

**This is a self-archived version of an original article. This version may differ from the original in pagination and typographic details.**

**Author(s):** Laine, Kati; Tynjälä, Päivi; Eteläpelto, Anneli; Hämäläinen, Raija

**Title:** Students' self-reported learning outcomes after a business start-up education program

**Year:** 2019

**Version:** Accepted version (Final draft)

**Copyright:** © Routledge, 2019

**Rights:** In Copyright

**Rights url:** <http://rightsstatements.org/page/InC/1.0/?language=en>

**Please cite the original version:**

Laine, K., Tynjälä, P., Eteläpelto, A., & Hämäläinen, R. (2019). Students' self-reported learning outcomes after a business start-up education program. *International Journal of Training Research*, 17(2), 98-115. <https://doi.org/10.1080/14480220.2019.1638621>

# **Students' Self-Reported Learning Outcomes after a Business Start-Up Education Programme**

**Kati Laine, Päivi Tynjälä, Anneli Eteläpelto and Raija Hämäläinen, University of Jyväskylä (2019)**

## **Abstract**

The aim of the present study is to examine the breadth of influence of a business plan-based entrepreneurship education. This task is implemented by examining students' (n = 227) self-reported learning outcomes concerning entrepreneurial skills, attitudes and abilities after education. In addition to proposing a classification of the self-reported learning outcomes, this study explores how these outcomes are related to the background characteristics of those taking part in an education programme, and of the companies involved.

Based on this study, four main areas of self-reported learning outcomes were found: (i) working life key skills, (ii) management skills, (iii) entrepreneurial empowerment, and (iv) development orientation. The most positive effects of the study programme were related to management skills and empowerment. The most challenging, and least influenced aspect involved the dynamic features of entrepreneurship.

**Keywords:** entrepreneurship, entrepreneurship education, learning outcomes, business plan

# **1 Introduction**

The requirements set for entrepreneurs cover a multitude of aspects. Kirby (2007) suggests that entrepreneurs must possess not merely the knowledge and functional tools to create new ventures, but also the competencies that enable them to perceive opportunities and bring them to fruition. However, traditionally many entrepreneurship education programmes stress business skills, and in particular, starting up and running a business (Liñán 2007; Surlemont 2007). It has been suggested that this so-called start-up education can teach the basic technical skills needed to start and manage a business (e.g. business planning, market research, and budgeting), which, of course, is also their primary focus. However, their ability to create entrepreneurs in a broader, ‘enterprising’ sense – referring here to entrepreneurial attitudes, skills, and capabilities such as creativity, opportunity recognition, risk-taking and self-confidence – appears limited. (Kirby 2007; Surlemont 2007.)

The aim of the present study is to examine the effects of a business plan-based entrepreneurship education through describing students’ self-reported learning outcomes concerning wide-ranging entrepreneurial skills, attitudes and abilities after education. In addition, this study explores how these outcomes are related to the background characteristics of those taking part in an education programme, and of the companies involved.

In the following sections, we firstly review previous literature on entrepreneurship and entrepreneurship education focusing in particular to start-up education and business plan, which are the main foci in the entrepreneurship education programme examined in the present study. After that we describe methodological solutions and research results. Finally, we discuss our findings from the educational development point of view.

## **2 The foundations of Entrepreneurship**

The skills and abilities required of a successful entrepreneur have been understood to comprise both art and science (Jack and Anderson 1999). The ‘science’ component involves multifunctional management, and it includes aspects such as strategic planning, marketing, cash management, networking, negotiation, and general management skills (Ibrahim and Soufani 2002); the ‘art’ component for its part is bound up with innovation, creativity, and new ways of thinking and behaving (Jack and Anderson 1999). The art of entrepreneurship can be understood as close to the concept of an ‘entrepreneurial orientation’ (see Poon *et al.* 2006), including innovativeness, creativeness, and a propensity to take risks. Furthermore, certain entrepreneurial elements such as emotional stability, need for achievement, and self-efficacy have found to contribute to success of business (Staniewski, Janowski and Awruk 2016).

The creation of a successful business involves a carefully-considered process of opportunity development, including evaluation and adjustments to the initial vision (Ardichvili *et al.* 2000). This implies that successful entrepreneurship will in large measure be a matter of pursuing opportunities (Stevenson 1999). Furthermore, confidence and self-belief have been found to be central to the connection between learning and entrepreneurial achievement; indeed, it has been noted that without self-belief, learning is unlikely to result in achievement (Rae and Carswell 2001). That is why entrepreneurship has been described as requiring an ‘entrepreneurial spirit’, defined in terms of attitudes, normative beliefs, and a feeling of being skilled (including self-efficacy and locus of control) (Frugier *et al.* 2003). In the rapidly changing world of business, importance is increasingly becoming attached to an entrepreneurial orientation, including the active seeking out and exploitation of opportunities. ‘Generic skills’ such as cooperation, communication, problem-solving, and reflection should not be overlooked either (see e.g. Jääskelä, Nykänen & Tynjälä 2018).

## **2.1 Entrepreneurship Education and its Outcomes**

There is considerable variation in the target groups, implementation, and aims of entrepreneurship education programmes. Entrepreneurship education can be classified to

have three main aims: (i) learn to understand entrepreneurship, (ii) learn to become entrepreneurial, or (iii) learn to become an entrepreneur (Heinonen and Poikkijoki 2006). This classification is not exclusionary but it indicates the main emphases of the programmes. In other words, some of the programmes aim at providing information on different aspects of entrepreneurship and nurturing entrepreneurial skills and mindset in students without the goal of making them actual entrepreneurs, while some programmes are specifically targeted for people who are going to earn their living as entrepreneurs. Irrespective of the type of entrepreneurship education, there is always present – more or less explicitly – a certain ‘attitudinal’ element favouring a positive outlook on entrepreneurship (Holmgren and From 2005). Moreover, Zhao *et al.* (2005) have suggested that while entrepreneurs may not exactly be ‘made’, they can at least be encouraged through education.

Studies by Täks, Tynjälä, Toding, Kukemelk and Venesaar (2014) and Arpiainen and Tynjälä (2017) are examples of research examining entrepreneurship programs with the main emphasis on goals (i) and (ii), described above, that is, to understand entrepreneurship and to become entrepreneurial, whereas the present study focussed on a training program aiming at (iii), learning to become an entrepreneur. A study of engineering students’ experiences in studying entrepreneurship (Täks *et al.* 2014) examines an Estonian study programme which was designed, through integrative pedagogy, to improve student’s entrepreneurial mindset, to deepen their understanding of enterprise and entrepreneurship process and to develop the appropriate skills. The study of Arpiainen and Tynjälä (2017) elaborates a programme aiming to enhancing entrepreneurial skills, knowledge and attitudes of the students of Polytechnic of Namibia through learning-by-doing and team work. Thus, these programmes pursued students’ understanding of entrepreneurship and learning to be entrepreneurial, rather than learning to be an actual entrepreneur, as was the case in our study which focused on the Finnish Further Qualification for Entrepreneurs.

The Finnish Further Qualification for Entrepreneurs is an official degree (ISCED3) within the Finnish education system. The skill requirements for this qualification are

defined in accordance with a level required for entrepreneurs in the phases of business start-up and stabilization. The qualification aims at achieving a better quality of business operations, and it can be taken as a competence-based qualification, usually in connection with preparatory training. The preparation of a business plan is an essential part of the study programme, which includes three parts: (1) specifying the business idea, (2) preparing a business plan, and (3) putting the business plan into action. It takes approximately 1.5–2 years to take the qualification. (Näyttötutkinnon perusteet: yrittäjän ammattitutkinto 2007; Yrittäjän ammattitutkinto. Tutkinnon perusteet 2001.) The Further Qualification for Entrepreneurs study programme is composed of face-to-face learning periods (1–2 days every 1–1.5 months), assignments related to students' companies, and company-specific tutoring given by the teachers on the programme.

The report and evaluation of the project entitled *High Level Reflection Panels on Entrepreneurship Education* (McCoshan *et al.* 2010) specifies the competencies that collectively form the desired outcomes of entrepreneurship education. The core outcome is to turn ideas into action by using creativity, innovation, risk-taking, and management skills. The three main competencies bound up with this process are defined as (i) knowledge, (ii) skills/know-how, and (iii) attitudes/personal attributes (McCoshan *et al.* 2010). von Graevenitz *et al.* (2010) also point out that in addition to enhancement of entrepreneurship and new businesses, entrepreneurship education may have so called 'sorting benefits'. Sorting benefits mean that students learn through education whether they actually want to become entrepreneurs or not. This can be seen as a positive outcome, which improves matching of students and career paths.

Altogether, entrepreneurship education is implemented through different types of input and at varying scales (Entrepreneurship Education: A road to success 2015). Firstly, there are national or regional strategies which aim for specific goals and objectives related to entrepreneurship education. Different programmes and activities are then used to put the strategies into action. Secondly, there are institutional changes meaning institutions prioritize content and methods related to entrepreneurship education in teaching and learning. Thirdly, different kinds of courses and classes related to entrepreneurship

education are offered by schools and universities. (Entrepreneurship Education: A road to success 2015.)

## **2.2 Start-Up Education and Business Plans**

This study focuses on an education programme, which supports participants in becoming entrepreneurs, referring here to the start-up and management of a business. This programme under examination was based on constructing a business plan.

A business plan has been described as consisting of a business opportunity, set out in its most elaborated form (Ardichvili *et al.* 2000). It describes the company's source of competitive advantage and the means of sustaining it in the longer term (Friend and Zehle 2004, p. 8). Business planning is understood to increase the knowledge, skills, and understanding that can assist entrepreneurs in their process of starting a firm (Honig 2004).

In a business plan, both the end product and the preparation process are important. The *process* can force the learner to take a critical look at the business project in its entirety, whereas the actual *plan* can serve as an operating tool for successful business management (Bangs 2002, p. 1). A plan helps to communicate the business ideas to different stakeholders (Bangs 2002, p. 1) and it may give an entrepreneur more formality and legitimacy (Honig 2004; Karlsson and Honig 2009). It has also been argued that the increase in specific knowledge and the formalization of a business idea can enhance the perceived self-efficacy of a potential entrepreneur (Liñán 2007). Furthermore, Liao and Gartner (2006) found that completing a business plan increases the likelihood of persistence among nascent entrepreneurs, meaning that they are more likely continue with the establishment or start-up activities of a new firm. Writing a business plan has also been found to promote venture viability (Greene & Hopp 2017). From the perspective of student evaluation, a business plan can offer focus and structure in an area that otherwise lacks conventional borders. (Honig 2004.)

### **3 Research Task and Questions**

Our previous study (Laine and Hämäläinen, 2015) focused on the factors that hinder and enable students' collaborative learning while making a business plan in the context of vocational education and training. In this study, we take one step further and focus on students' own perceptions regarding their entrepreneurial development. Our expectation is that students' self-reports of their experienced development reveal how entrepreneurship education familiarizes them with entrepreneurship. Thus, the aim of the present study is to determine how entrepreneurship education affects adult student's entrepreneurial skills and abilities in the context of start-up education focusing on the creation of a business plan.

Our particular interest was to determine whether this type of education provides more than technical management skills and whether it can in many different ways equip students to meet the challenges of entrepreneurship. Our research also examined how self-reported learning outcomes are connected with the characteristics of the subjects (participants) and the companies concerned. In conceptualizing the structure of self-reported learning outcomes, the study seeks to contribute to theorizing vocational and professional learning in the field of entrepreneurship education. The specific contribution within the scientific discourse of vocational and professional learning is on learning to become an entrepreneur. The research questions were specified as follows:

- (i) Which factors represent students' self-reported learning outcomes after education?**
- (ii) What self-reported learning outcomes were perceived to have developed most and least during education?**
- (iii) How are the self-reported learning outcomes associated with the subjects' backgrounds (gender, age, educational background, entrepreneurial experience, and field-specific working experience) and with the nature of the companies (their legal form, number of staff, and line of business) the subjects represent?**



## **4 Methods**

### **4.1 Target Group**

The target group for this study consisted of all the persons (N=429) who had taken the Finnish Further Qualification for Entrepreneurs via participation in the study programme. Out of the target group of 429 persons, 407 persons were approached by mail/e-mail, and 232 of these responded by filling in the questionnaire (a response rate of 57%). Finally, the number of respondents whose self-assessments of their learning outcomes were examined amounted to 227. (This number included respondents who were working as entrepreneurs or salary earners at the time the survey was carried out; it excluded in total 5 respondents who were full-time students, unemployed, or whose position was indefinable.) The control group was lacking because it was difficult to put together an applicable and comparable group for that purpose.

Among the persons whose assessments were analysed (n=227), 55% were women and 45% men. Their ages varied from 24 to 69 years, with a mean of 43 years. Approximately one third (29%) of the respondents had taken an upper secondary level qualification, and 43% had a post-secondary level degree. A Bachelor's degree from universities of applied sciences had been taken by 14% of the respondents, and 8% had a Master's degree. Self-employed persons or entrepreneurs comprised 82% of the respondents, while 16% were salary earners in the private sector, and 2% were working in the public sector. In terms of legal form, most of the enterprises (63%) were limited companies. The second largest group consisted of sole traders (25%). The enterprises represented different lines of industry fairly evenly, the largest group being from the commercial sector (19%). The majority of the enterprises (58%) employed 4 persons or fewer, and the number of staff was less than 49 in all the companies. On the basis of headcount, all these companies can be classified as small or micro enterprises (see Commission Recommendation 2003/361/EC).

## 4.2 Questionnaire

The assessment of the self-reported learning outcomes was based on data collected through a mailed/internet-based questionnaire. In the questionnaire the participants were asked to evaluate the impact of the study programme on their personal entrepreneurial skills: 'Evaluate how taking the Further Qualification for Entrepreneurs has affected your personal entrepreneurial skills'. Altogether, respondents rated 31 statements, which were evaluated on a 5-level Likert Scale. The scale was: (1) no positive effect, (2) a minor positive effect, (3) a moderate positive effect, (4) a substantial positive effect, and (5) no opinion. In the actual analysis, only levels 1-4 were included, since it was decided to leave out the 'no opinion' option, due to the small number of responses in this category.

The items used for examining students' learning outcomes were selected on the basis of their ability to describe the skills and abilities needed by an entrepreneur running a successful business. This general goal is expressed in the Finnish national core curriculum, which defines the aim of the Further Qualification for Entrepreneurs as 'to improve the entrepreneur's ability to run his/her business successfully and productively' (Yrittäjän ammattitutkinto. Tutkinon perusteet 2001). In the questionnaire, the multiple prerequisites for successful entrepreneurship were derived from and operationalized according to the scholarly literature on entrepreneurship, and entrepreneurship education referred to in Sections 1 and 2. [The literature review highlighted the following aspects of successful entrepreneurship: business management skills, entrepreneurial skills, confidence with entrepreneurship, cooperation skills, meta-cognitive skills, and entrepreneurial knowledge.](#) The basis of the operationalization is presented in Table 1. In practice, for the questionnaire, the theoretical concepts were operationalized into phrases. For example, pursuit of opportunities (Ardichvili *et al.*, 2000; Bygrave & Hofer, 1991; Stevenson, 1999), which has seen as one of the main cores of entrepreneurship, was operationalized as questionnaire item 1: 'Ability to identify and exploit new business opportunities'. The questionnaire as a whole was tested in an unpublished pilot study with persons who had taken the Further Qualification for Entrepreneurs but who did not

belong to the target group of the study, and, as a result, some items were reformulated or deleted. The internal consistency reliability of scales was tested by Cronbach’s alpha, and the values proved to be high, varying from .813 to .929.

Instruments measuring perceived learning outcomes of entrepreneurship education, have been used in other studies dealing with entrepreneurship education. However, these instruments are often tailored to measure learning outcomes in relation to certain conditions such as forms of motivation and teamwork (see Hytti, Stenholm and Heinonen 2010) or in certain type of education like ‘awareness education’ referring to learning to understand entrepreneurship (see Fretschner and Weber 2013). Research-based tools for measuring a person’s strengths and weaknesses as an entrepreneur, such as the Entrepreneur Scan (Driessen & Swartz 2007) can also be found online (see <https://entrepreneurscan.com/> 2019). In our study, we used a tailor-made questionnaire because we wanted it to be extensive covering all the aspects of successful business that emerged from the literature review, and modelled from the viewpoint of the target group.

**TABLE 1 Operationalization of learning outcomes in this study**

<b>THEORETICAL BACKGROUND</b>	<b>ITEMS</b>
<p><b>“Business management skills”</b></p> <ul style="list-style-type: none"> <li>• Entrepreneurship as a “science” (Jack &amp; Andersson, 1999.)</li> <li>• Know-how (Johannisson, 1991.)</li> <li>• Functional and managerial skills (Ibrahim &amp; Soufani, 2002.)</li> <li>• Business-specific learning content (Fisher <i>et al.</i>, 2008.)</li> <li>• Practical/experiential knowledge (Tynjälä <i>et al.</i>, 2008.)</li> </ul>	<ul style="list-style-type: none"> <li>c. Ability to see the entire picture of business activities</li> <li>d. Strategic planning and management of business activities</li> <li>f. Planning and follow-up of financial issues in the business</li> <li>g. Ability to find solutions to business problems</li> <li>h. Ability to market one’s own personal know-how and that of the organization</li> <li>k. Ability to analyse and manage risks</li> <li>m. Ability to gain and use information needed in business activities</li> <li>p. Ability to acquire suitable or additional resources</li> <li>x. Time management</li> <li>y. Ability to make decisions</li> <li>z. Organizational skills</li> </ul>
<p><b>“Entrepreneurial skills”</b></p> <ul style="list-style-type: none"> <li>• Entrepreneurship as an “art” (Jack &amp;</li> </ul>	<ul style="list-style-type: none"> <li>e. Ability to anticipate changes in the business</li> </ul>

<p>Andersson, 1999.)</p> <ul style="list-style-type: none"> <li>• Entrepreneurial orientation (Poon <i>et al.</i>, 2006.)</li> <li>• Know-when (Johannisson, 1991.)</li> <li>• Pursuit of opportunities (Ardichvili <i>et al.</i>, 2000; Bygrave &amp; Hofer, 1991; Stevenson, 1999.)</li> </ul>	<p>environment</p> <p>1. Ability to identify and exploit new business opportunities</p> <p>ä. Capability of tolerating uncertainty</p> <p>a2. Ability to operate more independently</p> <p>b2. Creativity</p> <p>c2. Courage to try out new ideas</p>
<p><b>“Confidence with entrepreneurship”</b></p> <ul style="list-style-type: none"> <li>• Mentality as part of entrepreneurial knowledge (Jack &amp; Andersson, 1999.)</li> <li>• Affective learning outcomes (Fisher <i>et al.</i>, 2008; Kraiger <i>et al.</i>, 1993)</li> <li>• Personal learning content (Fisher <i>et al.</i>, 2008.)</li> <li>• Entrepreneurial spirit (Frugier <i>et al.</i>, 2003.)</li> <li>• Know-why (Johannisson, 1991.)</li> </ul>	<p>a. Ability to work as an entrepreneur</p> <p>o. Ability to influence the future of the business</p> <p>q. Satisfaction with entrepreneurship as a career option</p> <p>r. Commitment to one’s own business/work organization</p> <p>s. Confidence in the success of the business</p> <p>t. Credibility as an entrepreneur</p> <p>u. Self-confidence</p> <p>v. Work motivation</p>
<p><b>“Cooperation skills”</b></p> <ul style="list-style-type: none"> <li>• Interpersonal learning content (Fisher <i>et al.</i>, 2008.)</li> <li>• Know-who (Johannisson, 1991.)</li> </ul>	<p>i. Leadership skills</p> <p>n. Creation and maintenance of cooperation networks</p> <p>å. Cooperation skills</p>
<p><b>“Metacognitive skills”</b></p> <ul style="list-style-type: none"> <li>• Self-regulative knowledge (Tynjälä <i>et al.</i>, 2008.)</li> </ul>	<p>b. Ability to identify personal strengths and weaknesses</p> <p>j. Ability to assess one’s own actions</p> <p>ö. Learning skills</p>
<p><b>“Entrepreneurial knowledge”</b></p> <ul style="list-style-type: none"> <li>• Concepts as part of entrepreneurial knowledge (Jack &amp; Andersson, 1999.)</li> <li>• Conceptual/theoretical knowledge (Tynjälä <i>et al.</i>, 2008.)</li> <li>• Cognitive learning outcomes (Fisher <i>et al.</i>, 2008; Kraiger <i>et al.</i>, 1993.)</li> <li>• Know-what (Johannisson, 1991.)</li> </ul>	<p><i>In this study “entrepreneurial knowledge” was not measured separately, since it was embedded in the previous items.</i></p>

### 4.3 Analysis

The data were analysed using SPSS for Windows software. An analysis of non-respondents found no statistical difference between respondents and non-respondents related to their age (Mann-Whitney U-test:  $n = 406$ ,  $U = 19685.00$ ,  $p = .67$ ) or the year when they had taken their degree (Pearson chi-square test:  $n = 407$ ,  $\chi^2(4) = 0.85$ ,  $p = .93$ ).

However, women were found to be more willing to answer than men (Pearson chi-square test:  $n = 407$ ,  $\chi^2(1) = 5.64$ ,  $p = .01$ ).

The Kolmogorov-Smirnov test was used to assess the normality of the variable distributions. It was found that the 31 variables based on questionnaire statements and the four sum variables based on factor analysis were not normally distributed (Kolmogorov-Smirnov  $p < .05$ ). They could not be modified into normal distributions by re-categorizations or transformations, and therefore nonparametric and other robust methods of analysis were used.

The self-reported learning outcomes after education (research question 1) were examined via exploratory factor analysis, Generalized Least Squares (GLS). In addition, the most and least developed self-reported learning outcomes (question 2) were studied using sum variables formed on the basis of the factors found by factor analysis. The reliabilities of the sum variables were examined according to the values of Cronbach's alpha. Subsequently, the sum variable mean values were calculated and the statistical differences between the mean values were examined using the Wilcoxon signed-rank tests. Mann-Whitney U-tests and Kruskal-Wallis tests were used to search for statistical differences between the self-reported learning outcomes reported by the students and the background characteristics of the subjects and companies (question 3). Concerning the background variables, students' assessments of the implementation of the study programme were examined, using Mann-Whitney U-tests.

## **5 Results**

### **5.1 Structure of the Self-Reported Learning outcomes**

The structure of learning outcomes was studied via exploratory factor analysis. In the factor analysis of 31 Likert scale statements, the GLS Method and Varimax rotation were used, with factor loadings of  $< 0.30$  and factor eigenvalues above 1 being chosen. The factor analysis included questionnaire respondents who worked as entrepreneurs or salary

earners at the time the survey was carried out (n=227). Within the factor analysis, cases were excluded listwise (n=177). On the basis of the exploratory factor analysis of the students' responses to the statements concerning the impact of the study programme on their entrepreneurial skills and abilities, four factors were found. These factors were designated as (i) *Working life key skills*, (ii) *Management skills*, (iii) *Entrepreneurial empowerment*, and (iv) *Development orientation*. As a whole, these factors were able to explain 60.9 % of the total variance (see Table 2).

**TABLE 2 Factors representing the learning outcomes from the *Further Qualification for Entrepreneurs* programme, as experienced by students (n = 177, GLS method, Varimax rotation, 60.9% of the total variance explained)**

<b>Learning outcome variable</b>	<b>F1 Working life key skills</b>	<b>F2 Management skills</b>	<b>F3 Entrepreneurial empowerment</b>	<b>F4 Development orientation</b>
y. Ability to make decisions	<b>.808</b>			
z. Organizational skills	<b>.790</b>			
å. Cooperation skills	<b>.716</b>			
a2. Ability to operate more independently	<b>.641</b>			
ä. Capability of tolerating uncertainty	<b>.598</b>			
ö. Learning skills	<b>.577</b>			
x. Time management	<b>.549</b>			
v. Work motivation	<b>.548</b>			
i. Leadership skills	<b>.411</b>			
d. Strategic planning and management of business activities		<b>.719</b>		
e. Ability to anticipate changes in the business environment		<b>.674</b>		
j. Ability to assess one's own actions		<b>.651</b>		
k. Ability to analyse and manage risks		<b>.618</b>		
c. Ability to see the entire picture of business activities		<b>.592</b>		
m. Ability to gain and use information needed in business activities		<b>.577</b>		
g. Ability to find solutions to business problems		<b>.560</b>		
f. Planning and follow-up of financial issues in the business		<b>.537</b>		
h. Ability to market one's own personal know-how and that of		<b>.509</b>		

the organization				
l. Ability to identify and exploit new business opportunities		<b>.507</b>		
a. Ability to work as an entrepreneur		<b>.487</b>		
b. Ability to identify personal strengths and weaknesses		<b>.456</b>		
t. Credibility as an entrepreneur			<b>.766</b>	
q. Satisfaction with entrepreneurship as a career option			<b>.710</b>	
s. Confidence in the success of the business			<b>.680</b>	
u. Self-confidence			<b>.673</b>	
r. Commitment to one's own business/work organization			<b>.587</b>	
o. Ability to influence the future of the business			<b>.490</b>	
c2. Courage to try out new ideas				<b>.605</b>
p. Ability to acquire suitable or additional resources				<b>.600</b>
b2. Creativity				<b>.577</b>
n. Creation and maintenance of cooperation networks				<b>.456</b>
<b>Eigenvalue</b>	15.26	2.16	1.34	1.21
<b>Percentage of variance explained</b>	18.24	17.43	14.76	10.51

The first factor, *Working life key skills*, embodies generic skills and abilities commonly needed in everyday working life, largely irrespective of the work position held. These skills include for example 'learning skills', 'cooperation skills', and 'the ability to make decisions'. Elements closely connected with entrepreneurship such as 'capability of tolerating uncertainty' and 'ability to operate more independently' were also integrated into this entity. These skills have increasingly been regarded as basic skills needed in the modern world of work. (see e.g. The future of work 2016.)

*Management skills*, the second of the learning outcome factors, comprised elements connected with planning of business strategies and performing of daily business activities. These items included, among others, 'strategic planning and management of business activities', 'planning and follow-up of financial issues within the business', 'ability to analyse and manage risks', and 'ability to market one's own know-how and that of the organization'. Moreover, skills and abilities closely connected with the person

performing entrepreneurship were conflated within this factor. These items were ‘ability to assess one’s own actions’, ‘ability to work as an entrepreneur’, and ‘ability to identify personal strengths and weaknesses’. The items related to self-knowledge and self-assessment illustrate the individual’s personal contribution to entrepreneurship. On the basis of this study, one can suggest that the skills of business planning and execution are interrelated with the individuals’ own conceptions of their abilities to work as an entrepreneur, and with their self-knowledge.

The third factor was labelled as *Entrepreneurial empowerment*. The empowerment involved with this factor can be seen as intrapersonal, encompassing perceived control, plus positive beliefs concerning personal competence and the future of the business (see Zimmerman 2000). Entrepreneurial empowerment may be interpreted as close to the concept of ‘entrepreneurial spirit’ defined by Frugier *et al.* (2003), that is to say as attitudes, normative beliefs, and a certain feeling of being skilled, which in turn includes self-efficacy and locus of control. In connection with the attitude towards entrepreneurship, this factor contains the item ‘satisfaction with entrepreneurship as a career option’. Beliefs were represented by ‘self-confidence’, ‘confidence in the success of the business’, and ‘ability to influence the future of the business’, all of which reflect self-efficacy (Bandura 1977, 1997), locus of control (Rotter 1990), and controllability of performance (Ajzen 2002). In addition, the factor representing entrepreneurial empowerment encompasses an item representing the formalizing effect of having a degree: the item ‘credibility as an entrepreneur’. In addition, the item ‘commitment to one’s own business/work organization’ represents the willingness of a person to work for the business in question, and the ability of education to promote this engagement.

The fourth factor, *Development orientation*, represents dynamism and activeness. It first of all encompasses elements connected with the ‘entrepreneurial orientation’ (Poon *et al.* 2006). Entrepreneurial orientation is represented by the items ‘courage to try new ideas’ and ‘creativity’. With regard to the element of risk, there is on the one hand the courage to experiment with something new, meaning to actually take a certain risk by making an exception to what is customary (‘courage to try new ideas’). On the other hand there is



the more inert skill of estimating and managing risks, which in this study of learning outcomes is connected with management skills ('ability to analyse and manage risks') (see also Fisher *et al.* 2008). The other main component of the *Development orientation* factor is the ability to develop the business further. The development function comes into existence through the items 'ability to acquire suitable or additional resources' and the 'creation and maintenance of cooperation networks'.

## 5.2 Most and Least Developed Learning Outcomes

Based on the grouping of items through the factor analysis (see Table 2), four sum variables were formed. The mean values, standard deviations, and Cronbach's alphas of the sum variables are presented in Table 3. The Cronbach's alpha values, which measure the reliability of the sum variables, can be regarded as good (see Nunnally and Bernstein 1994 pp. 264-265). Taken as a whole, the sum variable mean values (from 2.58 to 2.98, on a scale of 1–4) can be considered to provide a fairly positive picture of the effects of the study programme on the students' entrepreneurial skills and abilities.

**TABLE 3 Sum variables of self-reported learning outcomes based on explorative factor analysis**

Sum variable	Mean (scale 1-4)	Std. Deviation	Cronbach's Alpha
F3 Entrepreneurial empowerment	2.98	.705	.929
F2 Management skills	2.97	.530	.908
F1 Working life key skills	2.82	.661	.907
F4 Development orientation	2.58	.664	.813

The differences between the mean values of the four sum variables were tested using Wilcoxon signed-rank tests (see Table 4).

**TABLE 4 Comparisons of sum variable mean values based on Wilcoxon signed-rank tests**

Factors	F1	F2	F3	F4
F1				
F2	Z= -5.116, p= .000			
F3	Z= -5.176, p= .000	<b>Z= -.704, p= .481</b>		
F4	Z= -7.129, p= .000	Z= -9.469, p= .000	Z= -9.574, p= .000	

As Table 4 indicates, the differences were statistically significant ( $p \leq 0.05$ ) except for the difference between ‘Entrepreneurial empowerment’ and ‘Management skills’ (F2 vs. F3). These two factors also had the highest mean values which indicates the study programme had affected them most positively.

### 5.3 Learning Outcomes and Background Variables

When the self-reported learning outcomes were examined in relation to gender, educational background, entrepreneurs’ entrepreneurial experience (novice vs. habitual entrepreneurs), entrepreneurs’ working experience in the field, the legal form of the entrepreneurs’ companies (limited vs. non-limited companies), and the number of staff in the companies, no statistical differences were found (based on Mann-Whitney U-tests and Kruskal-Wallis tests). However, the perceived learning outcomes varied between the student entrepreneurs in *the social and health care sector and other industries*. As indicated by the Mann-Whitney U-tests ( $p \leq 0.05$ ), entrepreneurs with businesses in the social and health care sector had, in comparison with other domains, a more positive experience of the effect of the study programme on their management skills and on their entrepreneurial empowerment. These statistically significant differences are presented in Table 5.

**TABLE 5 Statistically significant differences in self-reported learning outcomes between (i) social and health care sector entrepreneurs and (ii) other entrepreneurs ( $p \leq 0.05$ )**

Learning outcome	N	Mean	Std. Deviation	Mann-Whitney U-test
Management skills	n <sub>sos</sub> =25 n <sub>other_e</sub> =150	Sos. = 3.25 Other_e = 2.92	Sos. = .424 Other_e = .548	U=1226,5, p=.006
Entrepreneurial empowerment	n <sub>sos</sub> =24 n <sub>other_e</sub> =150	Sos. = 3.33 Other_e = 2.95	Sos. = .496 Other_e = .295	U=1275,0, p=.021

Social and health care sector entrepreneurs differed from other entrepreneurs also in many of their assessments of the *implementation of the study programme*. For example, they had a more positive view of the benefits of making a business plan. They also gave a more positive assessment of the overall ability of the study programme to develop their entrepreneurial skills. Moreover, there were statistical differences between *novice* and *habitual* entrepreneurs. In this study, the habitual entrepreneurs included those persons who had already been entrepreneurs before they established their current business. Altogether 52 habitual entrepreneurs (28% of the total) and 133 novice entrepreneurs (72% of the total) took part in this study. Compared to the novice entrepreneurs, the habitual entrepreneurs gave more positive assessments concerning the preparation of the business plan, the overall development of entrepreneurial skills, the enhancement of cooperation and networks, and the suitability of the study programme. The Likert scale (1–4) statements on the programme implementation and the Mann-Whitney U-tests indicating the statistically significant differences between the groups of entrepreneurs are presented in Table 6.

**TABLE 6** Statistically significant differences on assessments of the study programme implementation ( $p \leq 0.05$ )

Entrepreneur groups compared	Questionnaire statement concerning the programme implementation	N	Mean	Std. Deviation	Mann-Whitney U-test
Industry: Social and health care sector entrepreneurs vs. other entrepreneurs	1) My enterprise/work organization benefited from preparing a business plan.	n <sub>sos</sub> =23 n <sub>other_e</sub> =148	Sos. = 3.61 Other_e = 3.20	Sos. = .583 Other_e = .870	U=1272.00, p=.035
	2) I was able to develop the skills needed in entrepreneurship by taking part in the study programme.	n <sub>sos</sub> =25 n <sub>other_e</sub> =155	Sos. = 3.68 Other_e = 3.09	Sos. = .557 Other_e = .809	U=1134.50, p=.000
	3) My enterprise/work	n <sub>nov</sub> =124	Nov. =	Nov. = .859	U=2081.5,

<b>Experience:</b>  Novice entrepreneurs vs. habitual entrepreneurs	organization benefited from preparing a business plan.	n <sub>hab</sub> =47	3.14 Hab.=3.55	Hab. = .746	p=.002
	4) Cooperative networks were built with other students/enterprises taking part in the study programme.	n <sub>nov</sub> =131 n <sub>hab</sub> =50	Nov. =2.47 Hab.=3.02	Nov. = .939 Hab. =.958	U=2265.0, p=.001
	5) Education has helped me to build new cooperation networks external to the study programme.	n <sub>nov</sub> =128 n <sub>hab</sub> =50	Nov. =2.10 Hab.=2.56	Nov. =.840 Hab. =.760	U=2208.0, p=.001
	6) Connections formed through the programme have been useful to my enterprise's/work organization's business operations.	n <sub>nov</sub> =128 n <sub>hab</sub> =49	Nov. =2.23 Hab.=2.63	Nov. = .900 Hab. =.834	U=2385.5, p=.009
	7) Networks formed through education have helped me to gain information needed in business operations.	n <sub>nov</sub> =128 n <sub>hab</sub> =48	Nov. = 2.10 Hab.=2.46	Nov. =.821 Hab. =.824	U=2369.0, p=.013
	8) New business relationships have been formed through the programme.	n <sub>nov</sub> =129 n <sub>hab</sub> =50	Nov. = 1.93 Hab.=2.30	Nov. =.877 Hab. =.909	U=2518.0, p=.016
	9) I can recommend this study programme to other people in similar situations.	n <sub>nov</sub> =124 n <sub>hab</sub> =49	Nov. = 3.31 Hab.=3.61	Nov. =.868 Hab. =.702	U=2452.5, p=.025

## 6 Discussion

The study examined the students' self-reported learning outcomes after a start-up programme focusing on creating a business plan; in so doing it aimed to explore the possibilities of such a programme for meeting the challenge of developing the wide-ranging entrepreneurial skills and abilities needed by an entrepreneur. More broadly, the study sought to contribute to more elaborated understanding of learning outcomes in the field of entrepreneurship education. On the basis of our results, we propose four main areas of learning outcomes after business plan-focused entrepreneurship education: (i) *entrepreneurial empowerment*, (ii) *management skills*, (iii) *working life key skills*, and (iv)

*development orientation*. In relation to these outcomes, *entrepreneurial empowerment* and *management skills* were experienced as having developed most during education.

The elements of development orientation and entrepreneurial empowerment can be understood as representing 'enterprising' learning outcomes. The role of empowerment was found clearly positive in this study. The strength of the empowerment aspect can be regarded as somewhat surprising, since the persons who had decided to take part in this programme had already worked as entrepreneurs, or else their entrepreneurial interests and intentions could otherwise be expected to have been fairly strong at the start of the programme. The study programme did seem to succeed in empowering students through participation, providing them with new knowledge, skills, and abilities (see Ediangbonya 2013). This highlights the value of formal education in entrepreneurial learning.

The second main point regarding enterprising learning outcomes of this education concerns the programme's ability to enhance a development orientation, referring to the dynamic skills and abilities required for the further development of a business. Promoting these skills and abilities has been understood as a challenging task for entrepreneurship education (Liñán 2007). Based on the Global Entrepreneurship Monitor Finnish 2015 Report (2016), both early-stage entrepreneurs and established business owners in Finland have rather modest aspirations in terms of growth, innovation and internationalization. Also in the present study, the programme seemed to be least successful in its aim of nurturing a development orientation (including creativity, the courage to try new ideas, the ability to acquire suitable or additional resources, and the creation and maintenance of cooperation networks). Of course, it can be argued that the further development of the enterprise will become a more topical matter at later stages of entrepreneurship. However, it can hardly be denied that in order to retain the vitality of the business, an entrepreneur should have the ability to be active and flexible in business solutions at any stage or in any type of entrepreneurship.

The study indicates that learning outcomes of entrepreneurship education may vary between different sub-groups. In this study, the social and health care sector

entrepreneurs had more positive perceptions than others concerning the effects of the study programme on their management skills and their entrepreneurial empowerment. Perhaps the development of these types of skills and abilities has traditionally been less central in educational or working life settings in this sector, and this sub-group might thus have a stronger sense of making gains than the others. Moreover, the role of private services in this sector is growing because of ongoing health and social services reform in Finland (see Finnish Government 2017). Kovalainen and Österberg-Högstedt (2013) point out that the current development towards a market-based and mosaic-type structure of the welfare system in the Nordic countries has established an emerging new business field to professional groups who have earlier had experience and access only to paid employment positions. They also suggest that the entrepreneurial identity, its challenges and attractions in the social and health care sector may lie in the combination of care, female roles and entrepreneurship, which makes it unique (Kovalainen and Österberg-Högstedt 2013).

The study also emphasizes the significance of students' entrepreneurial experience when they take part in entrepreneurship education. The results showed that compared to novices, persons who had acquired personal experience as entrepreneurs prior to their current business had more positive opinions regarding the usefulness of drawing up a business plan, the overall development of entrepreneurial skills, the enhancement of cooperation and networks, and the overall suitability of the programme. This implies that earlier learning-by-experience (see Gibb 2000; Toutain, Fayolle, Pittaway & Politis 2017) may help students to gain more from the business planning process. Such students are probably more specifically aware of what they require, and more willing to seek assistance in getting what they want. They may also have better opportunities to integrate theoretical, practical, and self-regulative knowledge, which is a prerequisite for deep expertise development (see Tynjälä 2008; Arpiainen & Tynjälä, 2017).

Concerning the limitations of this study, the validity of self-report data may be questioned due to the possibility of conscious bias in the person providing the data. In general, the subjects may give answers which make them look good. (Baldwin 2000.)

Memory distortion may also pervade retrospective self-reports (Stone and Shiffman 2002). Despite these limitations, self-reports comprise a widely used method of collecting empirical data (Chan 2009) which is typically applied in situations where no other source of information exists, or in cases where data exist but would be too difficult or too expensive to obtain (Baldwin 2000). The lack of a control group and pre-post-test design was also a limitation of this study. Measuring skills, knowledge and other learning outcomes would be more reliable when pre-test data is available. Therefore, we suggest for further studies a longitudinal design including the second post-test after a few years of completing entrepreneurship education. It would also be interesting to find a control group consisting of people starting business without the course but in practice, it is difficult to find this kind of comparable group.

Despite the limitations, the findings of this study have important implications concerning outcomes of entrepreneurship education. Taken as a whole, start-up education focusing on making a business plan seems to have been able to support and develop not only management skills (i.e. tools for starting and running a business) but also certain enterprising capabilities or entrepreneurial personality dispositions. It seems that the study programme was able to encourage students and to give them confidence in the process of becoming entrepreneurs. In this sense one could say that the programme appears to have nurtured entrepreneurial *spirit* (see Frugier et al. 2003) fairly well. In terms of the capabilities related to entrepreneurial *orientation* (see Poon *et al.* 2006), the reported learning outcomes were not as strong. Further actions will be needed if one is seeking to nourish the ability to be more dynamic, i.e. to instil creativity, the courage to take risks, and the ability to develop a business further. The study suggests that the development of an entrepreneurial orientation should be given greater emphasis, also in education where the specific focus is on business plans.

## REFERENCES

- Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology*, 32(4), 665-683.
- Ardichvili, A., Cardozo, R. & Ray, S. (2000). A theory of entrepreneurial opportunity identification and development. *Journal of Business Venturing*, 18(1), 105-123.
- Arpiainen, R.-L. & Tynjälä, P. (2017). Introducing team learning in developing economy: Students' experiences of experiential entrepreneurship education in Namibia. *Journal of Enterprising Culture* 25(2), 179-210.
- Baldwin, W. (2000). Information no-one else knows: The value of self-report. In A. Stone, J.S. Turkkan, C.A. Bachrach, J.B. Jobe, H.S. Kurzman & V.S. Cain (Eds.), *The science of self-report: Implications for research and practice* (pp.3-8). Taylor & Francis e-Library.
- Bandura, A. (1977). Self-efficacy: Toward a Unifying Theory of Behavioral Change. *Psychological Review*, 84(2), 191-215.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W.H. Freeman and Company.
- Bangs, D.H. (2002). *Business Planning Guide: Creating a Winning Plan for Success*. 9<sup>th</sup> ed. USA: Dearborn Trade Publishing, A Kaplan Professional Company.
- Bygrave, W.D. & Hofer, C.W. (1991). Theoretizing about entrepreneurship. *Entrepreneurship: Theory & Practice*, 16(2), 13-22.
- Chan, D. (2009). So why ask me? Are self-report data Really that bad? In C.E. Lance & R.J. Vanderberg (Eds.), *Statistical and methodological myths and urban legends: Doctrine, verity and fable in the organizational and social sciences* (pp. 309-336). Taylor & Francis e-Library.
- Commission Recommendation 2003/361/EC concerning the definition of micro, small and medium-sized enterprises (2003). [http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/sme-definition/index\\_en.htm](http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/sme-definition/index_en.htm).
- Driessen, M.P. & Zwart P.S. (2006). The Entrepreneur Scan measuring characteristics and traits of entrepreneurs. [www.researchgate.net/profile/Martijn\\_Driessen/publication/265031019\\_The\\_Entrepreneur\\_Scan\\_Measuring\\_Characteristics\\_and\\_Traits\\_of\\_Entrepreneurs/links/5a2e5ad6aca2728e05e31851/The-Entrepreneur-Scan-Measuring-Characteristics-and-Traits-of-Entrepreneurs.pdf](http://www.researchgate.net/profile/Martijn_Driessen/publication/265031019_The_Entrepreneur_Scan_Measuring_Characteristics_and_Traits_of_Entrepreneurs/links/5a2e5ad6aca2728e05e31851/The-Entrepreneur-Scan-Measuring-Characteristics-and-Traits-of-Entrepreneurs.pdf). Translated from Dutch. Original paper: De E-Scan Ondernemerstest ter beoordeling an ondernemerschap, Maandblad voor Accountancy en Bedrijfseconomie, juli/augustus 2006, 382-391.
- Ediagbonya, K. (2013). The roles of entrepreneurship education in ensuring economic empowerment and development. *Journal of Business Administration and Education* 4(1), 35-46.
- Entrepreneur Scan. (2019). <https://entrepreneurscan.com>.
- Entrepreneurship Education: A road to success. A compilation of evidence on the impact of*



- entrepreneurship education strategies and measures*. (2015). Luxembourg: Publications Office of the European Union.
- Finnish Government (2017). *Health and social services reform*. <http://alueuudistus.fi/en/social-welfare-and-health-care-reform/about-the-reform>. Fisher, S., Graham, M.E. & Compeau, M. (2008). Starting from scratch: Understanding the learning outcomes of undergraduate entrepreneurship education. In R.T. Harrison & C.M. Leitch (Eds.), *Entrepreneurial learning: Conceptual frameworks and applications* (pp. 313-340). Abingdon, Oxon, UK: Routledge.
- Fretschner, M. & Weber, S. (2013). Measuring and understanding the effects of entrepreneurial awareness education. *Journal of Small Business Management*, 51(3), 410-428.
- Friend, G. & Zehle, S. (2004). *Guide to Business Planning*. London: Profile Books Limited.
- Frugier, D., Verzat, C., Bachelet, R. & Hannachi, A. (2003). Helping engineers to become entrepreneurs. Attitudes, behaviours, beliefs, skills: What are the educational factors in their entrepreneurial spirit? Paper presented at IntEnt -Conference, Grenoble, France, 8-10 September 2003. [www.intent-conference.de/structure\\_default/ePilot40.asp?G=621&A=1&S=jPOFyC00o37520A5bQRI2W75Y177li8g9SoDsoRbP11D588P25&R=0](http://www.intent-conference.de/structure_default/ePilot40.asp?G=621&A=1&S=jPOFyC00o37520A5bQRI2W75Y177li8g9SoDsoRbP11D588P25&R=0).
- Gibb, A. (2000). Corporate restructuring and entrepreneurship: What can large organizations learn from small? *Enterprise & Innovation Management Studies*, 1(1), 19-35.
- Greene, F.J. & Hopp C. (2017). Are formal planners more likely to achieve new venture viability? A counterfactual model and analysis. *Strategic Entrepreneurship Journal*, 11 (1), 36-60.
- Heinonen, J. & Poikkijoki, S.-A. (2006). An entrepreneurial-directed approach to entrepreneurship education: mission impossible? *Journal of Management Development*, 25(1), 80-94.
- Holmgren, C. & From, J. (2005). Taylorism of the mind: entrepreneurship education from a perspective of educational research. *European Educational Research Journal*, 4(4), 382-390.
- Honig, B. (2004). Entrepreneurship education: Toward a model of Contingency-Based Business Planning. *Academy of Management Learning and Education*, 3(3), 258-273.
- Hytti, U. (2002). The case of entrepreneurial learning: Constructing meaning for negative entrepreneurial experiences. Paper presented at the 12<sup>th</sup> Nordic Conference on Small Business Research in Kuopio, Finland, May 26-28 2002.
- Hytti, U., Stenholm, P. and Heinonen, J. (2010). Perceived learning outcomes in entrepreneurship education: The impact of student motivation and team behaviour. *Education + Training*, 52(8-9), 587-606.
- Ibrahim, A.B. & Soufani, K. (2002). Entrepreneurship education and training in Canada: a critical evaluation. *Education + Training*, 44(8-9), 421-430.
- Jack, S.L. & Anderson, A.R. (1999). Entrepreneurship education within enterprise culture. Producing reflective practitioners. *International Journal of Entrepreneurial Behaviour & Research*, (5)3, 110-125.

- Johannisson, B. (1991). University training for entrepreneurship: Swedish approaches. *Entrepreneurship & Regional Development*, 3(1), 67-82.
- Jones, B. & Iredale, N. Enterprise education as pedagogy. *Education + Training*, 52 (1), 7-19.
- Jääskelä, P., Nykänen, S. & Tynjälä, P. (2018) Models for the development of generic skills in Finnish higher education. *Journal of Further and Higher Education*, (42)1, 130-142.
- Karlsson, T. & Honig, B. (2009). Judging business by its cover: An institutional perspective on new ventures and the business plan. *Journal of Business Venturing*, 24(1), 27-45.
- Kirby, D. (2007). Chancing entrepreneurship education paradigm. In A. Fayolle (Ed.), *Handbook of research in entrepreneurship education. Volume 1: A general perspective* (pp. 21-45). Cheltenham, UK: Edward Elgar Publishing Limited.
- Kolb, D.A. (1984). *Experiential learning: experience as the source of learning and development*. Englewood Cliffs, New Jersey: Prentice-Hall Inc.
- Kovalainen, A. & Österberg - Högstedt, J. (2013) Entrepreneurship within social and health care: A question of identity, gender and professionalism. *International Journal of Gender and Entrepreneurship*, 5(1), 17-35.
- Kraiger, K., Ford, K. & Salas, E. (1993). Application of cognitive, skill-based, and affective theories of learning outcomes to new methods of training evaluation. *Journal of Applied Psychology*, 78(2), 311-328.
- Laine, K. & Hämäläinen, R. (2015). Collaborative business planning in initial vocational education and training. *Journal of Vocational Education & Training*, 67 (4), 497–514.
- Lave, J. & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.
- Liñán, F. (2007). The role of entrepreneurship education in the entrepreneurial process. In A. Fayolle (Ed.), *Handbook of research in entrepreneurship education. Volume 1: A general perspective* (pp. 230-247). Cheltenham, UK: Edward Elgar Publishing Limited.
- Liao, J. & Gartner, W.B. (2006). The effects of pre-venture plan timing and perceived environmental uncertainty on the persistence of emerging firms. *Small Business Economics*, 27(1), 23-40.
- McCoshan, A., Lloyd, P., Blakemore, M., Gluck, D., Betts, J., Leprore, M. & McDonald, N. (2010). *Towards Greater Cooperation and Coherence in Entrepreneurship Education*. Report and Evaluation of the Pilot Action ‘High Level Reflection Panels on Entrepreneurship Education’ initiated by DG Enterprise and Industry and GD Education and Culture, European Commission, Enterprise and Industry, available at [http://ec.europa.eu/enterprise/policies/sme/promoting-entrepreneurship/education-training-entrepreneurship/reflection-panels/files/entr\\_education\\_panel\\_en.pdf](http://ec.europa.eu/enterprise/policies/sme/promoting-entrepreneurship/education-training-entrepreneurship/reflection-panels/files/entr_education_panel_en.pdf).
- Nunnally, J.C. & Bernstein, I.H. (1994) *Psychometric theory*. Third edition. USA: McGraw-Hill.

- Näyttötutkinnon perusteet: yrittäjän ammattitutkinto 2007.* [Requirements of the Competence-Based Qualification: Further Qualification for Entrepreneurs.] Finnish National Board of Education, regulation 22/011/2007. [www.oph.fi/download/111172\\_yrittaja\\_ammattitutkinto.pdf](http://www.oph.fi/download/111172_yrittaja_ammattitutkinto.pdf). [In Finnish.]
- Poon, J.M.L., Ainuddin, R.A. & Junit, S.H. (2006). Effects of self-concept traits and Entrepreneurial orientation on firm performance. *International Small Business Journal*, 24(1), 61-82.
- Politis, D. (2005). The process of entrepreneurial learning: a conceptual framework. *Entrepreneurship Theory and Practice*, 29(4), 399-424.
- Rae, D. (2000). Understanding entrepreneurial learning: a question of how? *International Journal of Entrepreneurial Behaviour & Research*, 6(3), 145-159.
- Rae, D. (2005). Entrepreneurial learning: a narrative-based conceptual model. *Journal of Small Business and Enterprise Development*, 12(3), 323-335.
- Rae, D. & Carswell, M. (2001). Towards a conceptual understanding of entrepreneurial learning. *Journal of Small Business and Enterprise Development*, 8(2), 150-158.
- Rotter, J.B. (1990). Internal versus external control of reinforcement. A case history of a variable. *American Psychologist*, 45(4), 489-493.
- Smilor, R.W. (1997). Entrepreneurship: reflections on a subversive activity. *Journal of Business Venturing*, 12(5), 341-346.
- Staniewski, M.W., Janowski, K. and Awruk, K. (2016). Entrepreneurial personality dispositions and selected indicators of company functioning. *Journal of Business Research* 69 (5), 1939-1943.
- Stevenson, H.H. (1999). A perspective on entrepreneurship. In W.A. Sahlman, H.H. Stevenson, M.J. Roberts & A. Bhidé (Eds.), *The entrepreneurial venture*, 2<sup>nd</sup> ed, (pp. 7-22). USA: Harvard Business Press.
- Stone, A.A. & Shiffman, S. (2002). Capturing momentary, self-report data: A proposal for reporting guidelines. *Annals of Behavioral Medicine* 24(3), 236-243.
- Surlemont, B. (2007). Promoting enterprising: a strategic move to get schools' cooperation in the promotion of entrepreneurship. In A. Fayolle (Ed.), *Handbook of research in entrepreneurship education, Volume 2: Contextual perspectives* (pp. 255-265). Cheltenham, UK: Edward Elgar Publishing Limited.
- The future of work: Skills and Resilience for a World of Change.* (2016). EPSC Strategic Notes. European Political Strategy Centre. Available at: [http://ec.europa.eu/epsc/sites/epsc/files/strategic\\_note\\_issue\\_13.pdf](http://ec.europa.eu/epsc/sites/epsc/files/strategic_note_issue_13.pdf)
- Toutain, O., Fayolle, A., Pittaway, L. & Politis, D. (2017). Role and impact of the environment on entrepreneurial learning. *Entrepreneurship & Regional Development*, 29(9-10), 869-888.
- Tynjälä, P. (2008). Perspectives into learning at the workplace. *Educational Research Review*, 3(2), 130-154.
- Täks, M., Tynjälä, P., Toding, M., Kukemelk, H. & Venesaar, U. (2014). Engineering students' experiences in studying entrepreneurship. *Journal of Engineering Education*, 103(2), 573-598.

- von Glasersfeld, E. (2007). *Key works in radical constructivism*. Rotterdam, The Netherlands: Sense Publishers.
- von Graevenitz, G., Harhoff, D. & Weber, R. (2010). The effects of entrepreneurship education. *Journal of Economic Behavior & Organization*, 76 (1), 90-112.
- Wenger, E. (1998). *Communities of practice. Learning, meaning and identity*. Cambridge: Cambridge University Press.
- Yrittäjän ammattitutkinto. Tutkinnon perusteet* (2001). [Further Qualification for Entrepreneurs. Requirements of the Qualification] Finnish National Board of Education. [www.edu.fi/julkaisut/maaraykset/naytot/yrittajan\\_at.pdf](http://www.edu.fi/julkaisut/maaraykset/naytot/yrittajan_at.pdf). [In Finnish.]
- Zhao, H., Hills, G.E. & Seibert, S.E. (2005). The Mediating Role of Self-Efficacy in the Development of Entrepreneurial Intentions. *Journal of Applied Psychology*, 90(6), 1265–1272.
- Zimmerman, M.A. (2000). Empowerment theory: psychological, organizational, and community level of analysis. In J. Rappaport & E. Seidman (Eds.), *Handbook of community psychology*. (pp. 43-63) New York: Kluwer Academic/Plenum Publishers.