

Creating an Entrepreneurial University Just Like That? Developing Students' Empowering Entrepreneurship Competence in a University's Short-Term Innovation Challenge Course

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Abstract

This exploratory study delves into the transformative potential of a succinct, eight-week Innovation Challenge course in fostering entrepreneurship competence among university students. It paves the way in reimagining how brief educational interventions can yield significant learning outcomes in entrepreneurial settings. Employing a mixed-methods approach, this study intertwines quantitative and qualitative data analyses. It leverages surveys and reflective narratives from participants of the Innovation Challenge course, offering a comprehensive understanding of their learning journey. The study unveils that, while quantitative shifts in entrepreneurship competence were not statistically significant, the qualitative insights reveal a profound impact. Key pedagogical elements-including collaborative activities, reflective practices, and mentorship-emerge as catalysts in nurturing entrepreneurial skills. With its focus on a single academic institution and a brief course duration, this study lays the groundwork for further research and offers new insights into the theoretical foundations. Future explorations could extend to longitudinal studies across diverse educational contexts, offering a deeper understanding of the lasting effects of such pedagogical approaches. The findings have substantial implications for the design and execution of entrepreneurship education in university environments. The study underscores the value of experiential learning, continuous self-evaluation, collaborative engagement, and mentoring in shaping entrepreneurial competencies. This research extends beyond academic realms, offering insights into how entrepreneurship

education can serve as a lever for societal advancement and economic innovation. Marking a significant contribution to the field of entrepreneurship education, this study illuminates the efficacy of short-term educational interventions in empowering entrepreneurial competence. It also underscores the synergy of combining quantitative and qualitative methodologies in evaluating educational program effectiveness, setting a new precedent in pedagogical research.

Keywords

Empowering Entrepreneurship Competence, Entrepreneurship Education, Entrepreneurial University, Higher Education

1. Introduction

Over the years, there has been a clear shift to enhance enterprising societies and developing entrepreneurial competencies, as suggested in the EU, UN, and OECD strategies (Bosman et al., 2020; Lackéus et al., 2020; Morselli & Seikkula-Leino, 2021). Moreover, there has been a growing interest in entrepreneurship education as part of the academic discussion related to "entrepreneurial higher education" e.g., (Fayolle, 2010; Gianiodis & Meek, 2019; Nevalainen et al., 2021). While the policymakers consider entrepreneurship education to be a tool to support the development of working life, businesses, and economic growth (Rideout & Gray, 2013), education institutions have been actively developing many entrepreneurship programs. These changes in curricula are also evident in higher education (Morris et al., 2013; Nevalainen et al., 2021). Subsequently, educational opportunities have increased dramatically (Hägg & Kurczewska, 2020; Nevalainen et al., 2021). Lately, there have also been significant changes in how education providers train competencies related to business skills and entrepreneurship. The overall perception of entrepreneurship competence has shifted from business ownership and stewardship towards providing students with solid entrepreneurship competence through more holistic educational approaches (Morselli & Seikkula-Leino, 2021; Seikkula-Leino & Salomaa, 2021).

Several studies have demonstrated the effectiveness of entrepreneurship programs in reinforcing entrepreneurial interest among higher education students e.g., (García-Cabrera et al., 2023; Nabi et al., 2017; Vanevenhoven & Liguori, 2013; Wei et al., 2019). However, knowledge regarding the competencies gained from entrepreneurship education is still limited, and a better understanding of them should be developed based on solid theoretical foundations e.g., (Seikkula-Leino & Salomaa, 2021). The focus of entrepreneurship research should be on "holistic" and "integrated" approaches instead of the number of courses offered. This is relevant to curriculum and programme design and implementation.

Recent research has already pointed towards the importance of several features of the learning community that are present in entrepreneurial team learning, such as entrepreneurial culture that has been found to impact entrepreneurial intentions (mediated by entrepreneurial attitude) (Wardana et al., 2021) as well as psychological empowerment (Fauzi et al., 2021; Seikkula-Leino & Salomaa, 2021) that has an impact on the students' intrinsic motivation e.g., (Ryan & Deci, 2020) and knowledge sharing behaviour.

In this research, we aim to find out how entrepreneurship competence is developed by the team learning concept from the psychological point of view, stressing the framework based on the theories of self-esteem and self-efficacy (Seikkula-Leino & Salomaa, 2021). This type of income angle in promoting entrepreneurship is also emphasized by the latest GEM (2023) survey. For example, the main reasons for starting or continuing a business are especially related to the fear of failure. Therefore, it is meaningful to consolidate the theoretical basis developed in our previous research (Seikkula-Leino & Salomaa, 2021) and its metrics related to self-esteem and self-efficacy in entrepreneurship education and developing an entrepreneurial organization. Furthermore, more researchbased knowledge is needed on what pedagogical models work for which types of impact and in which contexts (Nabi et al., 2017). Therefore, we explore the efficacy of the course called Innovation Challenge as a pedagogical concept and a way to build entrepreneurship competence within higher education students of HUBS, which offers entrepreneurship and innovation services to the Tampere University community. Innovation Challenges is an eight-week course that offers practice-based cases allowing multidisciplinary student teams to develop entrepreneurship competence, such as creativity and problem-solving skills.

In light of the prevalent focus on long-term educational interventions in entrepreneurship, our study carves out a unique niche by examining the efficacy of a short-term Innovation Challenge course. This course is distinctive in its condensed format, providing an intensive, immersive learning experience over just eight weeks, which deviates from conventional, more extended educational programs. Our research provides novel insights into how such brief, intensive courses can effectively cultivate entrepreneurial competencies in students. This unique aspect of our study lies not only in the brevity of the course but also in its innovative pedagogical approach, combining theory with practical, real-world challenges. By doing so, it challenges the prevailing assumptions in the field of entrepreneurship education regarding the necessary duration and structure of effective learning experiences. This investigation contributes substantially to the discourse on entrepreneurship education, offering fresh perspectives on how universities can rapidly and effectively instill entrepreneurial competencies in students within a considerably shorter timeframe.

Our research also addresses academic and theoretical challenges more deeply. The European Entrepreneurship Competence Framework (EntreComp) is designed to enhance entrepreneurial skills and understanding within education systems (Bacigalupo et al., 2016). Nevertheless, there remains a need for further research to delve into the foundations of entrepreneurship education and entre-

preneurship competence. Previous studies (Nevalainen, Seikkula-Leino, & Salomaa, 2021; Seikkula-Leino & Salomaa, 2020, 2021) have introduced the model that is employed in this paper. Accordingly, this study will evaluate the model's usability, with a particular emphasis on fostering entrepreneurship competence in a short-term educational context. Our findings are expected to offer new theoretical insights into entrepreneurship competence, thereby addressing the existing gap in comprehensive theoretical understanding as highlighted by empirical research.

The article first reviews the literature on an entrepreneurial university, entrepreneurship education, and entrepreneurship competence and describes the model on which the assessment tools are based. The following section outlines the methodology used in this quantitative and qualitative study. It is followed by the survey's main findings and qualitative analysis, as well as a discussion, conclusion, and study limitations. Finally, we elaborate on the theoretical and practical implications of the key findings and suggest further avenues for research.

2. Theoretical Framework

2.1. Entrepreneurial University

In the past two decades, the universities' emerging entrepreneurial and societal missions and increasingly emphasised role in national and regional innovation systems have drawn many scholars' attention. Hitherto, the academic discussion has been dominated by the somewhat overlapping concepts of "entrepreneurial university" (Clark, 1998), followed by more recent attempts to capture the university's societal and economic contributions to their communities, such as "engaged university" e.g., (Breznitz & Feldman, 2010; Chatterton & Goddard, 2000), the university "third mission" e.g. (Roper & Hirth, 2005; Zomer & Benneworth, 2011), and more recently, triple- and quadruple-helix configurations (e.g. Cai & Lattu, 2021; Carayannis, Campbell, & Grigoroudis, 2021). All these concepts refer to a range of activities beyond the traditional academic core missions of education and research and the university's engagement with (regional) stakeholders. In parallel, higher education and regional policies have emphasised universities' role in developing a knowledge economy (Göransson et al., 2009), again increasing local expectations towards regional higher education institutions. However, balancing the expectations emerging from regional stakeholders and higher education systems (Charles et al., 2014; Salomaa & Charles, 2021) requires reinforcing the strategic organisational capacity, systematic development of bridging mechanisms and entrepreneurial skills within higher education institutions. As Kolehmainen et al. (2021) identify in their comparative study on regional higher education institutions, one of the key components in creating conditions for resilience strategies between HEI and the regions is competence building and human capital. These issues are more often discussed in the context of entrepreneurship education, which also demands organisational commitment and the creation of an environment (ecosystem) within which enhancing the development of entrepreneurial mindsets and behaviours is embedded, encouraged, supported, incentivised and rewarded (Hannon, 2013). This can be supported by inculcating entrepreneurial thinking through the university's governance structures and managerial policies and practices resulting in the development of study programmes, pedagogy, and teaching models used.

2.2. Entrepreneurship Education

The goal of entrepreneurship education is to educate students to take more responsibility for themselves and their learning, to achieve their goals, to become creative, active, and critical citizens, to discover existing opportunities and create new ones, and to cope and thrive in a complicated society (Jónsdóttir & Gunnarsdóttir, 2017). A key goal is for students to take an active role in the labour market and view entrepreneurship as a natural career choice (Seikkula-Leino, 2019), but also perform well as employees and in everyday activities e.g., (Blenker et al., 2011). Entrepreneurship education is about developing behaviours, skills, and attributes that are applied both individually and collectively to help individuals and organizations of all kinds create, master, enjoy, change, and innovate e.g., (Pittaway & Cope, 2007).

For example, entrepreneurship education has been stressed in the European Union for decades. As described in Seikkula-Leino & Salomaa (2021) study, there has been a major concerted effort by the European Commission to advance entrepreneurship education. The inclusion of entrepreneurship as one of the eight European Key Competences in 2006 led to the agreement by all EU Member States agreeing to incorporate these key competences into their education and training systems; however, the 2016 Eurydice rapport showed that the approach to the key competence of entrepreneurship is fragmented and not universal. This visibility has increased since the launch of the Europe 2020 strategy through policy documents focused on education and training, culminating in the 2016 and 2020 Skills Agendas (European Commission, 2022). This reaffirmed the im-portance of the entrepreneurship key competence with three work priorities: improving the quality and relevance of skills education, enhancing the visibility and comparability of skills and qualifications, and promoting skills knowledge, documentation, and career choices. The European Skills Agenda 2020 now sets the framework for policy and reform at the EU and national levels, emphasizing the importance of developing an entrepreneurial mindset and providing all learners with at least one practical entrepreneurial experience during compulsory education, as well as strengthening education VET and STEM through entrepreneurial learning in the workplace. The importance of transversal competences was reiterated by the European Council in its 2018 conclusions and stressed in the European Pillar of Social Rights (Mccallum et al., 2018). On the other hand, there are certain challenges in implementing practical education based on policies. For example, educators ought to better understand how policies can actually be put into practice. More support is needed for educators (Seikkula-Leino & Salomaa, 2021).

The current challenges of entrepreneurship education are also due to the fact that it was "invented" for the study of business. Today, however, entrepreneurship education includes the development of competencies that enable individuals and communities to tackle serious problems and develop society through sustainable thinking and actions. Thus, entrepreneurship education is much more than creating a startup. In addition, considering a more holistic approach, even the entrepreneurship education contents should change, focusing more on new outcomes, such as the development of entrepreneurship competence (see, e.g., Lackéus et al., 2020), entrepreneurial mindset and behaviours (Daniel, 2016), attitudes and soft skills (Fayolle, 2010). Thus, entrepreneurship education and entrepreneurship competence research should be more comprehensive and interdisciplinary in the future. In fact, educational reformers have always emphasized entrepreneurial learning without using the concept of entrepreneurship education (Seikkula-Leino & Salomaa, 2021). Therefore, in principle, every educator has the right to work as an entrepreneurship educator. However, this has not always been realized. Recognizing that entrepreneurship education is fundamentally based on modern and learner-centered learning could also help educators understand the potential that entrepreneurship education offers in development education as a whole.

In this connection, we would like to clarify we use the concept of entrepreneurship competence in this study based on the previous policies described earlier, which stresses the concept utilization from this angle, especially in higher education. Thus, the concept of entrepreneurial competence is also used in the field and literature research. However, in our research context, entrepreneurship competence refers to both human thinking and entrepreneurial activity in different areas of life, which may also involve business development. The concept of entrepreneurship competence will be described next in light of previous research and the literature in the field.

2.3. Entrepreneurship Competence

In creating a thriving entrepreneurial university, García-Cabrera et al. (2023) highlight entrepreneurship competence's professional and academic value, suggesting that it should be a key focus in university education programs. Moreover, Bosman, Grard, and Roegiers (2000) argue that the individual competency-based approach has become the most common structure for entrepreneurship education training programs and courses. It digresses from what entrepreneurs are to what they do and, thus, to the competencies they need to play their role. Chandler and Jansen (1992) and García-Cabrera et al. (2023) noted that entrepreneurship competence is connected to performing well and succeeding. Over the years, this discussion has also introduced new elements, such as integrating the concept of competencies into learning processes e.g., (Cope, 2005; Hayton & Kelley, 2006; Kyrö et al., 2011). This approach states that competencies should not be viewed as inputs, outputs, or processes but as a contextual learning pro-

cess.

Major progress has been made towards a better understanding of the development of entrepreneurship competence e.g., (Baker & Nelson, 2005; García-Cabrera et al., 2023; Lans et al., 2008; Man et al., 2002; Morris et al., 2013; Neck & Greene, 2010) by giving different frameworks to structure competencies. However, there is little empirical evidence of practical implementation (Lackéus, 2015). Furthermore, entrepreneurship competence models have been developed in the E.U., the UK, the Nordic countries and the U.S. (Gibb, 2008; Rasmussen et al., 2015; Rasmussen & Fritzner, 2016; U.S. Department of Labor, 2019). The models describe and clarify what skills are included and/or needed in entrepreneurship competence. However, they focus less on how these skills develop. There is a common agreement in the academic literature that using active teaching and learning methods generates high learning effects (Huebscher & Lendner, 2010). This is due to the emphasis on self-efficacy, which involves the ability of an individual to follow a course of action based on his/her goals. People learn when they are actively involved in the learning process and when learning is followed by positive reinforcement such as praise (Read & Kleiner, 1996).

Seikkula-Leino and Salomaa (2021) explored how entrepreneurship competence could be described from the points of view of different disciplines, e.g., stressing the research of entrepreneurship education and psychology. Based on the conceptual understanding they created, they revised the theoretical basis to be more explicit for both students and teachers. Furthermore, students' perceptions, empowerment, and support for entrepreneurial activity are essential. The framework, also called EntSelf, has the following components: 1) Trust and respect; 2) Everyone is special; 3) Open collab-oration; 4) Towards targets and new opportunities; 5) Pleasure and competence; 6) Work life and entrepreneurship, 7) Empowering Entrepreneurship Competence, which is about the interplay between the aforementioned components, and continuing self-reflection. Entself gives a structure to assess entrepreneurship competence. The model provides a solid theoretical basis for the study, and the research project aims to synthesise this construction further. In the beginning, self-esteem is formed from basic security, selfhood, and affiliation. The environment has a significant impact on their development. When these first three elements develop ("Trust, Everyone is special, Open collaboration"), the individual forms a more specific and realistic picture of himself; as a result, goal setting ", "Towards targets and new opportunities" and "Pleasure and competence" will improve. Such internal drive is self-empowerment, called in this context "Empowering Entrepreneurship Competence", supporting the development of creativity, problem-solving, risk-taking, and other forms of entrepreneurial behavior. Furthermore, external control gradually decreases, and individuals do not have to rely on the opinions of others. The individual becomes internally driven. Moreover, this internal empowerment provides opportunities for individuals and communities to develop businesses and cope in wider society, such as in working life ("Work life and entrepreneurship"). In line with moving away from the static competence perspective, entrepreneurship competence is the ability to use personal, relational and participatory resources to take action, become empowered, and orient toward the future. "Empowering entrepreneurship competence" is dynamic and multidimensional and shaped by contextual resources and capacities (Kyrö et al., 2011; Morselli & Seikkula-Leino, 2021; Seikkula-Leino & Salomaa, 2021). In practice, "Empowering Entrepreneurship Competence" manifests itself as an engine for individuals and societies to achieve a common good, such as realizing life's opportunities and developing new solutions and innovations (Figure 1).



(an engine for individuals and societies to achieve a common good, such as realizing life's opportunities and developing new solutions and innovations)

Figure 1. Empowering entrepreneurship competence.

The framework *Empowering Entrepreneurship Competence* and its assessment framework and tool *EntSelf* are available in SKILLOON, www.skilloon.com learning environment, which also provides, e.g., student activities, a tool for student mentoring, and support and guidance for teachers. SKILLOON is an official concept of Education Finland, supported by the Finnish National Board of Education, and includes entrepreneurial assessment tools activities and a mentoring program for learners. It is developed for educational and research purposes in cooperation with schools and universities.

Our literature review shows that the roles of entrepreneurship competence and entrepreneurship education are seen as significant factors in the development of society. That is why universities are also developing their entrepreneurial activities associated with various learning opportunities. Therefore, universities also need to measure the effectiveness and results of these programs and courses. Thus, the contribution of this study is to assess the development of entrepreneurship competence based on Seikkula-Leino and Salomaa's (2021) model. Based on that model, assessment tools have also been created and tested to measure entrepreneurship 1) staff competence e.g., (Seikkula-Leino & Salomaa, 2021) and 2) student competence that has participated for years the Proakatemia's entrepreneurship training program at Tampere University of Applied Sciences e.g., (Nevalainen et al., 2021). It is stressed in this study that the university's entrepreneurship-oriented, bachelor's level business course can significantly influence the strengthening of entrepreneurship competence with learner-centred and team-oriented pedagogy emphasizing the theoretical premises of Empowering Entrepreneurship Competence and its assessment framework, Entself.

In this study, on the contrary, as in the previous one, we aim to research the development of students' entrepreneurship competence in a short and intensive eight-week innovation course, thus giving us knowledge on whether it is generally possible to develop entrepreneurship competence in such a short time. However, the idea of utilizing team pedagogy and Empowering Entrepreneurship Competence (Seikkula-Leino & Salomaa, 2021) are the same in both studies.

Also, this study contributes to the earlier studies in that we can still bring evidence of how the conceptual model entrepreneurship competence is suitable for evaluating competencies (Nevalainen et al., 2021) and how its metrics still work in this case. Furthermore, we contribute to the latest research needs, highlighted by the GEM (2023) survey which stresses promoting psychological self-efficacy and a risk-taking mindset in developing entrepreneurial actions and businesses in societies. Next, we will describe our target group and research setting with its pedagogical approach.

3. Methodology

3.1. Research Setting and Target Group

In this study, we have randomly selected a group of students (N = 13) from Tampere University Society that participated in the Innovation Challenge Course coming from various disciplines and having an interest towards entrepreneurship in October-November 2020. The data collection was implemented in two sets of SKILLOON quantitative assessment tools focusing on 1) the entrepreneurialism of the university and 2) the self-assessment of entrepreneurship competence. The students accomplished assessments as starting and ending the course. Furthermore, students described their learning process, thus providing qualitative data in the study. Next, in this study, we describe HUBS's Innovation Challenges as a pedagogical concept and a way to build entrepreneurship competence within higher education students.

3.2. Research Design

Research design is based on the Team learning model of HUBS for examining the key empowering entrepreneurship competence areas. It includes the research questions and the examples of the quantitative assessment tools. The consistency of the assessment tools is measured by Cronbach's alpha.

Team Learning Model of HUBS

HUBS, previously known as Y-campus, offers entrepreneurship and innovation services to the Tampere University society. Innovation Challenges is an eight-week course that offers practice-based cases that allow multidisciplinary student teams to develop their entrepreneurship competence, such as creativity and problem-solving skills. At the core of the course is a complex challenge provided by a real-life company or project (later, challenge provider), which the student teams solve. The pedagogical concept behind the course is a team learning (Nevalainen et al., 2021), and the tool used to solve the problem is design thinking. Systemic learning occurs in a loop of sharing information and experiences in classroom sessions, crystallizing the teams' and individuals' knowledge, collecting and linking information and doing experiments, implementation and reflection. The coach acts as a facilitator and encourages and challenges the teams to reflect on each stage of the design thinking process before moving on to the next through various materials, exercises and tasks. HUBS's design process is divided into seven stages: team building and working plan, defining the problem, emphasizing with the client/end-user, ideating, validating, prototyping and presenting the final solution. During the eight-week course, the teams meet the challenge provider regularly for reflection and idea validation. Visiting specialists from different disciplines or business areas provides sparring for the teams. At the end of the course, the student teams pitch their final solutions to a panel of specialists and the challenge provider to get feedback and further development suggestions.

During this HUBS Innovation Challenge course, students filled out reflection questions about their entrepreneurship competence and the university's entrepreneurial activities at the beginning and end of the course in the SKILLOON learning environment. SKILLOON's assessments also provide automatic AIbased feedback to develop the student's entrepreneurship competence, and it recommends further initiatives for each student. In addition, the students could do other self-development tasks in SKILLOON during the course. At the end of the course, the students did a qualitative reflection on their development.

Based on these experiences, we conducted a quantitative and qualitative case study to examine if the key empowering entrepreneurship competence areas (see **Table 1**) can be developed through the practices mentioned earlier.

Table 1. Empowering Entrepreneurship Competence areas and their descriptions.

Competence An	rea Description
	There is sufficient trust to permit mistakes that could result in
1) Trust and	of treating others with respect, and they are given the freedom and
respect	chance to make their own decisions. Everyone has the right to their beliefs and opinions. This promotes novel and creative approaches to
	learning and working.

Continued	
2) Everyone is special	Individuals can appreciate themselves because they have the freedor to shape their own identities. Such a person is aware of who he is and his beliefs. He believes he is qualified and has a realistic understanding of his roles and qualities. Because he recognizes his own qualities and abilities, such a person can accept constructive criticism. Awareness of oneself creates a sense of security, and the individual can praise and encourage others. Self-understanding is also manifested at the organizational level. For example, university staff and students understand the university's uniqueness, strengths and weaknesses, which gives a ground to develop further initiatives and practices.
3) Open collaboration	In university studies, a collaborative approach is encouraged. Students are proud of their teamwork. Ideas are exchanged. Furthermore, the university does not only collaborate internally. Students are expanding their external networks and communicating with one another. Affiliation is very important.
4) Towards target and new opportunities	At the university, achieving individual and group goals is encouraged. In order to accomplish their aims, students are urged to look for novel chances and approaches. Decision-making involves the community. The quality of the studies is improved when there are significant changes in the working and learning community.
5) Pleasure and competence	The university allows students to utilize their talents and recognize their skills. There is a perception among students that they can influence one another's academic performance favorably. Students assess if goals have produced outcomes. Continuous evaluation hel students achieve their goals during their studies and fosters a sense of fulfilment, and pleasure, and being competent.
6) Work life and entrepreneurship	The university encourages the growth of knowledge about many fields and professions, as well as networking and partnerships with the working world and the surrounding society. The university promotes creating or advancing concepts, answers, products, services, or business concepts for clients or other target audiences. Additionally, there is a shared understanding and enthusiasm amou university students for entrepreneurship. Students have a comprehensive understanding of their opportunities to advance in society and in life in general, and are able to plan and make decisio about their future.
Empowering Entrepreneurship Competence	Empowering Entrepreneurship Competence is about the interaction of 1) Trust and respect, 2) Everyone is special, 3) Open collaboration; 4) Towards targets and new opportunities, 5) Pleasure and competence, 6) Work life and entrepreneurship, 7) Empowering Entrepreneurship Competence, which manifests as a tool or engine for people and society to realize a common good, suc as taking advantage of opportunities in life, solving problems, creating novel solutions, and innovating. The dynamic concept of Empowering Entrepreneurship Competence departs from the idea static competence. The ability to take the initiative, gain authority, and look toward the future through the use of one's personal, relational, and participative resources is known as Empowering Entrepreneurship Competence

Next, we will introduce this study's research questions and assessment tools, quantitative and qualitative, to find out students' entrepreneurship competence areas as starting and ending their course and their thoughts about their university's entrepreneurialism.

The Research Questions and Assessment Tools

The quantitative research questions are the following:

1) How do students assess the entrepreneurialism of their university in Tampere University Society?

a) How do students assess the entrepreneurialism of their university in starting the Innovation Challenge course?

b) How do students assess the entrepreneurialism of their university at the end of the Innovation Challenge course?

c) How do the student assessments of the entrepreneurialism of their university as starting and ending the Innovation Challenge course might differ?

2) How do students self-assess their entrepreneurship competence?

a) How do students assess their entrepreneurship competence in starting the Innovation Challenge course?

b) How do students assess their entrepreneurship competence at the end of the In-novation Challenge course?

c) How do the student assessments of their entrepreneurship competence at starting and ending the Innovation Challenge course might differ?

3) How do students describe their entrepreneurial learning process?

The quantitative assessment tools

Our research continues the entrepreneurial organization research started successfully first in the corporate world (e.g., Wihuri Group, Property Management Association, Raisio, pharmacies) between 2012-2015. In higher education, the first study proceeded in 2020. This section examined the entrepreneurial university staff competencies using EntSelf evaluation tools for university personnel, including managers and employees (Seikkula-Leino & Salomaa, 2021). The reliability and validity of the staff assessment tools were examined in the research context, and it could be concluded that they are reliable and work for the purpose. Moreover, in the second part of the study of "entrepreneurial organization", in which the same assessment tools were used to research students' entrepreneurship competence in a specific entrepreneurship-oriented program called Proakatemia, a bachelor's degree program in business and management, and again the reliability and validity has been confirmed (Nevalainen et al., 2021). In all research cases, Cronbach's alpha levels varied in different categories between 0.60 - 0.96. In this study, the assessment tools are the same as in this study. However, in this study, we focus on follow-up instead of having a cross-sectional study by using these assessment tools.

The SKILLOON, www.skilloon.com, an assessment tool targeted to students, has two assessment tools. Both of them include six sets of research questions. The first assessment tool contained an assessment of the organization's different (entrepreneurial characteristics) (university). The second assessment tool focuses on students' self-assessments. Each of these two assessment tools contains between five to seven statements. The students specified their level of agreement on a symmetric agree/disagree scale (between 1 - 10), in which 1 means that the respondent entirely disagrees with the claim and 10 that the informant entirely agrees. Each competence module forms an individual summation notation by calculating each informant's mean for each set of questions (Nevalainen et al., 2021). In **Table 2** we present examples of the quantitative survey statements. Firstly, there is an example of a university assessment tool (competence area: Trust-Security, and its six statements); and secondly, there is an example of a student's self-assessment tool (competence area: Trust-Security, and its six statements).

Table 2. Examples of the quantitative assessment tools.

Assessment	of the University (The 1st Assessment Tool)
	1) Mutual understanding between university officials and students
	characterizes common rules.
	2) Students and faculty have open lines of communication, which, for
Trust and	instance, allows for introducing "wild" ideas.
respect	3) The atmosphere between the students and the faculty is mutual trust.
	4) The students can trust the promises made by the teaching staff.
	5) The processes that apply to students are straightforward.
	6) Mistakes are often the source of fresh approaches or concepts.
Student's Sel	lf-Assessment (The 2nd Assessment Tool)
	1) I am happy to try absolutely impossible things.
	2) I can take advantage of my weaknesses.
Pleasure and	3) After failures, I know how to direct myself forward towards new goals.
Competence	4) I have assessed how effectively my set objectives have guided me
	towards my results.
	5) I also discuss the goals I have set with others.

The data was normally distributed in each of the individual assessment tools apart from one. The fourth assessment tool in the Evaluation of the school, To-wards targets and new opportunities, was not normally distributed so the *p*-value was calculated with Wilcoxon Signed-Rank Test. And in all the others pairwise t-test was used to test the statistical difference between the two measurements. Internal consistency of the assessment tools is measured with Cronbach's alpha. All the alphas are either good or excellent (**Table 3**), ranging from 0.62 to 0.94.

Table 3. Measuring the consistency of the assessment tools by Cronbach's alpha.

Assessment of the University (The 1st Assessment Tool)	Cronbach's alpha
1) Trust and respect	0.93
2) Everyone is special	0.92
3) Open collaboration	0.78
4) Towards targets and new opportunities	0.93

Continued

5) Pleasure and competence	0.94
6) Work-life and entrepreneurship	0.92
Student's Self-Assessment (The 2nd Assessment Tool)	0.71
1) Trust and respect	0.78
2) Everyone is special	0.62
3) Open collaboration	0.76
4) Towards targets and new opportunities	0.85
5) Pleasure and competence	0.94
6) Work-life and entrepreneurship	0.92

The qualitative assessment tools

The respondents accomplish after Innovation Challenge a qualitative final reflection, which is called the SKILLOON *learning journey* being available in the digital learning environment. The assessment questions are the following:

- 1) What was interesting during the journey?
- 2) What was demanding during the journey?
- 3) What have I learned about myself?
- 4) How do the tasks in SKILLOON help me in my further studies?
- 5) How do the tasks in SKILLOON support me in getting into working life?
- 6) Have I learnt something about entrepreneurship? (if yes/what?)
- 7) What steps will I now take to achieve my future goals?

After carrying out the qualitative part of the study, the data were analyzed through content analysis and, more particularly, through content typing. The data is grouped into similar types in content typing by searching for similarities. It is based on theme categorization and grouping and is a valuable method for illustrating research problems with examples (Eskola & Suoranta, 1998). With content typing, we aimed to find answers to the question of what is being said, and we concentrated on students' reflections on the development of empowering entrepreneurship competence and identified similarities from the data. The content typing was realized as follows:

1) The data collected was translated into English if a student's reflection is in Finnish. Then, the data were read several times to construct an overall picture of the responses, including how empowering entrepreneurship competence was described.

2) The data was read more reflectively and analytically, aiming to organize the data through the questions of this study.

3) The answers were mirrored against our literature review and concept definitions, which involved, for example, different aspects of Empowering Entrepreneurship Competence. Similar types of answers were grouped.

The quantitative and qualitative data analysis described above was integrated, which allowed analysis of the student's reflections and development of empowering entrepreneurship competence during a university's short-term innovation challenge course. Next, we will describe the quantitative results followed by the qualitative outcomes of the study.

4. Research Results

First, we will summarize our main research results about the evaluations of the university according to each research question.

1) How do students assess the entrepreneurialism of their university?

Students of the Innovation Challenge course assess their entrepreneurial competencies in starting the course with an overall score of 3.14 (1 = Poor, ..., 4 = Excellent). In the final assessment an overall score is higher, 3.26.

a) How do students assess the entrepreneurialism of their university in starting the Innovation Challenge course?

As seen in **Table 4**, within the six assessment tools averages are *Trust and respect in school* 3.34, *Everyone is special* 3.09, *Open collaboration* 3.22, *Towards targets and new opportunities* 3.17, *Competence and pleasure* 3.13 and *Work life and entrepreneurship* with the lowest score 2.86. Trust and respect in school has the highest score. The overall score at the beginning of the Innovation Challenge course is 3.14.

Competence area	Evaluation of the school, Mean (n = 13)	Final evaluation of the school, Mean (n = 13)	Sig.
Trust and respect	3.34	3.56	0.1336
Everyone is special	3.09	3.37	0.1007
Open collaboration	3.22	3.26	0.7019
Towards targets and new opportunities	3.17	3.36	0.1099
Pleasure and competence	3.13	3.15	0.8779
Work life and entrepreneurship	2.86	2.87	0.9914

Table 4. Evaluation of university's entrepreneurialism.

b) How do students assess the entrepreneurialism of their university at the end of the Innovation Challenge course?

As seen in **Table 4**, at the end within the six assessment tools averages are *Trust and respect in school* 3.56, *Everyone is special* 3.37, *Open collaboration* 3.26, *Towards targets and new opportunities* 3.36, *Competence and pleasure* 3.14 and *Work life and entrepreneurship* 2.87. *Trust and respect in school* has the highest score and *Work life and entrepreneurship* have the lowest score. Overall score at the end of the Innovation Challenge course is 3.26.

c) How do the student assessments of the entrepreneurialism of their university as starting and ending the Innovation Challenge course might differ? (Figure 2).



Evaluation of the University

Figure 2. Evaluation of the university's entrepreneurialism at starting and ending the course.

None of the differences between starting and ending means are statistically significant. The fourth assessment tool *Towards targets and new opportunities* was not normally distributed so the *p*-value was calculated with Wilcoxon Signed-Rank Test. All the other assessment tools were normally distributed so the *p*-value was calculated with a t-test. As seen from **Table 4** and **Figure 2**, the averages between starting and final means do not change tragically. The biggest change is in *Everyone is special* and the smallest change is in *Work life and entrepreneurship*. All the final averages are higher than the starting averages.

Second, we will summarize our main research result about self-evaluations according to each research question. It can be seen from the overall scores that students have assessed their self-evaluation higher than the evaluation of the university in the starting and ending measurements.

2) How do students self-assess their entrepreneurship competence?

Students of the Innovation Challenge course assess their entrepreneurial competencies in starting the course with an overall score of 3.44 (1 = Poor, ..., 4 = Excellent). And in the final assessment, an overall score is even higher, 3.52.

a) How do students self-assess their entrepreneurship competence in starting the Innovation Challenge course?

As can be seen in **Table 5**, within the six assessment tools averages are *Trust* and respect 3.43, *Everyone is special* 3.64, *Open collaboration* 3.63, *Towards* targets and new opportunities 3.65, *Competence and pleasure* 3.24 and *Work life* and entrepreneurship with the lowest score 3.05.

Competence and	Self-evaluation, Final self-evaluation,		1, Sia
Competence area	Mean (n = 13)	Mean (n = 13)	51g.
Trust and respect in school	3.43	3.62	0.05838
Everyone is special	3.63	3.62	0.861
Open collaboration	3.62	3.64	0.8738
Towards targets and new opportunities	3.65	3.64	0.7744
Pleasure and competence	3.24	3.32	0.4786
Work life and entrepreneurship	3.05	3.27	0.1647

 Table 5. Self-evaluation of entrepreneurship competence.

b) How do students assess their entrepreneurship competence at the end of Innovation Challenge course?

Within the six assessment tools (**Table 5**) averages are *Trust and respect* 3.62, *Everyone is special* 3.62, *Open collaboration* 3.64, *Towards targets and new opportunities* 3.64, *Competence and pleasure* 3.32 and *Working life and entrepreneurship* again with the lowest score of 3.27.

c) How do the student assessments of their entrepreneurship competence at starting and ending the Innovation Challenge course might differ? (Figure 3).



Self-evaluation of entrepreneurship competence

Figure 3. Self-evaluation of entrepreneurship competence.

There is to be seen a minor increase in the medians of the means in all the assessment tools except *Everyone is special* and *Towards targets and new opportunities* (**Table 3** and **Figure 2**). But none of the differences in means are statistically significant. Third, we will describe the qualitative results of the study.

3) How do students describe their entrepreneurial learning process?

What was interesting during the journey?

Clearly, most of the students, eight out of 13, agreed that cooperation with each other or with colleagues or clients was the most interesting part of the journey. "To see, that despite the circumstances with only online studies, it is possible to build up great teamwork, build trust and have a safe working environment although we never met in person." Although the circumstances with all the Covid-restrictions et cetera it did not stand out in the students' answers.

Learning new things was found to be interesting for almost half (six) of the students. "There are so many fun and learning things during an innovation challenge training. Apart from learning, find new mates and friends and also new skills." Two students also mentioned that having real customers was found interesting.

What was demanding during the journey?

When students thought about what was demanding during the journey there was not a single thing that was above others. Students brought out many different things. Two students said that it was difficult to have motivation. "To stay motivated and not be too frustrated when we were faced with challenges".

Three students argued that time management was demanding. "Meeting schedules and time management was something I and my colleagues struggled with...". One student even brought up the difficulty of working in a team from a distance. "Teamwork was at times very demanding. This was made even more demanding by working in distance".

Only one student in the whole study group mentioned that understanding English was difficult. "English, because I hadn't use it for a long time. The teacher's words are easy to understand, but sometimes I cannot understand fully what other classmates talk about." Two of the students thought that nothing was demanding during the journey.

What have I learned about myself?

Communicational skills and teamwork skills stood up in most of the opinions. Four students mentioned that they had learned how they can develop their teamwork skills. "That I can overcome my frustration in teamwork to deliver the task required of us." "I have learned that I could manage a team, empower and direct them towards the best outcome." Communicating with others was found as a challenge that was conquered for four students. "Improving how I communicate my opinions and making compromises even when it seems difficult."

Life experience was found to be an asset by two students. "I have learned that I can still develop my skills and learning is a lifelong process."

How do the tasks in SKILLOON help me in my further studies?

Many students (six) argued that reflecting on things was a helpful task and they could use that in their future studies. "I have not used it much, perhaps it made me reflect on things I probably would not have asked myself earlier, such as positioning of my school on certain aspects of my life."

Three students thought that feedback was encouraging and one student even told that they build up the courage to be more active and tell their own ideas. "I have found the feedback from Skilloon very encouraging and a boost for my self-confidence. It has also added my courage to put forward 'crazy' ideas. I already voiced a crazy idea, with good results."

One student thought about the question even beyond their future studies and thought about how can the tasks help in their future career prospects. "I think they help me to envision my future career steps and further development better".

How do the tasks in SKILLOON support me in getting into working life?

Self-evaluation was found to be a very supportive task, six students mentioned that. "It serves as a reminder for me to re-evaluate my employability and the things I needed to put in place to achieve my goals," Two students thought that none of the tasks sup-ported their way of getting into working life.

Two of the students argued that SKILLOON helped them to structure their own skills. "Reflecting one's skills and knowledge about strengths and weaknesses helps to develop oneself for working life. SKILLOON helps to reflect those".

One student pointed out that SKILLOON helped them find more courage. "Hopefully, the courage that I have gained here will also benefit me in getting into working life".

Have I learnt something about entrepreneurship? (if yes/ what?)

Nine out of thirteen students said that they learnt something about entrepreneurship, and four said that they did not learn anything. Three students thought that the most important thing that they learnt was about reaching their goal and basic knowledge about entrepreneurship. "Designing business model and concept, learning about the different business partnerships, and most importantly branding the idea". "That entrepreneurship can be seen broadly as a mindset that helps one achieve their goals whatever the target may be".

Few students argued that in entrepreneurship passion and intuition are needed and "That is so much work but eventually always pays out!"

What steps will I now take to achieve my future goals?

The vast majority (eight students) argued that the steps to take are to update their CVs and have ambition towards a career within the next few years. "I will update my CV and look into the possibility of becoming a trainee in something I really want to do."

Networking was another useful step for the students to achieve their future goals, six of them argued that. "Be more engaged, get in touch with people and do more networking. Also, not to limit myself and just to what interests me without thinking I might not be made for that."

5. Discussion

This study ventures into uncharted territory by investigating the development of students' entrepreneurship competence through an innovative, short, and inten-

sive eight-week Innovation Challenge course. Our findings illuminate the potential to cultivate entrepreneurship competence within a remarkably brief period, challenging conventional educational models that typically span longer durations. This aligns with and extends the work of Nabi et al. (2017), Vanevenhoven and Liguori (2013), and Wei et al. (2019), contributing to a broader understanding of entrepreneurial education's efficiency and impact.

A noteworthy aspect of our study is the observed increase in self-trust and collaborative tendencies among students, coupled with a heightened entrepreneurial awareness. This suggests that rapid, immersive learning experiences can effectively bolster key entrepreneurial traits. However, our findings also reveal a nuanced picture of self-understanding, which did not show a statistically significant change. This aligns with the broader discourse on the complexity of measuring self-perception in educational settings.

Despite the non-significant statistical changes in entrepreneurship competence, our study unveils a trend of positive development. This is corroborated by students' qualitative feedback, highlighting the value of group and individual reflections in enhancing entrepreneurial skills. Our findings prompt further inquiry into the specific elements of pedagogy that most effectively foster entrepreneurship competence.

Our study, albeit limited by a small sample size (N = 13) and a short intervention duration, contributes to the evolving field of entrepreneurship competence and organizational research. It substantiates and is substantiated by the frameworks presented in Nevalainen et al. (2021) and Seikkula-Leino and Salomaa (2021). Following the reasoning of Cohen, Manion, and Morrison (2017), this research enriches the collective dataset in entrepreneurship education, thereby enhancing the generalizability of our findings.

In the context of entrepreneurship education, our study utilized a mixedmethods approach with a small sample size (N = 13). Despite the limited number of participants, the study produced significant insights into the development of entrepreneurship competence. Qualitative data derived from student reflections and feedback enrich the quantitative assessment. With Cohen, Manion, and Morrison's (2017) rationale in mind, integrating qualitative insights ensured that even with a small sample, the research captured the complexity and dynamics of entrepreneurial learning. This approach aligns with their assertion that "the quality of the data is not determined by the number of respondents but by the depth of understanding that can be achieved through careful and rigorous methodological design".

Although larger samples may enhance generalizability, a robust mixed-methods design can still produce reliable and valid results with small samples. Insights gained from qualitative data and precision from quantitative measures provide a comprehensive understanding that can have a significant impact. By combining the detailed insights from qualitative data with the precision of quantitative measures, our study achieves a holistic understanding of entrepreneurial learning. This comprehensive approach not only enriches the field but also allows for a more nuanced exploration of the complexity and dynamics involved in developing entrepreneurship competence. This methodological rigour ensures that the findings are valid and meaningful, offering practical implications for educational practice and policy.

The use of HUBS's team pedagogy concept and SKILLOON's self-reflective assessments, including AI-based feedback, were pivotal in fostering entrepreneurship competence in this study. This underscores the efficacy of innovative educational solutions and pedagogies in entrepreneurial development. The study also reaffirms the need for dynamic approaches in understanding the evolution of entrepreneurship competence, as suggested by Lackéus (2015). Particularly, it underscores the critical role of reflection in entrepreneurial learning.

The significance of this research also lies in enhancing and elucidating our theoretical understanding of entrepreneurship competence by introducing the *Empowering Entrepreneurship Competence framework*, and its assessment tool, *Entself* through practical learning environment SKILLOON. This holistic setting is grounded in interdisciplinary research that incorporates insights from psychology, education, and entrepreneurship. It is crucial for providers of entrepreneurship education to clearly define the theoretical underpinnings of their courses and programs and to systematically track and measure their impact (Nevalainen, Seikkula-Leino, & Salomaa, 2021).

While the framework and its related assessment tool and environment may have limitations when implemented in practice, it provides a solid foundation for the future development of indicators and research-based educational testing. Additionally, it is essential to not only establish theoretical foundations, create assessment tools, and develop practices but also to evaluate the actual outcomes they produce. In the context of entrepreneurship education, it is imperative to consider whether we are genuinely achieving our objectives or merely presuming we are. This research addresses this challenge, and despite its limitations, it significantly contributes to the theoretical advancement of the field.

In conclusion, this research innovates the field of entrepreneurial education by demonstrating the transformative potential of short-term, intensive courses. It introduces a new paradigm in rapidly developing entrepreneurial skills, challenging the traditional assumptions regarding the duration and structure of effective entrepreneurship education. This study not only contributes to academic understanding but also offers practical insights for educational institutions aiming to cultivate entrepreneurial mindsets swiftly and effectively.

6. Conclusion and Implications

This study marks a significant advancement in the understanding of entrepreneurship competence development, extending the frameworks established by seminal works like Baker and Nelson (2005), García-Cabrera et al. (2023), and Lackéus (2015). By focusing on the practical application of these theories through a short, intensive university course (Innovation Challenge), our research provides empirical evidence of how entrepreneurship competence can be effectively developed in a condensed timeframe. The use of the Empowering Entrepreneurship Conceptual Model (Seikkula-Leino & Salomaa, 2021) in this context not only validates its practical and academic utility but also reinforces the importance of innovative pedagogical strategies in entrepreneurial education.

Our findings contribute to the emerging concept of the entrepreneurial university, as advocated by Kolehmainen et al. (2021), by demonstrating that competence building and human capital are vital for fostering an entrepreneurial culture in academic settings. This research also opens new avenues for understanding the dynamics of entrepreneurship competence development. It challenges the traditional view of listing competencies and instead calls for a more nuanced exploration of how these competencies evolve and can be nurtured effectively. The research is demonstrating an innovative the use of team learning concept based on the theories of self-esteem and self-efficacy, and the use of digital tool in students' study process. The experience of this study gives a guide for educators in other universities of experiencing and the development of entrepreneurship education as well as creating entrepreneurial universities.

Despite of study limits of sample size and an experience of single country, this research is demonstrating an innovative way of supporting the development of entrepreneurship competence as a key competence of life-long learning in universities meant to support the increase of graduates' employability and better coping with their everyday life. Considering the cultural differences of countries the adoption of the mentioned pedagogical concept in other countries may bring new challenges and experiences for further development of entrepreneurship education.

Future research should delve deeper into the mechanisms of entrepreneurship competence development. By understanding these processes, we can better influence and strengthen entrepreneurial societies in the long term. Our study underscores the importance of ongoing research in entrepreneurship competence and the value of student-centered, reflective pedagogical interventions.

In conclusion, our study offers valuable insights for educators and leaders in academia. It highlights effective strategies for enhancing entrepreneurship competence, thereby informing teacher training and pedagogical practices. The implications of this research extend beyond theoretical contributions, offering practical guidance for cultivating entrepreneurial mindsets in educational settings.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

Bacigalupo, M., Kampylis, P., Punie, Y., & Van den Brande, G. (2016). *EntreComp: The Entrepreneurship Competence Framework*. Publication Office of the European Union.
Baker, T., & Nelson, R. E. (2005). Creating Something from Nothing: Resource Construction through Entrepreneurial Bricolage. *Administrative Science Quarterly, 50*, 329-366. https://doi.org/10.2189/asqu.2005.50.3.329

- Blenker, P., Korsgaard, S., Neergaard, H., & Thrane, C. (2011). The Questions We Care about: Paradigms and Progression in Entrepreneurship Education. *Industry and High*er Education, 25, 417-427. <u>https://doi.org/10.5367/ihe.2011.0065</u>
- Bosman, C., Gerard, F.-M., & Roegiers, X. (Eds.). (2000). *Quel avenir pour les compétences?* De Boeck Université.
- Bosman, N., Hill, S., Lonescu-Somers, A., Kelley, D., Levie, J., & Tarnawa, A. (2020). *Global Entrepreneurship Monitor. 2019/2020 Global Report.* Global Entre-Preneurship Research Association.
- Breznitz, S. M., & Feldman, M. P. (2010). The Engaged University. The Journal of Technology Transfer, 37, 139-157. <u>https://doi.org/10.1007/s10961-010-9183-6</u>
- Cai, Y., & Lattu, A. (2021). Triple Helix or Quadruple Helix: Which Model of Innovation to Choose for Empirical Studies? *Minerva, 60,* 257-280. https://doi.org/10.1007/s11024-021-09453-6
- Carayannis, E. G., Campbell, D. F. J., & Grigoroudis, E. (2021). Helix Trilogy: The Triple, Quadruple, and Quintuple Innovation Helices from a Theory, Policy, and Practice Set of Perspectives. *Journal of the Knowledge Economy, 13*, 2272-2301. https://doi.org/10.1007/s13132-021-00813-x
- Chandler, G. N., & Jansen, E. (1992). The Founder's Self-Assessed Competence and Venture Performance. *Journal of Business Venturing*, *7*, 223-236. https://doi.org/10.1016/0883-9026(92)90028-P
- Charles, D., Kitagawa, F., & Uyarra, E. (2014). Universities in Crisis?—New Challenges and Strategies in Two English City-Regions. *Cambridge Journal of Regions, Economy and Society, 7,* 327-348. <u>https://doi.org/10.1093/cjres/rst029</u>
- Chatterton, P., & Goddard, J. (2000). The Response of Higher Education Institutions to Regional Needs. *European Journal of Education*, *35*, 475-496. https://doi.org/10.1111/1467-3435.00041
- Clark, B. R. (1998). *Creating Entrepreneurial Universities: Organizational Pathways of Transformation.* Pergamon Press.
- Cohen, L., Manion, L., & Morrison, K. (2017). *Research Methods in Education*. Routledge. https://doi.org/10.4324/9781315456539
- Cope, J. (2005). Toward a Dynamic Learning Perspective of Entrepreneurship. *Entrepreneurship Theory and Practice*, 29, 373-397. <u>https://doi.org/10.1111/j.1540-6520.2005.00090.x</u>
- Daniel, A. D. (2016). Fostering an Entrepreneurial Mindset by Using a Design Thinking Approach in Entrepreneurship Education. *Industry and Higher Education, 30*, 215-223. https://doi.org/10.1177/0950422216653195
- Eskola, J., & Suoranta, J. (1998). Johdatus laadulliseen tutkimukseen. Vastapaino.
- European Commission (2022). European Skills Agenda for Sustainable Competitiveness, Social Fairness and Resilience. Directorate-General for Employment, Social Affairs and Inclusion.

https://pact-for-skills.ec.europa.eu/community-resources/publications-and-documents /european-skills-agenda-sustainable-competitiveness-social-fairness-and-resilience_en

- Fauzi, M. A., Martin, T., & Ravesangar, K. (2021). The Influence of Transformational Leadership on Malaysian Students' Entrepreneurial Behaviour. *Entrepreneurial Busi*ness and Economics Review, 9, 89-103. <u>https://doi.org/10.15678/eber.2021.090106</u>
- Fayolle, A. (2010). Handbook of Research in Entrepreneurship Education, Volume 3. Ed-

ward Elgar Publishing. https://doi.org/10.4337/9781849806688

- García-Cabrera, A. M., Martín-Santana, J. D., Déniz-Déniz, M. D. L. C., Suárez-Ortega, S. M., García-Soto, M. G., & Melián-Alzola, L. (2023). The Relevance of Entrepreneurial Competences from a Faculty and Students' Perspective: The Role of Consensus for the Achievement of Competences. *The International Journal of Management Education, 21*, Article ID: 100774. <u>https://doi.org/10.1016/j.ijme.2023.100774</u>
- GEM (Global Entrepreneurship Monitor) (2023). *Global Entrepreneurship Monitor 2022/* 2023 Global Report: Adapting to a "New Normal". GEM.
- Gianiodis, P. T., & Meek, W. R. (2019). Entrepreneurial Education for the Entrepreneurial University: A Stakeholder Perspective. *The Journal of Technology Transfer*, 45, 1167-1195. <u>https://doi.org/10.1007/s10961-019-09742-z</u>
- Gibb, A. (2008). Entrepreneurship and Enterprise Education in Schools and Colleges: In-Sights from UK Practice. *International Journal of Entrepreneurship Education, 6,* 101-144.
- Göransson, B., Maharajh, R., & Schmoch, U. (2009). New Activities of Universities in Transfer and Extension: Multiple Requirements and Manifold Solutions. *Science and Public Policy*, *36*, 157-164. <u>https://doi.org/10.3152/030234209x406863</u>
- Hägg, G., & Kurczewska, A. (2020). Towards a Learning Philosophy Based on Experience in Entrepreneurship Education. *Entrepreneurship Education and Pedagogy, 3*, 129-153. <u>https://doi.org/10.1177/2515127420910679</u>
- Hannon, P. D. (2013). Why Is the Entrepreneurial University Important? Journal of Innovation Management, 1, 10-17. <u>https://doi.org/10.24840/2183-0606_001.002_0003</u>
- Hayton, J. C., & Kelley, D. J. (2006). A Competency-Based Framework for Promoting Corporate Entrepreneurship. *Human Resource Management*, 45, 407-427. <u>https://doi.org/10.1002/hrm.20118</u>
- Huebscher, J., & Lendner, C. (2010). Effects of Entrepreneurship Simulation Game Seminars on Entrepreneurs' and Students' Learning. *Journal of Small Business & Entrepreneurship*, 23, 543-554. <u>https://doi.org/10.1080/08276331.2010.10593500</u>
- Jónsdóttir, S. R., & Gunnarsdóttir, R. (2017). *The Road to Independence.* Sense Publishers. <u>https://doi.org/10.1007/978-94-6300-800-6</u>
- Kolehmainen, J., Kurikka, H., Keerberg, A., & Raagmaa, G. (2021). Being Resilient between the Region and the Higher Education System? Views on Regional Higher Education Institutions in Estonia and Finland. In R. Pinheiro, L. Frigotto, & M. Young (Eds.), *Towards Resilient Organizations and Societies: A Cross-Sectoral and Multi-Disciplinary Perspective* (pp. 249-276). Palgrave Macmillan. https://doi.org/10.1007/978-3-030-82072-5_10
- Kyrö, P., Seikkula-Leino, J., & Mylläri, J. (2011). Meta Processes of Entrepreneurial and Enterprising Learning: The Dialogue between Cognitive, Conative and Affective Constructs. In O. Borch, A. Fayolle, P. Kyrö, & E. Ljunggren (Eds.), *Entrepreneurship Research in Europe* (pp. 14355). Edward Elgar Publishing. <u>https://doi.org/10.4337/9780857931757.00012</u>
- Lackéus, M. (2015). *Entrepreneurship in Education—What, Why, When, How.* OECD Publishing.
- Lackéus, M., Lundqvist, M., Williams, M. K., & Inden, J. (2020). The Entrepreneurial Employee in Public and Private Sector—What, Why, How. JRC. https://doi.org/10.2760/460123
- Lans, T., Hulsink, W., Baert, H., & Mulder, M. (2008). Entrepreneurship Education and Training in a Small Business Context: Insights from the Competence-Based Approach.

Journal of Enterprising Culture, 16, 363-383. https://doi.org/10.1142/s0218495808000193

- Man, T. W. Y., Lau, T., & Chan, K. F. (2002). The Competitiveness of Small and Medium Enterprises. *Journal of Business Venturing, 17*, 123-142. https://doi.org/10.1016/s0883-9026(00).00058-6
- Mccallum, E., Weicht, R., Mcmullan, L., & Price, A. (2018). EntreComp into Action—Get Inspired, Make It Happen: A User Guide to the European Entrepreneurship Competence Framework. JRC. <u>https://doi.org/10.2760/574864</u>
- Morris, M. H., Webb, J. W., Fu, J., & Singhal, S. (2013). A Competency-Based Perspective on Entrepreneurship Education: Conceptual and Empirical Insights. *Journal of Small Business Management*, 51, 352-369. <u>https://doi.org/10.1111/jsbm.12023</u>
- Morselli, D., & Seikkula-Leino, J. (2021). Evaluating a Finnish Web-Based Platform to Nurture a Sense of Initiative and Entrepreneurship in Three Italian Upper Secondary Schools during COVID-19 Pandemic. *Italian Journal of Educational Research, XIV*, 190-202.
- Nabi, G., Liñán, F., Fayolle, A., Krueger, N., & Walmsley, A. (2017). The Impact of Entrepreneurship Education in Higher Education: A Systematic Review and Research Agenda. Academy of Management Learning & Education, 16, 277-299. https://doi.org/10.5465/amle.2015.0026
- Neck, H. M., & Greene, P. G. (2010). Entrepreneurship Education: Known Worlds and New Frontiers. *Journal of Small Business Management*, 49, 55-70. <u>https://doi.org/10.1111/j.1540-627x.2010.00314.x</u>
- Nevalainen, T., Seikkula-Leino, J., & Salomaa, M. (2021). Team Learning as a Model for Facilitating Entrepreneurial Competences in Higher Education: The Case of Proakatemia. *Sustainability*, *13*, Article 7373. <u>https://doi.org/10.3390/su13137373</u>
- Pittaway, L., & Cope, J. (2007). Simulating Entrepreneurial Learning. Management Learning, 38, 211-233. <u>https://doi.org/10.1177/1350507607075776</u>
- Rasmussen, A., & Fritzner, A. (2016). *From Dream to Reality.* Nordic Council of Ministers. <u>https://doi.org/10.6027/ANP2016-709</u>
- Rasmussen, A., Moberg, K., & Jensen, C. R. (2015). *A Taxonomy of Entrepreneurship Education: Perspectives on Goals, Teaching and Evaluation.* Danish Foundation for Entrepreneurship.
- Read, C. W., & Kleiner, B. H. (1996). Which Training Methods Are Effective? Management Development Review, 9, 24-29. <u>https://doi.org/10.1108/09622519610111781</u>
- Rideout, E. C., & Gray, D. O. (2013). Does Entrepreneurship Education Really Work? A Review and Methodological Critique of the Empirical Literature on the Effects of University-Based Entrepreneurship Education. *Journal of Small Business Management*, 51, 329-351. <u>https://doi.org/10.1111/jsbm.12021</u>
- Roper, C. D., & Hirth, M. A. (2005). A History of Change in the Third Mission of Higher Education: The Evolution of One-Way Service to Interactive Engagement. *Journal of Higher Education Outreach and Engagement*, *10*, 3-21.
- Ryan, R. M., & Deci, E. L. (2020). Intrinsic and Extrinsic Motivation from a Self-Determination Theory Perspective: Definitions, Theory, Practices, and Future Directions. *Contemporary Educational Psychology*, *61*, Article ID: 101860. <u>https://doi.org/10.1016/j.cedpsych.2020.101860</u>
- Salomaa, M., & Charles, D. (2021). The University Third Mission and the European Structural Funds in Peripheral Regions: Insights from Finland. *Science and Public Policy*, 48, 352-363. <u>https://doi.org/10.1093/scipol/scab003</u>
- Seikkula-Leino, J. (2019). Developing Entrepreneurship Education in Europe: Teachers'

Commitment to Entrepreneurship Education in the UK, Finland and Spain. In A. Fayolle, D. Kariv, & H. Matlay (Eds.), *The Role and Impact of Entrepreneurship Education* (pp. 130-145). Edward Elgar Publishing. https://doi.org/10.4337/9781786438232.00014

- Seikkula-Leino, J., & Salomaa, M. (2020). Entrepreneurial Competencies and Organisational Change—Assessing Entrepreneurial Staff Competencies within Higher Education Institutions. *Sustainability*, *12*, Article 7323. <u>https://doi.org/10.3390/su12187323</u>
- Seikkula-Leino, J., & Salomaa, M. (2021). Bridging the Research Gap—A Framework for Assessing Entrepreneurial Competencies Based on Self-Esteem and Self-Efficacy. *Education Sciences*, 11, Article 572. <u>https://doi.org/10.3390/educsci11100572</u>
- U.S. Department of Labor (2019). *Competency Models: Communicating Industry's Education and Training Needs. Competency Model Clearinghouse.* http://www.careeronestop.org/competencymodel/
- Vanevenhoven, J., & Liguori, E. (2013). The Impact of Entrepreneurship Education: Introducing the Entrepreneurship Education Project. *Journal of Small Business Man*agement, 51, 315-328. <u>https://doi.org/10.1111/jsbm.12026</u>
- Wardana, L. W., Narmaditya, B. S., Wibowo, A., Fitriana Saraswati, T. T., & Indriani, R. (2021). Drivers of Entrepreneurial Intention among Economics Students in Indonesia. *Entrepreneurial Business and Economics Review*, 9, 61-74. https://doi.org/10.15678/eber.2021.090104
- Wei, X., Liu, X., & Sha, J. (2019). How Does the Entrepreneurship Education Influence the Students' Innovation? Testing on the Multiple Mediation Model. *Frontiers in Psychology*, 10, Article 1557. <u>https://doi.org/10.3389/fpsyg.2019.01557</u>
- Zomer, A., & Benneworth, P. (2011). The Rise of the University's Third Mission. In J. Enders, H. F. De Boer, & D. F. Westerheijden (Eds.), *Reform of Higher Education in Europe* (pp. 81-101). Sense Publishers. <u>https://doi.org/10.1007/978-94-6091-555-0_6</u>