EE evaluation studies should start during the project's lifecycle and should continue for a while after the project has ended. The study should continue for a rather long time as a follow-up study after the project has ended. The top management of the organization (school directors) must also be included in the evaluation.

During this study, the functionality of the BAS framework has been tested through EE evaluations. The results of the study show that the BAS framework works for evaluating EE rather well and the methodology built up for the systematic evaluation of EE projects in this research can also be used for the evaluation of EE projects in other countries. Taking the BAS framework of entrepreneurial behaviours, attributes and skills into account is an important part of entrepreneurial actions both in developing EE in schools and developing EE in projects.

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Appendix 1. Detailed information about the sample of EE projects for the study

The number and name of the Project	The Original fundamental set	The email address did not function	Away	The final fundamental set	Answers	
					N	%
1. KummiWiki (GodparentWiki)	6			6	5	83,3
2. Kartta kouraan ja matka yrittäjyyteen (Map to hand and trip to the entrepreneurship)	16	1		15	12	80
3. Yrittäjyyskasvatuksen mittaristo (Measurement tool of EE)	47		1	46	33	71,7
4. Yrittäjyyskasvatuksen ehjä polku (Unbroken path of EE)	24	2	2	20	14	70
5. Yrittävän elämisen malli (the Model of entrepreneurial life)	12			12	8	66,7
6. Y-love: Yrittäjyyslukioverkosto, Jyväskylän seudun yrittäjyyslukio ja Y4-yrittäjyyslukio (EE-love)	3			3	2	66,7
7. Ykä Yritteliäs (Ykä Yritteliäs)	50	4	2	44	25	56,8
8. Työssäoppijasta yrittäjäksi BUSINESS-TOP (From "on-the-job learning" becoming an entrepreneur)	13	2		11	6	54,5
9. Lupa yrittää (License to be an entrepreneur)	15	2		13	7	53,8
10. SaTaVa (SaTaVa)	31	1	2	28	14	50
11. Innovaatio- ja yrittäjyyskeskus Innova (Innovation and entrepreneurship center Innova)	18			18	9	50
12. YRTTI-KESKUS Hyvinvointialojen yrittäjyyden kehittämishanke (Development of welfare EE)	12	6		6	3	50
13. HOPE – yrittäjyyskasvatushanke (HOPE – The EE project)	98	1	1	96	45	46,9
14. FIRMA – yrittäjyyteen valmentaminen toisella asteella (FIRMA – coaching for EE on vocational school)	68	5	1	62	28	45,2
15. Kasvu yrittäjyyteen (Growth to entrepreneurship)	148	10	6	132	58	43,9
16. Yrittämällä eteenpäin (Forward with enterprises)	65	1	3	61	26	42,6
17. Nuori yrittäjyys (NY): Yrittäjyyskasvatuksen polku ja Nuori yrittäjyys nousuun (Young Entrepreneurship)	43		2	41	17	41,5
18. YRITÄ (Try)	8	2	1	5	2	40
19. Innoakatemia (InnoAcademy)	9	1		8	3	37,5
20. YVI – yrittäjyyskasvatuksen virtuaalinen oppimisympäristö (YVI virtual learning environment)	19			19	7	36,8

21. LYYTI – löydä oma yrittäjyytesi, Pohjois-Karjalan hanke (LYYTI – Find your own Entrepreneurship)	20	1		19	7	36,8
22. YES yrittäjyyskasvatuskeskus (YES network)	165	4	5	156	55	35,3
23. Yrittäjyyskoulutuksen uudet opetusmenetelmät – YPEDA (The new methods for EE – YPEDA)	27	3	1	23	8	34,8
24. Kädet 007 (Hands 007)	69	2		67	23	34,3
25. Ammattiosaajasta yrittäjäksi (From professional to entrepreneur)	61	2		59	20	33,9
26. Ideasta liiketoiminnaksi – aloittavan yritystoiminnan tukeminen: Wäläky (From idea to business – Wäläky)	11		1	10	3	30
27. Strategialähtöinen liiketoimintaosaamisen kehittäminen (Strategy Based Business Development)	25			25	7	28
28. Yrittäjyyden portaati (The steps for Entrepreneurship)	5			5	1	20
29. Kulttuuriyrittäjyys, osaamisen edistäminen Keski-Pohjanmaalla (Cultural entrepreneurship development)	6	1		5	1	20
30. Oppilaitosten yrittäjyyskoulutuksen kehittämishanke –YTY (Development of EE in schools)	280	133	2	145	22	15,2
TOTAL	1374	184	30	1160	471	40,6

Appendix 2. The webropol questionnaire

Background questions

- The location of EE project (regional/national), The timeframe of EE project (ended, going on), The size (€) of the project, The respondent's role in the project, Age, Gender

Evaluation of the EE project success

- How important were next objectives on the EE project and How well the objectives were came true
 - Entrepreneurial pedagogy developing
 - Developing of the learning environment to direct operation responsibly and entrepreneurial
 - Strengthening of creativity and innovativeness
 - Affirmative entrepreneurship culture and attitude on national and regional level
 - Developing of participating and active citizenship
 - New business creation
 - Developing SME's business
 - Supporting the change ownership
- Did the EE project educations, actions support the deeper understanding of entrepreneurship come true

The entrepreneurship is the ability of the individual to change the ideas into operation. It contains the creativity, innovation ability and risk-taking, as well as, the operation of the ability to design and to lead to reach objectives. These properties support the everyday life of the individual in the education, as leisure and in other social operations. These properties are needed in entrepreneurship but they also increase the worker's consciousness of their work and help to take the possibilities. (eg. Kyrö, Klapper, Gibb, Fayolle, Gaille)

Yes/No/No answer

Have you met in your organization/institution any kinds of obstacles to use/test the EE come true

Yes/No/No answer

If yes, whats kind of

- What kind of good EE practices, methods you have learned from your EE project
Explain
- Have you tested good EE practices, methods in your work
What kind of you have tested
- What was in the project especially good
- What was in the project especially a failure
- What has from the project stayed in the operation after the project
Entrepreneurship education is part of our curricula
EE network is stronger
EE network continues
New entrepreneurial pedagogy are part of our school operations
EE is a part of schools and developing agencies strategy and actions
Regional EE is effective

Skills and know-how advanced in the EE projects

- Does next skills and know-how developed in the EE project
My new EE experimental learning and new EE operations has developed
I'm inspired to take an experience
Marketing and sales skills are part of any work
Networking skills are better
I have got tools for creative problem solutions
My skills of the making of proposals has developed
My tolerance of the uncertainty has improved
My wide management know-how has developed
I understand the wide business development importance
My business know-how has developed
Business plan coaching skills are better
I understand the profit and loss account and the balance sheet
- Do you think have your entrepreneurial pedagogy developed
I let my students to do thinks spontaneously
I allow failures (both my own and students)
I let my students to test new models creativity
I trust that my students are responsible
My teaching / coaching support students social networks developing

New entrepreneurial learning environments have been tested and are in use
 I use new EE methods
 I use EE methods, which develop to perceive and to create the vigilance opportunities
 I have learned to survive uncertainty
 My teaching materials support entrepreneurial behaviour
 The ability to take risks has improved
 My teaching materials have developed

Developing teacher training and teacher continuing education

- What kind of EE training should be for teachers
- Open ideas, methods, curricula

Appendix 3. The thematic interviews: Interviewed projects

The Number and name of the projects

1. KummiWiki (GodparentWiki)
2. Kartta kouraan ja matka yrittäjyyteen (Map to hand and trip to the entrepreneurship),
3. Yrittäjyyskasvatuksen mittaristo (Measurement tool of EE),
4. Yrittäjyyskasvatuksen ehjä polku (Unbroken path of EE),
5. Yrittävän elämisen malli (the Model of entrepreneurial life),
7. Ykä Yritteliäs (Ykä Yritteliäs),
8. Työssäoppijasta yrittäjäksi BUSINESS-TOP (From “on-the-job learning” becoming an entrepreneur),
9. Lupa yrittää (License to be an entrepreneur),
10. SaTaVa (SaTaVa),
11. Innovaatio- ja yrittäjyyskeskus Innova (Innovation and entrepreneurship center Innova),
13. HOPE – yrittäjyyskasvatushanke (HOPE – The EE project),
14. FIRMA – yrittäjyyteen valmentaminen toisella asteella (FIRMA – coaching for EE on vocational school),
16. Yrittämällä eteenpäin (Forward with enterprises),
20. YVI – yrittäjyyskasvatuksen virtuaalinen oppimisympäristö (YVI virtual learning environment),
21. LYYTI – löydä oma yrittäjyytesi, Pohjois-Karjalan hanke (LYYTI – Find your own Entrepreneurship),
22. YES yrittäjyyskasvatuskeskus (YES network),
23. Yrittäjyyskoulutuksen uudet opetusmenetelmät – YPEDA (The new methods for EE – YPEDA),
24. Kädet 007 (Hands 007),
25. Ammattiosaajasta yrittäjäksi (From professional to entrepreneur),
27. Strategialähtöinen liiketoimintaosaamisen kehittäminen (Strategy Based Business Development),
30. Oppilaitosten yrittäjyyskoulutuksen kehittämishanke –YTY (Development of EE in schools).

Appendix 4. The list of organizations that participated in the workshops

Universities:

- University of Turku
- University of Lappeenranta
- Aalto University
- University of Oulu
- Helsinki University

Universities of Applied Sciences:

- Satakunta University of Applied Sciences
- Haaga-Helia University of Applied Sciences
- Tampere University of Applied Sciences

Vocational Education institutes or high schools:

- Omnia Vocational Education Institute
- Salo Vocational Education Institute
- Länsi-Pirkanmaa Vocational Education Institute
- Jyväskylä Vocational Education Institute
- Business College Helsinki (vocational education)
- Valkeala High School

Primary schools:

- Mikkeli comprehensive school

Teacher education institute:

- Educode (The teacher continuing education organization)

Networks, projects or associations:

- The National YES network (association)
- HOPE –project
- Helsinki entrepreneurs (association)
- TAT – Taloudellinen tiedotustoimisto
- Finnish National Agency of Education
- The Federation of Finnish Enterprises
- Diges (association)
- Perheyritysten liitto (The Finnish Family Enterprises Union)