

Article

Team Learning as a Model for Facilitating Entrepreneurial Competences in Higher Education: The Case of Proakatemia

Timo Nevalainen ^{1,*} , Jaana Seikkula-Leino ^{1,2}  and Maria Salomaa ^{1,3}

¹ TAMK Business, Tampere University of Applied Sciences, 33520 Tampere, Finland; jaana.seikkula-leino@tuni.fi (J.S.-L.); maria.salomaa@tuni.fi (M.S.)

² Department of Education, Mid-Sweden University, SE-891 22 Östersund, Sweden

³ Lincoln International Business School, University of Lincoln, Lincoln LN6 7TS, UK

* Correspondence: timo.nevalainen@tuni.fi

Abstract: In the past decades, there has been a growing interest in entrepreneurship education, and many higher education institutions have developed specific programs and courses to support entrepreneurial competencies. However, there have been significant changes in how universities train competences related to business skills and entrepreneurship in practice. Whereas entrepreneurship courses used to focus on the different forms of businesses and drafting business plans, the overall perception of entrepreneurship and entrepreneurial competences has shifted this toward a more holistic educational approach to develop students' entrepreneurial competencies. In this comparative quantitative case study, we investigate the university students' perception of the development of their entrepreneurial competencies in the case of Proakatemia (Tampere University of Applied Sciences). The aim was to examine how the entrepreneurial competencies are reflected and strengthened in their thinking and everyday functions through the concept of team learning. The survey involved, altogether, 64 students, of which 21 studied in Proakatemia. The results of this study indicate that the team learning concept of Proakatemia facilitates learning entrepreneurial competencies. Therefore, these results provide insights for universities aiming to develop their curricula, programs and pedagogy, thus promoting sustainable societal development. However, we recommend further studies, e.g., from a qualitative point of view, to assess the effective of the concept in other learning environments.

Keywords: team learning; entrepreneurship; entrepreneurship education; entrepreneurial competencies; innovation



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1. Introduction

In the past decades, there has been a growing interest towards entrepreneurship education as part of academic discussion related to the 'entrepreneurial university' (e.g., [1,2]). While the policy makers consider entrepreneurial education to be a tool to support job creation and economic growth [3], the education institutions, especially post-secondary level, have been busy developing a large range of entrepreneurship programs in practice [4]. Subsequently, the range of offered educational opportunities have increased dramatically [5,6]. More recently, there have been significant changes in how universities train competences related to business skills and entrepreneurship in practice. Whereas the entrepreneurship courses offered as part of higher education study paths used to focus on the different forms of businesses and drafting business plans—with the idea that the main task for a new entrepreneur is to utilize the business plan in applying for funds for the start-up—the overall perception on entrepreneurship and entrepreneurial competences has shifted from business ownership and stewardship towards providing students strong entrepreneurial competencies through more holistic educational approaches [6–10].

There is some previous evidence that entrepreneurship programs can indeed be effective in reinforcing entrepreneurial interests among higher education students (e.g., [8,11–13]).

However, the knowledge on the competences gained through entrepreneurship education is rather limited, and should be further investigated based on solid theoretical foundations (e.g., [3,14]). Instead of the volume of provided entrepreneurship courses, the focus of the research should be on 'holistic' and 'integrated' approaches toward entrepreneurship in both curriculum design and delivery, including exposure to role models, peer examples and applied learning [15]. Moreover, as Fayolle and Linan [16] state, the role of the university institutions and their operational (business) environment—the context—in supporting entrepreneurial behavior should be further studied as part of entrepreneurship education. This is also emphasized in the sense that societies, including education, must change in terms of sustainable development [17]. For example, how do we produce new operating models and solutions for, e.g., climate change or pandemic prevention? This requires people to have the will and ability to think and act entrepreneurially. Therefore, traditional higher education programs and delivery methods need further consideration: What do we educate and how?

As an attempt to contribute to the rather limited theoretical discussion on entrepreneurship education [3], this paper investigates team learning as a conceptual framework for supporting students' entrepreneurial competencies within higher education institutions. More specifically, we explore the efficacy of the team learning method in entrepreneurship education as adapted in the case of entrepreneurship unit entitled 'Proakatemia' located in Tampere University of Applied Sciences (TAMK) in Finland. The team learning method is based on a holistic concept perceiving human being as the basis of education; instead of more traditional education delivery models, team learning builds on a strict requirement to support the students' ownership of their own shared learning processes [18], and the goals of the team enterprise in their study paths. The quantitative study collected from Proakatemia and non-Proakatemia students at the Tampere Higher Education Community builds on Seikkula-Leino's & Salomaa's [19], and Ruskovaara et al.'s [20] previous works.

Previously, Seikkula-Leino's & Salomaa's [19] framework for entrepreneurial competencies has been used to assess entrepreneurial competencies of university staff members. The competence areas presented in the framework form the theoretical basis of our research. In this study, they are applied to the university student's perception of the development of their entrepreneurial competencies, based on the idea of how these entrepreneurial competencies are reflected and strengthened in their thinking and everyday functions through team learning within the chosen case university. By utilizing this new framework in comparing the effects of a team learning approach on entrepreneurship education to the effects of other more individually oriented approaches in the university context, this study contributes to research on pedagogical and communal factors shaping the development of entrepreneurial competencies during university studies. Previous 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) [21], as well as psychological empowerment [22] that has an impact on the students' intrinsic motivation (e.g., [23]) and knowledge sharing behavior. Typically, entrepreneurship education within universities has focused on entrepreneurial knowledge instead of becoming an owner of a team enterprise in a learning community. Entrepreneurial knowledge has been found to have an impact on the learners' entrepreneurial intentions, but less so on their entrepreneurial mindset [24].

The paper is structured as follows: first, the theoretical framework for assessing entrepreneurial competencies [19] of higher education students is discussed in detail in the literature review together with the concept of team learning. Then, we introduce the chosen case study, and the selected methods, after which we present the main results from the survey followed by discussion, conclusion and limitations of the study. The results indicate that utilizing team learning is an effective way to foster the development of entrepreneurial competencies of higher education students. Finally, we elaborate on

the theoretical and practical implications of the key findings, as well as suggesting further avenues for research.

2. Literature Review

2.1. Entrepreneurial Competencies Beyond Business Ventures

Bosman, Grard and Roegiers [25] argue that an individual, competency-based approach is among the most common structures to deliver entrepreneurship education training programs and courses. This approach digresses from what entrepreneurs are towards what they do, and what are the key competencies needed in the society. As Chandler and Jansen [26] found out in their study, the entrepreneurial competencies are essential skills for performing and succeeding well in life and work. Since then, entrepreneurship research has focused also on the psychological aspects having an impact on the entrepreneurial and enterprising processes (e.g., [27]) of individuals, and subsequently, several intention models have been proposed to shape the development of entrepreneurial competencies, such as combining personal and contextual factors as well as self-efficacy [28–31]. One of the rather widely used frameworks for analyzing the impact of entrepreneurship education is Ajzen's 'Theory of Planned Behaviour', which focuses on individual entrepreneurial intentions [32] and positive effect on the desirability and feasibility of starting a business [33]. However, currently entrepreneurship education can also have other goals beyond starting up a company. As an example, Miller & Breton-Miller [34] argue that the focus could be on the role of entrepreneurial courage and imagination fostered through entrepreneurship education, although these aspects have been underemphasized in the research literature.

Recently, new elements have been introduced to entrepreneurship education, such as integrating the concept of 'competence' to entrepreneurial learning processes (e.g., [19,35–38]). In this approach, the focus is on the process; entrepreneurial competencies should not be viewed as inputs or outputs, but as context-dependent processes of learning. Entrepreneurial processes are often iterative rather than linear [39], which means that also entrepreneurial attitudes, intentions and behavior become dynamically interrelated [40] and they may vary in different performances [41]. This dynamic runs through experimental learning, thus transforming entrepreneurial learning into a process in which knowledge is created through the transformation of experiences [42] and, according to the socio-constructivist approach, new knowledge is then created and revised (collectively) in a social context.

According to Man and Chan [43], entrepreneurial competencies consist of personal attributes, knowledge, and skills. Considering that entrepreneurship competences are highly diversified, Bacigalupo et al. [44] build an entrepreneurial competency framework that includes opportunity identification, entrepreneurial skills that represent resources, action areas, and a list of 15 competencies. Gianesini et al. [45] compared models and classifications of entrepreneurial competencies, arguing that entrepreneurial competencies include personality traits, entrepreneurial knowledge and skills. Each classification states that personal qualities are an inherent part of entrepreneurial competencies, which are the focus of this article.

According previous research [19], the underpinnings of entrepreneurial thinking and behavior involves a range of competencies, such as, (1) trust, (2) getting to know yourself, (3) cooperation, (4) learning to set goals, (5) practicing success and (6) creating pathways to future studies and working life. The model is based on Borba's [46,47] psychological and educational work of creating self-empowerment, which can also be formed in group activities (see [48–50] and through experiential learning, e.g., [42]). At first, an individual's self-esteem builds on three key elements, which are basic security, selfhood and affiliation (see [1–3]). Moreover, the environment, which involves opportunities for cooperation (see [3,6]), has an important role in their development in which one can form a more specific and realistic picture of themselves. As a result, goal setting (see 4) and success (see 5) of the individual will improve. Thus, the importance of external control gradually

decreases, and the individual does not need to rely on others' opinions, but he/she becomes internally driven through self-empowerment.

All six modules of entrepreneurial learning concern the aspects of an entrepreneurial way of thinking as well as behavior, which fosters creativity, taking risks and solving problems. As an example, in terms of cooperation, a student may find new creative ways to develop friendship. In terms of developing self-trust, a student will create solutions for a problem which may arise when presenting new ideas aloud. In terms of goal-oriented behavior, students also set goals for themselves and accomplish them without being discouraged by problems and hardships. The individual is also able to find alternative solutions and minimize problems in challenging situations. Therefore, entrepreneurial behavior is a way of thinking and acting, not just about establishing a company, although this approach is also supported (e.g., working life and entrepreneurship), and can be seen as a career opportunity among other options. This is supported by, e.g., [37,51,52]. approaches to entrepreneurial learning by raising academic debate on holistic understanding of the work-life, in which individuals can find their own meaningful ways to contribute after having developed an entrepreneurial mindset.

2.2. Team Learning Model Employed in TAMK Proakatemia

Next, we describe team learning as a pedagogical concept and method to empower entrepreneurial learning within higher education students. Team learning is based on holistic and situated concept of human beings as the basis of education (e.g., [53,54]), in which team coaches support the students' ownership of their own learning processes and the goals of the team enterprise throughout their study path. One major difference between individual coaching and team coaching, is that in the latter, the coach will always have to encounter each student as a unique human being. At the same time, they help the students in guiding their attention and intention to relationships, and how they affect the 'good of the whole'—the team and the community. Where individual goals clash with the goals of the team or appear irrelevant in relation to those goals, the coach must also be ready to engage in dialogue with the student about his or her priorities and, if necessary, to challenge them.

The role of the team coach in professional higher education (for example, in Finnish universities of applied sciences) differs significantly from the traditional role of a lecturer in a conventional university setting. The primary task of the team coach is not to act as an expert source of information on a specific topic, but to assist the team and individual team entrepreneurs in guiding their attention and energy to the team learning processes and the goals set by the team and the individuals for themselves through dialogue [55,56]. Team coaches also give feedback with the aim of encouraging critical reflection and transformative or double-loop learning [57] where their focus is on critically examining the habituated ways of thinking and action instead of focusing solely on the student behavior or assumed knowledge.

Entrepreneurial team learning approach in TAMK Proakatemia, also referred to as 'experiential action learning' [58] is originally based on 'Tiimiakatemia' team learning methodology developed in the beginning of 1990's by Johannes Partanen in the Jyväskylä University of Applied Sciences. Team learning approach differs from other forms of action learning in that it highlights the relationship between the individual and the team, as well as the whole learning community, and the role of this relationship in the transformative learning process. In TAMK Proakatemia, the original Tiimiakatemia model has been developed further to facilitate greater student autonomy and participation in the strategic leadership of the community and the degree programme. Team enterprise in TAMK Proakatemia is a holistic and relational framework [59] in which the learning process takes place in a platform of collaborative learning and experimentation for the students. Team coaching in Proakatemia focuses on both collaborative team learning and the personal growth of individual students. Team learning environment and coaching in Proakatemia is expected to facilitate the development of skills needed in teamwork, collaborative product

development and problem-solving, leadership and management, as well as sales and marketing and to help the students develop a clearer vision of their own strengths and motivations as entrepreneurs and business professionals.

2.3. Team Learning and the Development of Entrepreneurial Competencies

Team learning model implements Seikkula-Leino's [52] and Seikkula-Leino's and Salomaa's [19] approach to fostering and assessing entrepreneurial competencies in practice, focusing on both collaborative team learning and the personal growth of individual students. Team learning is a pedagogical concept and method utilized in our case study, while entrepreneurship is a unit entitled Proakatemia within Tampere University of Applied Sciences, in which students can accomplish Bachelor's Degree in Business Administration. In annual graduate feedback for universities of applied sciences, collected by Finnish Ministry of Culture and Education, Proakatemia has received consistently higher marks from its current students than any other degree program in the university [60,61]. When interviewed about their experience in Proakatemia, and how it has helped them succeed as entrepreneurs, the members of the alumni who are business owners or leaders often refer to the team as a practice environment and the development of their ability to learn new things that they need in developing their business independently through, for example, the habit of reading books which they developed in Proakatemia. Many also indicate the coaching in Proakatemia as a transformational influence in their lives. Qualitative study of Proakatemia alumni views from 2017 [62] showed that entrepreneurs graduated from Proakatemia do not necessarily view economic success as the self-evident goal of entrepreneurial activity. They may also equate success with ability to provide a living for themselves and employ others, ability to focus on a particular professional field or to create a 'workplace of dreams' for themselves and others. For the interviewed entrepreneurs and managers, money is often viewed as a means of livelihood and a reward for a job well done and taking responsibility.

For the interviewed alumni members, success as an entrepreneur has required a positive attitude toward experimentation and trying out new ideas, as well as reasonable tolerance for risk and uncertainty. They viewed the trust and encouragement by other team members as a major influence in developing their entrepreneurial attitude. The role of the coach as someone who encouraged, supported and challenged them to think for themselves and leave their 'comfort zone' was seen as instrumental in their choosing to start their own enterprises after graduation. Alongside the important influences of the team and the coach for later success as entrepreneurs and managers, the alumni members mentioned the importance of own office facilities in Proakatemia and the significance of the wider community during the studies.

Based on these experiences, we conducted a quantitative case study in order to examine if the key entrepreneurial competence areas (see Table 1) can be developed through the above-mentioned concepts and practices. In the following section, we will introduce the research setting and the methodology of our study.

Table 1. Description of entrepreneurial competencies in university context. After [19,46,47].

Competence Area	Description
Trust and Respect	There is trust between the students, academia, staff, and in the organization (university) as a whole. There is trust enough to allow mistakes that may lead to new solutions or ideas.
Everyone is Special	Students have an understanding of individual respect, and students are given the space and opportunity to act individually. Individuals are open to express their ideas and thoughts. This also promotes new, innovative ways to study and work.
Open Collaboration	A collaborative approach is encouraged in studies. Students are proud of the team spirit. Ideas are shared. Furthermore, the university does not cooperate only internally. Students are developing their external networks and communication.
Towards Goals	The achievement of personal and group goals is supported at the university. Students are encouraged to seek out new opportunities and ways of doing things to achieve goals. The community participates in decision making. Meaningful changes in a working and learning community bring improvements to the studies.
Competence and Pleasure	Students' skills are recognized, and they have an opportunity to leverage their strengths at the university. There is a feeling that students are able to positively influence one another's results. Students evaluate whether objectives have led to results. Continuing evaluation supports reaching the goals during studies and promotes the feeling of satisfaction. The university supports the development of understanding of different fields and professions, and networking and partnerships with working life and the society around that.
Working Life and Entrepreneurship	The university encourages the development/further development of ideas, solutions, services, or business ideas for customers or other target groups. Moreover, understanding and interest in entrepreneurship is shared within the university students.

3. Materials and Methods

3.1. Case Study Overview

The Finnish higher education landscape is based on a dual model consisting of research universities and universities of applied sciences as high-level vocational institutions. The Universities of Applied Sciences (UAS) are especially active in collaborative RDI activities and they collaborate with a range of different stakeholders. The Finnish UASs are considered to be significant promoters of innovation, particularly through their strong business and work-life connections. As Seikkula-Leino and Salomaa [19] observed, strong entrepreneurial competences of both staff and students would further strengthen the establishment of linkages with external partners and other collaborative initiatives.

The selected case unit Proakatemia is part of Tampere University of Applied Sciences (TAMK), which is among the largest UASs in Finland. TAMK is a multidisciplinary higher education institution, and it provides many BA and MA degree programs, especially in health and wellbeing, business studies, and technology, and has over 13,000 students and ca. 800 staff members. TAMK has strong working life connections, and the management has committed towards becoming an entrepreneurial organization [63]. TAMK's mission statement emphasizes the importance of developing collaboration as well as the higher education's societal role: 'Our strong orientation towards working life ensures the best learning possibilities for our students. Furthermore, we are involved in research, development and innovation which specifically target the development needs of working life.' In 2019, TAMK became a member of the newly established Tampere Higher Education Community, after the merger of the former University of Tampere and Tampere University of Technology in 2019. Currently, there are ca. 150 students and 12 team coaches in Proakatemia. Since being founded in 1999, Proakatemia students have started 46 team enterprises. During recent years, the overall turnover of companies operating in Proakatemia has been about EUR 1.2 million per year: For example, the community has also had a set goals for increasing the overall revenue of the team enterprises by 20% yearly from 2014 (EUR ~400,000) until 2019 (EUR ~1.2 million). However, not only business development is emphasized, but the students are encouraged to develop their literacy knowledge and reading competencies while focusing on the psychological wellbeing of the team entrepreneur students.

Daily work in TAMK Proakatemia is led by the board of leaders which consists of one team entrepreneur student from each team enterprise, the Head Coach of Proakatemia

who is the only member of the teaching faculty in the board of leaders, and the Assistant Coach, a team entrepreneur student hired by TAMK to assist the coaches in managing the community and to work with the leaders of team enterprises, the Marketing and Communications Team, the International Team and the more recently formed Data Team. The strategic leadership roles of the Assistant Coach, as well as the leaders of the Marketing and Communications Team and the International Team have become more visible during the last few years. This has significantly helped to expand Proakatemia's visibility and reach both in locally and internationally.

The main forums for dialogue in Proakatemia are training sessions where whole teams participate two times three to four hours each week and which are usually planned, led, and facilitated by the team entrepreneur students themselves. The training sessions usually focus on a theme or topic that the team entrepreneur students have identified as an important one. There is a formal curriculum in Proakatemia but rather than listing the required content and topics for teaching, it outlines the entrepreneurial team learning process (based on core values of Proakatemia) and the expected learning outcomes. This way, the control over content and topics to be learned remains almost entirely with the learning community, the team enterprises and the students themselves.

3.2. Research Design and Target Group

Previous studies imply that the development of entrepreneurship by entrepreneurship education is not straightforward in an academic education [64–66], nor creating 'real entrepreneurship' [67,68]. Furthermore, there is no clear understanding of what kind of entrepreneurial competencies is needed to empower entrepreneurship by entrepreneurship education (e.g., [69]). Reconfirming past reviews and meta-analyses, it has been seen that entrepreneurship education impact research still predominantly focuses on short-term and subjective outcome measures, and also tends to severely under describe the actual pedagogies being tested [70].

These findings provided a profitable starting point for our study, allowing us to build on existing viewpoints related to entrepreneurial competencies in the context of higher education. Thus, we wanted to further investigate how different students studying in different entrepreneurial related courses or programs perceive entrepreneurialism within the TAMK university, and how these students perceive the development of their individual entrepreneurialism. It is also interesting to see how pedagogically successful entrepreneurship education programs, such as Proakatemia, supports the development of entrepreneurial competencies. All students in Proakatemia establish a company (registered as a co-operative) together with their peers, and about 40% of those students continue as entrepreneurs after their studies. Therefore, we compare how the entrepreneurial competencies have developed during university studies of students from different study programs. We have selected two groups for the comparison: (1) Proakatemia students (N 21) in their final years of their studies, and (2) non-Proakatemia students (N 43) coming from various disciplines, and having a slight interest towards entrepreneurship, since they attended a mini-course of entrepreneurship education called 'Summer Challenge', in May–June 2020. The collection of the data was implemented in May–June 2020 by two sets of SKILLOON assessment tools focusing on (1) the entrepreneurialism of university, and (2) the self-assessment of entrepreneurial competencies.

3.3. Research Questions and Assessment Tools

The research questions are following:

1. How do students assess the entrepreneurialism of their university in Tampere Higher Education Community?
 - 1.1. How do Proakatemia students of the entrepreneurialism of their university?
 - 1.2. How do other, not Proakatemia students, in the Tampere Higher Education Community assess the entrepreneurialism of their university?

- 1.3. How do the assessments of Proakatemia and other students in the Tampere Higher Education Community differ?
2. How do students self-assess their entrepreneurial competencies?
 - 2.1. How do Proakatemia students in Tampere Higher Education Community self-assess their entrepreneurial competencies?
 - 2.2. How do other, not Proakatemia, students in the Tampere Higher Education Community self-assess their entrepreneurial competencies?
 - 2.3. How do the self-assessments of the entrepreneurial competencies of Proakatemia and other Tampere Higher Education Community students differ?

Overall, our study continues previous ‘entrepreneurial organization research’ implemented by SKILLOON (www.skilloon.com, accessed on 10 December 2021), which is an official education concept of Education Finland supported by the Finnish National Board of Education. SKILLOON involves assessment tools of entrepreneurial activities and a mentoring program for learners. It is created in research cooperation with schools and universities, and it is used for education and research purposes. Thus, this study builds on a series of entrepreneurial organization research, which initially took place in August–May 2020. In the first part, entrepreneurial staff competencies were studied by using Seikkula-Leino’s theoretical approach as in this study, thus also applying SKILLOON assessment tools for university staff. In the first research setting, the staff assessment tools were analyzed to be reliable and valid, and the phenomenon has been examined through a multidisciplinary approach, and with a range of different assessment tools and two different respondent groups. In general, Cronbach’s alpha levels varied from 0.60 to 0.95. In addition, in our previous studies, the SKILLOON assessment tools have been successfully used in the corporate world (e.g., Wihuri Group, Property Management Association, Raisio, pharmacies etc.) between 2012–2015. These individual studies confirm the reliability of the assessment tools; as an example, Cronbach’s alpha levels varied in different categories between 0.67–0.96 [19]. However, there is still room for further development of the assessment tools and research design for other target groups, which is our focus in this study.

The SKILLOON assessment tool, targeted to students, has two sets of different assessment tools, each of which included six sets of research questions. The first assessment tool contained an evaluation of the different (entrepreneurial characteristics) of the organization. The second assessment tool focused on self-assessment of the students. Each of these two assessment tools contained between five to seven claims. The respondents specified their level of agreement or disagreement on a symmetric agree/disagree scale between 1–10, where 1 meant that the respondent fully disagreed with the claim, and 10 that the respondent fully agreed. Each competence area forms an individual summation notation, by calculating each respondent’s mean for each set of questions. The tables below show examples of survey questions for evaluating the school (Table 2) and self-evaluation (Table 3).

Table 2. Examples of survey questions and statements.

Competence Area	Evaluation of the School (The 1st Assessment Tool)
Trust and Respect	<ol style="list-style-type: none"> 1. Common rules are characterized by a mutual understanding between the school staff and the students. 2. There is open communication between students and the entire staff, which makes, for example, the presentation of “crazy” ideas possible. 3. A climate of mutual trust prevails between the students and the teaching staff. 4. Students can rely on promises made by the teaching staff. 5. The procedures applying to students are clear. 6. In our view, mistakes made lead to new solutions or ideas.
Everyone is Special	<ol style="list-style-type: none"> 1. There are opportunities to point out students’ knowledge or appreciation. 2. The unique features of individual students are valued and taken into account. 3. Teachers and/or friends pay attention to students’ personal life (birthdays, hobbies etc.) 4. Students feel that they are valued as individuals. 5. In school, we experience the feeling that the entire community is valued. 6. In our school students have the opportunity to take risks, and there is no need to be afraid of failure.
Open Collaboration	<ol style="list-style-type: none"> 1. Pride in the school’s team spirit is clearly visible among staff and students. 2. In our school, we encourage a collaborative approach. 3. The atmosphere in our school suggests that we keep our ideas to ourselves. 4. The school staff and students want to work for the benefit of the whole school—not just for their own benefit. 5. There is a team spirit among students. 6. We actively develop cooperation with other people and organizations outside the school.

Table 3. Examples of survey questions and statements in students’ self-evaluation.

Competence Area	Students’ Self-Evaluation (The 2nd Assessment Tool)
Towards goals and new opportunities	<ol style="list-style-type: none"> 1. I try to look for alternative solutions to problems. 2. I set goals for my studies. 3. I try to create an encouraging atmosphere with my friends in order to achieve better results. 4. New things related to school operations make me interested in school. 5. I think about new ways of making my studies more effective.
Competence and Pleasure	<ol style="list-style-type: none"> 1. I am also happy to try absolutely impossible things. 2. I can also take advantage of my weaknesses. 3. After failures, I know how to direct my focus forward, towards new goals. 4. I have evaluated how effectively my set objectives have guided me towards my results. 5. I also discuss the objectives I have set with others.

3.4. The Analysis of the Data and Reliability

Analysis of variance (ANOVA) was used to examine the differences between the means of different groups. The necessary assumptions concerning the normality and uniformity of deviations were appropriately addressed. After this, a suitable method (parametric vs. non-parametric) was chosen. The reliability of every assessment tool was examined by calculating the Cronbach’s alpha coefficients. Internal consistency of the assessment tools is measured with Cronbach’s alpha. All the alphas are either good or excellent (Table 1),

ranging from 0.63 to 0.90. The table below (Table 4) shows the measurements for the consistency of the assessment tools by Cronbach's alpha.

Table 4. Measuring the consistency of the assessment tools by Cronbach's alpha.

Student's Self-Evaluation	Cronbach's Alpha
1. Trust and respect	0.80
2. Everyone is special	0.63
3. Open collaboration	0.88
4. Towards goals	0.86
5. Competence and pleasure	0.82
6. Working life and entrepreneurship	0.83
Evaluation of the School	
1. Trust and respect	0.86
2. Everyone is special	0.90
3. Open collaboration	0.82
4. Towards goals	0.89
5. Competence and pleasure	0.90
6. Working life and entrepreneurship	0.86

3.5. Generalization

TAMK provides an interesting case of HEI, as it has a strategic aim to strengthen entrepreneurial skills and competencies on an organizational level. Our current case study, as a second part of 'entrepreneurial organization research' targeted to students, together with the previous case study of staff, provides a suitable platform for investigating how these organizational goals can be detected in different individual members', as staff's and students', attitudes, beliefs, and behavior. According to Cohen, Manion, and Morrison [71], the generalizability of single experiments, such as case and pilot studies, can be further extended through replication or multiple experiment strategies [72]. This allows individual case studies to contribute to the development of a growing pool of data for eventually achieving a wider generalizability. Therefore, the results obtained from this study contribute to 'analytic' rather than 'statistical' generalization to build on further studies.

4. Results

In this section, we will summarize our main research results according to each research question.

4.1. How Do Students Assess the Entrepreneurialism of Their University in Tampere University Higher Education Community?

Students in the Tampere Universities assess the entrepreneurialism of their university to be high with an overall score 3.19 (1 = Poor, . . . , 4 = Excellent). Within the six assessment tools averages are Trust and respect 3.29, Everyone is special 3.23, Open collaboration 3.22, Towards goals 3.25, Competence and pleasure 3.14 and Working life and entrepreneurship with the lowest score 3.02.

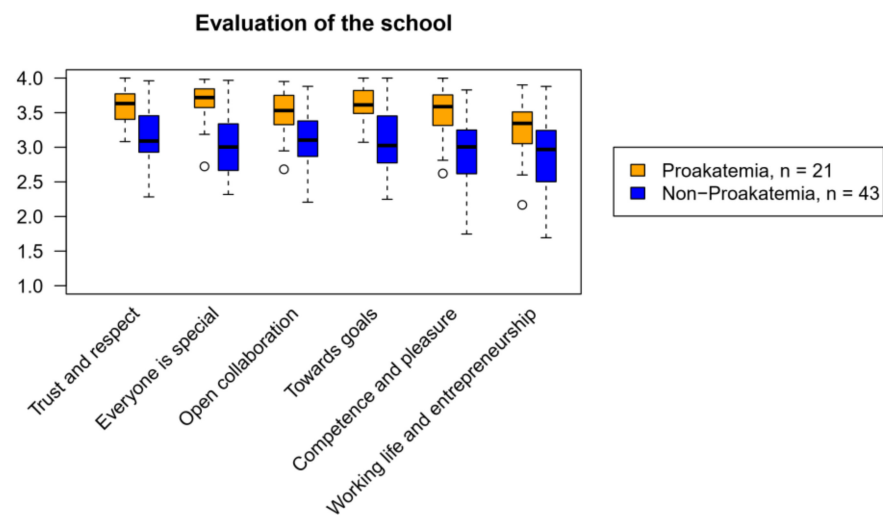
4.1.1. How Do Proakatemia Students of Tampere Higher Education Community Assess the Entrepreneurialism of Their University?

In Table 5 and Figure 1, it can be seen that the students of Proakatemia consider the level of entrepreneurialism of their university to be very high. Within the six assessment tools averages are Trust and respect 3.63, Everyone is special 3.64, Open collaboration 3.54, Towards goals 3.61, Competence and pleasure 3.52 and Working life and entrepreneurship with the lowest score 3.27.

Table 5. Assessment of entrepreneurialism within Tampere Higher Education Community.

	Proakatemia Students, Mean	Non-Proakatemia Students, Mean	Sig.
Trust and respect	3.63	3.13	8.147×10^{-6} ***
Everyone is special	3.64	3.03	1.727×10^{-6} ***
Open collaboration	3.54	3.07	1.135×10^{-5} ***
Towards goals	3.61	3.07	1.028×10^{-5} ***
Competence and pleasure	3.52	2.96	9.3×10^{-6} ***
Working life and entrepreneurship	3.27	2.90	0.002729 **

Note: ** $p < 0.01$. *** $p < 0.001$.

**Figure 1.** Evaluation of the school ($n = 64$).

4.1.2. How Do Other, Non-Proakatemia Students, in the Tampere Higher Education Community Assess the Entrepreneurialism of Their University (TAMK or Tampere University)?

Furthermore, non-Proakatemia based students assess the entrepreneurialism of their university to be rather high. In the Table 5 can be seen that the averages of each assessment tool are 3.13, 3.03, 3.07, 3.07, 2.96 and 2.90, respectively.

4.1.3. How Do the Assessments of Proakatemia and Other Students in the Tampere Higher Education Community Differ?

When assessing the entrepreneurship of the Tampere Higher Education Community, the scores depend a lot on whether the respondent is studying at the Proakatemia or not. In all the assessment tools, the differences between groups are statistically significant (Table 5). It was examined by Mann-Whitney U-test. Proakatemia students rate university's entrepreneurship at a higher level than non-Proakatemia students in all six assessment tools, although both rate university entrepreneurship as very high. The lowest mean in both groups is in the assessment tool working life and entrepreneurship (Figure 1). Proakatemia students have the average of 3.27 and non-Proakatemia students have the average of 2.90. Within Proakatemia students the highest mean (3.64) is in the assessment tool Everyone is special and within non-Proakatemia students the highest mean (3.13) is in the assessment tool Trust and respect.

When examining individual questions inside the assessment tools, altogether in two questions the averages of the two groups are almost the same ("We actively develop cooperation with other people and organizations outside the school" Proakatemia average is 3.23 and non-Proakatemia average is 3.21, and "In our school we are guided to develop our own CVs or portfolios which can be used, for example, in looking for a job.") Proakatemia average is 3.11 and non-Proakatemia average is 3.17. Only in question "In our school we are guided to look for a job (for example jobs during weekends/holidays etc.)" the students

of Proakatemia have a very low score (2.08), lower than those studying in non-Proakatemia (2.91). The biggest difference (1 or over) in averages is in questions “In our school we do brainstorming about our business ideas and/or create jobs for ourselves.” Proakatemia average is 3.93 (very high score) and non-Proakatemia average is 2.72, “Together we think about new solutions and/or policies for the development of our school.” Proakatemia mean 3.73 and non-Proakatemia mean 2.73 and “In our school we practice job hunting.” Proakatemia average is 3.89 and non-Proakatemia average is 2.89. All of these questions mentioned above are in assessment tool Working life and entrepreneurship except the question “We actively develop cooperation with other people and organizations outside the school” is in assessment tool Open collaboration.

The result in the assessment of *Trust and respect* reflects the values that are explicitly promoted in Proakatemia. Trust is put forward in the “Value path” of Proakatemia as the basic building block of entrepreneurial team learning and the community that supports their development. The measure for “Everyone is special” appears to reflect the focus on coaching encounters with individual students, as well as the interplay of the whole team and each individual team member. Open collaboration measures could reflect the open leadership structure of Proakatemia, as well as the intention of the coaches and the students to build and maintain a safe and collaborative environment.

4.2. How Do Students Self-Assess Their Entrepreneurial Competencies?

The sum variables were formed from the responses of 64 students: Proakatemia students and non-Proakatemia students.

4.2.1. How do Proakatemia Students in Tampere Higher Education Community Self-Assess Their Entrepreneurial Competencies?

The averages of each sum variable are very high as we can see from Table 6—they all are clearly above the mid-range 2.5. The highest average is in the measurement tool *Trust and respect* and the lowest average is in measurement tool *competence and pleasure*. We conclude that students in Proakatemia assess their own entrepreneurial competencies very highly.

Table 6. Self-assessment of the entrepreneurial competencies of students ($n = 64$).

	Proakatemia, Mean	Non-Proakatemia, Mean	Sig
1. Trust and respect	3.47	3.16	0.0142 *
2. Everyone is special	3.29	3.21	0.3639
3. Open collaboration	3.31	3.13	0.1398
4. Towards goals	3.33	3.19	0.07621
5. Competence and pleasure	2.93	2.88	0.7443
6. Working life and entrepreneurship	3.11	3.01	0.5046

Note: * $p < 0.05$.

4.2.2. How Do Other, non-Proakatemia Students in the Tampere Higher Education Community Self-Assess Their Entrepreneurial Competencies?

In this case, the averages of each sum variable are high and above the mid-range. The highest average is in the measurement tool ‘Everyone is special’ and the lowest average is in the measurement tool ‘Competence and pleasure’.

4.2.3. How Do the Self-Assessments of the Entrepreneurial Competencies of Proakatemia and Other Tampere Higher Education Community Students Differ?

It was investigated with analysis of variance (ANOVA) whether there were any differences between the means of Proakatemia students and non-Proakatemia students. Only statistically significant difference was in the assessment tool *Trust and respect*. From Table 6 and Figure 2, we can indeed agree with these results. Although the averages of Proakatemia students are slightly higher than the averages of non-Proakatemia students

there is more dispersion in the answers of students not in Proakatemia which can be seen from Figure 2. This dispersion could be explained by the fact that there are significantly more respondents among the students not in Proakatemia than the students in Proakatemia.

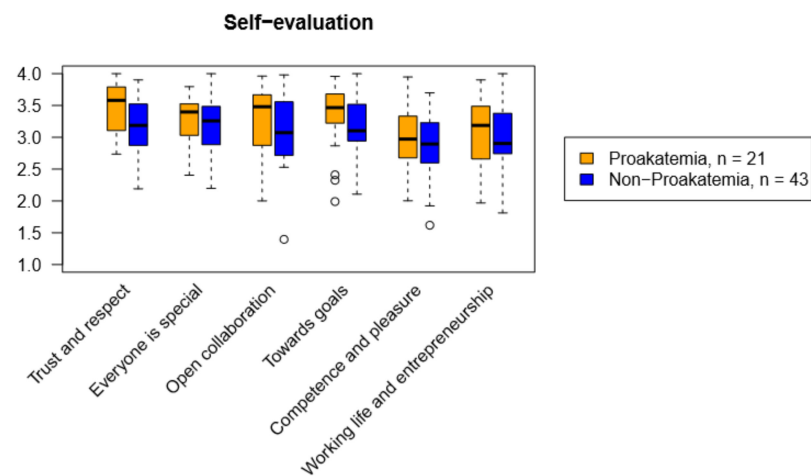


Figure 2. Self-evaluation ($n = 64$).

Self-evaluation assessments appear to confirm that the team learning and coaching methodology, the integrated curriculum and the open leadership structure of Proakatemia provide a solid basis for developing entrepreneurial capabilities. It would seem that those measures which are most emphasized also by the structures of the learning community (trust and respect, open collaboration and goal-orientation) are also assessed highest in the students' self-evaluations. In most measures for the non-Proakatemia group of respondents, the near opposite was true and the students in this group more often rated themselves higher than their institution in terms of entrepreneurialism.

However, the applicability of the results in other contexts may be limited because the participants of the study have a strong interest in entrepreneurship. All the participants have taken part in entrepreneurship education courses offered by Tampere Higher Education Community, and may thus be expected to be more oriented towards entrepreneurship than Finnish university students in general. Moreover, students in Proakatemia commit themselves to work in an entrepreneurial team and as an actual co-operative team enterprise for the duration of their studies (~3.5 years) which in itself indicates a significant entrepreneurial intention on their part. Therefore, we suggest further studies comparing the competencies of new students in both Proakatemia and other programs in the Tampere Higher Education Community with recent graduates from both groups. Another matter that requires further studies is the applicability of the results in multicultural groups and in other cultural contexts.

5. Discussion and Conclusions

The results indicate that the chosen case university has strong working life connections, and the management has committed towards becoming an entrepreneurial university. Our results are thus in line with our previous study, in which we investigated the entrepreneurial staff competencies at Tampere University of Applied Sciences (Seikkula-Leino & Salomaa 2020). It also suggests that the Proakatemia program is efficient in educating the students to become entrepreneurs, and to think and act entrepreneurially. Proakatemia has been running for over 15 years and the success of the program has been evident. In Proakatemia, all students establish their company, and about 40% of those students continue as an entrepreneur. Furthermore, the concept has been disseminated to Europe, Latin America and China. Even though Proakatemia evidence is "strong" in practice, we still have had concerns about its quality from the research point of view. Previous studies imply that the outcomes of entrepreneurship education are not straightforward [64–68]. Furthermore, recent studies emphasize the need of studying used pedagogy

in the field to understand the phenomenon of entrepreneurship education and learning (e.g., [70]). Therefore, there was a definite need for our study; do we do “the right things” in Proakatemia entrepreneurship education (or do we only think so)? What kind of entrepreneurial competencies do we develop having team learning as our pedagogy? Then, how these Proakatemia students might differ compared to other students joining entrepreneurship education courses provided by Tampere Higher Education Community.

These questions provided a profitable starting point for our study, allowing us to build on existing viewpoints related to entrepreneurial competencies in the context of higher education. Thus, we wanted to further investigate how different students studying in different entrepreneurial related courses or programs perceive entrepreneurialism within the TAMK university, and how these students perceive their individual entrepreneurial competencies. Proakatemia curriculum and team learning method both allow the students high degree of freedom in following their own interests within the studies and enable them to dedicate time and effort on developing capabilities in the areas they feel they need to develop. The primary constraints or guiding factors in this, such as in most aspects of studies in Proakatemia, are the pressure coming from the team for each student to contribute to its success (often measured in terms of both, economic success and the development of the team and its members) and the Proakatemia curriculum which translates into personal study plan for each student. Students in Proakatemia are connected with working life organizations and entrepreneurs mainly through commercial projects where those organizations are their paying customers. This allows them to build real-life business relationships already during their studies. Proakatemia also has a very active alumni network of entrepreneurs and business professionals which provides events for dialogue and knowledge sharing, mentoring for current Proakatemia teams and individual students, as well as new business opportunities. The degree to which the current students utilize these structural affordances depends on the individual interests and personality.

Even though Proakatemia students’ entrepreneurial assessments are generally very positive, it is interesting to note that Proakatemia students’ individual assessments are lower compared to the other students. Given the nature of the degree program this somehow understandable; as previously described, at Proakatemia students have to challenge themselves genuinely as entrepreneurs in the business world. In this way, perhaps they do not share too idealistic perceptions of entrepreneurship change, and students look at themselves more critically. On the other hand, the added value of Proakatemia is highly evident in the results, demonstrated by the consistency in the way in which the students assessed the entrepreneurialism of the community. This is also highlighted in open collaboration measure that could reflect the open leadership structure of Proakatemia, as well as the intention of the coaches and the students to build and maintain a safe and collaborative environment. Proakatemia also has an explicit process for setting the renewed vision for the whole community every five years, and each year the coaches and the leadership team together select a specific development theme for the community.

These results are also in line with the yearly feedback from recent graduates collected on a national level also suggests that team learning model in Proakatemia provides a holistic learning environment where different elements that contribute to students’ personal growth are well-balanced [60,61], while some degree programs may attain higher marks from their graduates on some aspects of the learning process, guidance and the environment, Proakatemia gets consistently high marks on measured satisfaction on learning process guidance and the environment, including the use of process and peer feedback, which supports the utilization of team learning as a driver of entrepreneurial competencies.

This is evident in the survey results, which stress developing trust and respect in cooperation within teams. This reflects the values that are explicitly promoted by Proakatemia. As previously described, trust is promoted in the ‘value path’ of Proakatemia as the basic building block of entrepreneurial team learning, in which the community supports its development. These findings suggest that the Proakatemia concept could be utilized not only in the development of higher education curricula, but also in other levels of education,

such as leadership training and continuous education. The various educational concepts of the Proakatemia are already being utilized internationally, such as “From Teacher to Coach Training”, in which traditional academic teacher role shifts towards a coach role enhancing team learning. However, further studies will be needed to validate the utilized conceptual framework of entrepreneurial learning

Based on these results, we conclude that the Proakatemia pedagogical concept facilitates the learning of the entrepreneurial competencies (e.g., [19,30,31,33,36–38,40]). Therefore, these results provide insights for universities aiming to develop their curricula, programs and pedagogy. However, we recommend further studies; for example, the conceptual framework used in this study and its evaluation could be approached from a qualitative point of view to increase knowledge on the effectivity of its’ adaptations in different educational contexts.

In conclusion, this study contributes to the development of theory-based framework of entrepreneurial competencies and their pedagogical operationalization within the context of higher education. As an implication for practice, we encourage to adapt Proakatemia pedagogy and further develop it, e.g., with the higher education’s own needs in mind. Furthermore, we have introduced novel assessment tools for higher education students’ entrepreneurial competencies by introducing a new framework for self-evaluation, which has previously been applied to assess the development of higher education staff’s entrepreneurial competencies. Overall, the research has increased our understanding of the development of entrepreneurial competencies, their realization, and their assessment and validation towards sustainable transformation within societies.

The results of the study also indicate the need for further comparative studies, including new students and recent graduates, as well as studies conducted using the framework with multicultural groups and in other cultural contexts.

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