

ENTREPRENEURSHIP CURRICULUM AS THE SUPPORTER OF THE YOUNGSTERS' WELLBEING



Haaga-Helia

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ENTREPRENEURSHIP CURRICULUM AS THE SUPPORTER OF THE YOUNGSTERS' WELLBEING

1.4.2020 – 30.9.2022

Development of cross-border
entrepreneurship of students
with Special Educational Needs
in the field of Science,
Technology, Engineering and
Mathematics

Tarja Römer-Paakkanen, Pirjo Saaranen and Virve Vainio (editors)



Haaga-Helia

CONTENTS

Preface 6

1. INTRODUCTION 8

SENsationalSTEM project and objectives 9

Tarja Römer-Paakkanen & Pirjo Saaranen

SENsationalSTEM pilot group timeline, events and tasks 16

Pirjo Saaranen & Namrata Sethi

START Camp online – students’ reflections 29

Pirjo Saaranen & Sari Ruotsalainen

BOOT Camp online & National live event in Pasila – feelings so far 33

Namrata Sethi

2. REFLECTIONS FROM PROJECT ACTORS 38

Learning internal entrepreneurship in international business project – teachers’ experiences of the project 39

Heidi Havumäki & Mirjami Lehtikoinen

Mentoring in SENsationalSTEM project 42

Riikka Saastamoinen, Heidi Hamari-Martimo and Helena Tähtinen-Kivikäs

JA Finland’s Company Program modified and applied in the SENsationalSTEM project 44

Mari Laakso-Suutari

Accessibility of materials – threat or opportunity 48

Pirjo Saaranen & Sari Ruotsalainen

3. RESULTS - LEARNING OUTCOMES AND CURRICULUM 50

The core of the business ideas: wellbeing of people, animals and environment 51

Pirjo Saaranen & Sari Ruotsalainen

The pedagogical thinking behind the SENSationalSTEM process and curriculum 54

Tarja Römer-Paakkanen & Virve Vainio

Action research and learning outcomes of the SENSationalSTEM project 65

Tarja Römer-Paakkanen & Pirjo Saaranen

PREFACE

In 2019 we were discussing at Estonian Chamber of Disabled People (EPIKoda), that also students with special educational needs (SEN) can employ themselves by starting their own company. It has been proven that sometimes in a working life one's skills are not fully utilized. Why not become your own boss? We realized that such funding from EU Interreg Central Baltic programme was available, the question was, can we put together a suitable team for applying for the funding.

I have been really happy that we from EPIKoda found such nice partners to work together with – as our Latvian partner SUSTENTO, the national umbrella organization for people with disabilities, Haaga-Helia University of Applied Sciences, a well-established higher education institution in Finland, and Estonian Agrenska Foundation, working with disabled children and youth being an Estonian-Swedish jointly run civil society stakeholder. Fortunately, we received funding for the SENSationalSTEM project!

Of course, little did we know what challenges were ahead of us. Even before the project contract was signed and we could start the project, COVID-19 was there. We were able to have one face-to-face steering group meeting in August 2020, otherwise most of the work has been conducted in a fully virtual or hybrid format. Only at end of 2021 and in spring 2022 it was possible to meet in smaller groups and get to know the people we have encountered during the project.

Today, we have almost wrapped up the SENSationalSTEM pilot programme, which helped to identify how SEN-students can find a way to start earning their own income by using their skills.

In our last virtual meeting on May 3, 2022, which brought together all participants – students, teachers, mentors and staff – we were able to highlight and celebrate all the good work done. And, with pleasure to say that: *Team work makes the dreams work.*

Wishing all the students companies prosperous future. Be connected and don't hesitate to reach for your dreams!

With best wishes

Meelis Joost

Lead partner project manager

June, 2022

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1. **INTRODUCTION**

SENSATIONALSTEM PROJECT AND OBJECTIVES

Tarja Römer-Paakkanen & Pirjo Saaranen

Young people's interest in trying out entrepreneurship has increased since 2013 and more and more young people want to try entrepreneurship at some point in their careers as they have learned that an entrepreneurial attitude is needed in all work. (Haikola & Myllyniemi, 2020, 66 and 81). Huusko et al. (2018) found several good and meaningful ways to learn entrepreneurship in vocational education. Their study also highlighted features of the operating culture that did not promote the learning of an entrepreneurial approach. For example, students experienced shortcomings in equality and justice. Among other things, the fact that they may not have been able to progress in their studies to the best of their ability adversely affected the learning of an entrepreneurial approach. (Huusko et al. 2018). Consideration of one's own strengths and abilities is an important motivating factor for every student. Determining the need for support for students with special needs (SEN) requires familiarization with the student's activities in different operating environments.

Special support can be provided in vocational training if one needs long-term or regular support for learning and studying due to a learning disability, disability, illness or other reason. The necessary support measures are individually planned for the student, which are recorded in the personal competence development plan (HOKS). (Opintopolku 2021.) The purpose of vocational education and the objectives set for it (L 630/1998 2 §, 5 §) are in line with the objectives of special vocational education and thus serve the implementation of special vocational education well. Objectives can be emphasized in very different ways according to the individual conditions of the student. The goals of developing working life and promoting employability are particularly important, as employment can be difficult for students with individual solutions and special needs. (Miettinen 2015, 22)

SEN people may have learning difficulties such as reading, writing or perceiving, which slows down their learning and they need help with completing exercises and in practical tasks. According to Parkkila et al. (2018, 51), psychosocial factors can also influence learning in many ways. Those factors should be identified as part of the guidance work; in this way, a pedagogically barrier-free atmosphere can be created in teaching in which the factors of psychosocial well-being can be better taken into account. In a well-functioning

learning environment, the student dares to fail and receive support for learning from both the learning community and the teacher.

Also ADHD can cause learning difficulties and the need for special support. However, according to Hansen (2017), ADHD may at its best be a life-promoting trait that provides an individual with resources that can manifest as, for example, ingenuity, curiosity, creativity, courage, and ability to deliver (Hansen, 2017, 24). These are the characteristics which are often also referred to as characteristics related to entrepreneurial activity and entrepreneurial skills.

Estonia, Finland and Latvia pursue inclusive education policies that emphasize a broad-based basic education network that supports the right of every pupil to learn. The aim of the SENSationalSTEM project is to find ways to meet the challenges that SEN youths may have in identifying their own skills and different employment opportunities.

SENSationalSTEM project's expected outcomes

SENSationalSTEM project¹ aims to develop cross-border entrepreneurship with a specific focus on students with special educational needs (SEN) in the field of science, technology, engineering and mathematics (STEM). The field of STEM was widely applied as nowadays all businesses take advantage of at least IT applications and other new technologies.

The overall objective of the project is the increased entrepreneurship of young people in Estonia, Finland and Latvia. The project provides SEN-students with the possibility to create international teams and establish student companies, which can serve as a basis for their future cooperation and business partnerships within the Central Baltic region.

The aim of the pilot program that was produced in the project was to support SEN youths to believe in their own skills and find their place in the labor market in the future. It is important that obtaining and mastering STEM skills SEN students provide themselves with vast career opportunities that technology holds. Thus, the project provides them with competitive advantage to be economically successful, being as an entrepreneur or finding a job with great added value in STEM-areas.

Framework and expected outcomes for the SENSationalSTEM project are:

1 SENSationalSTEM project (1.4.2020 – 30.9.2022) was funded by Interreg Central Baltic. The project- partners were Haaga-Helia University of Applied Sciences in collaboration with JA Finland (Finland), EPIkoda, The Estonian Chamber of Disabled People and EAF i.e. Estonian Agrenska Foundation (Estonia) and SUSTENTO, The Latvian Umbrella Body For Disability Organisations (Latvia). The planning process of the project started in April 2020 and the pilot education program with the students started in February 2021 and ended in May 2022.

- developing curriculum and training materials for STEM-based entrepreneurship considering SEN-students' specific needs
- training teachers to deliver trainings as a team: both STEM and entrepreneurship teachers are involved simultaneously
- training SEN-students in STEM-based entrepreneurship, including the formation of joint cross-border STEM-based possible business ideas
- raising awareness about STEM-based entrepreneurial opportunities, especially in the SEN context through reaching out to a wide range of stakeholders and network development
- influencing a pro-entrepreneurial attitude in society and among youngsters.

Expected quantitative results of the SENSationalSTEM project were: Training 80 SEN-students, 30 teachers and 20 mentors, 5 new joint cross-border SEN-student companies established, and 7 business ideas implemented as “business simulations”. (Figure 1)

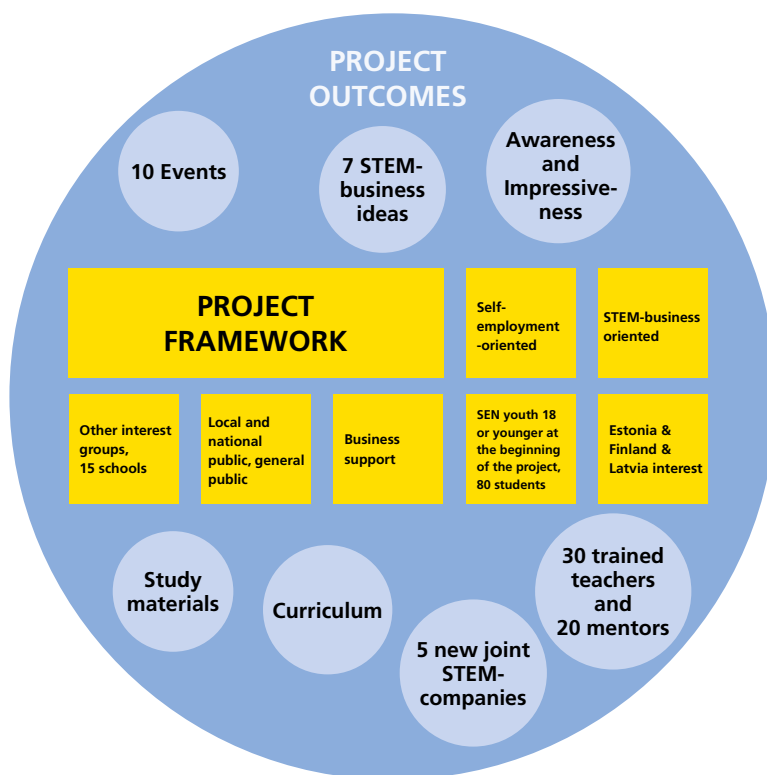


Figure 1. Project framework and expected outcomes

ESTONIAN SCHOOLS

- Narva Paju School
- Tartu Art School
- Tartu Herbert Masingu
- Astangu Vocational Rehabilitation Center
- Viljandi VTC

FINNISH SCHOOLS

- Keuda
- Omnia
- Perho
- Kiipula

LATVIAN SCHOOLS

- Rigas 66. Secondary School
- Talsi State Gymnasium
- College of the State Agency for Social Integration
- Design Technical School of Vidzeme and Tornakalns Private Secondary School

Figure 2. Participating schools from Estonia, Finland and Latvia (SENSationalSTEM 2022)

The recruitment process of the schools started in the spring 2020. The project and its goals were presented to the teachers and management in virtual meetings. During the meetings, we discussed various possibilities how to combine the project activities with school activities. Some of the participating schools were special education institutions and some were vocational schools where SEN students are integrated into student groups (figure 2).

Two special education institutions in Finland would have been interested in participating in the project, but their SEN students are typically older than 18. Some of the students were recruited for the project on a voluntary basis and some of the students joined as a whole group. The inflexibility of teachers' working hours produced some inconvenience in participating in events and student guidance. Teachers' work is resourced on a group-by-group basis instead of individual student-based, which made it somewhat difficult to recruit schools and students for the project.

JA Finland's Company program for vocational schools

In the project, a modified version of the JA Company Program for vocational schools was implemented for the SEN youth. The JA Company Program is a study program offered by JA Finland (Nuori Yrittäjyys NY), which is part

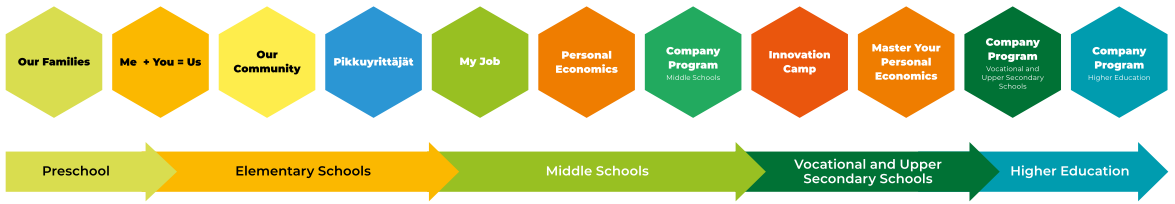


Figure 3. JA Programs from pre-primary to higher education (JA Finland 2022)

of the international Junior Achievement (JA) network². JA programs equip young people with the employment and entrepreneurship skill- and mind-sets they need to succeed in working life. By building abilities and nurturing self-belief, JA prepares youth for the future of work, ensures that they have the tools to be financially capable adults, and teaches them to think entrepreneurially.

JA Finland's programs form the JA Path of Entrepreneurship Education, which offers collaboration opportunities to all grades from pre-school to universities. JA Finland provides pre-made study materials for all programs and support in using these materials.

The JA Company Program has been in use in Finland since 1995. JA Company Program is one of the most recognized entrepreneurship education programs in Finland with yearly participant number being over 4000 students who set up more than 1500 JA companies. The JA Company During the program, the participants establish in teams a JA company that operates using real money. The JA companies are not considered actual businesses, and thus do not have real business IDs.

The program connects the theoretical information included in the curriculum for upper secondary education with practice through genuine situations. The students learn by actually working as a member of their own company.

JA Company program can be used as a tool in several parts of the degree, and it has been used to complete elective and common degree components. JA's operations are wide-ranging and cover many different topics and the teacher can determine the priorities of NY companies through their own

2 Junior Achievement (JA) World Wide is the umbrella organization that operates in 115 countries of six continents. Working in over 100 countries, JA Worldwide is supported by nearly half a million volunteers, and reaching more than 12 million students each year. JA Worldwide has been nominated for the 2022 Nobel Peace Prize.

activities. The program is always organized as part of the education provided by the educational establishment, and the JA companies may only operate when they have an instructing teacher. (JA Finland 2022)

Teachers (and the school) decide how broad the program is in terms of academic performance and how it is evaluated. In SENSationalSTEM project, the performance of students from different schools was integrated and evaluated as part of the students' ongoing courses and degree studies, even though the students worked in joint international teams.

In SENSationalSTEM project the JA program was applied to support SEN youths' personal entrepreneurial mindset and team skills rather than to help them learn how to make a great business plan or business. The most important expected learning outcomes were the opportunities that entrepreneurship could offer for SEN youths' professional development and the support and resources provided by the team for each team member.

The key learning objectives of the JA Program, which are also important from the SENSationalSTEM project's point of view:

- The student recognizes the requirements of entrepreneurship and is able to evaluate their own strengths and areas for development.
- Students develop their own entrepreneurial skills, which include teamwork skills, problem solving skills, communication skills, presentation and sales skills.
- The student identifies and evaluates his/her own activities as part of a team.
- The student is able to draw up a business model and plan to support his or her own idea and to develop it during the activity.
- The student builds cooperation networks. (Modified from JA Finland 2022)

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SENsationalSTEM PILOT GROUP TIMELINE, EVENTS AND TASKS

Pirjo Saaranen & Namrata Sethi

The project application was prepared in September 2019 and we received notification of its approval in February 2020. The project started in April 2020. Because the project application was compiled before the COVID-19 pandemic, the application included more live, in-person meetings than we were able to arrange. In addition, the progression of the pandemic could not be predicted, so on several occasions we had to modify the events to be held online.

The lead partner is the Estonian Chamber of Disabled People (EPIKoda). The Latvian partner SUSTENTO are similar organization to EPIKoda, both national umbrella organizations for people with disabilities. Haaga-Helia University of Applied Sciences is a well-known education higher education institution in Finland, while Estonian Agrenska Foundation is working with disabled children and youth, being an Estonian-Swedish jointly run civil society stakeholder. Associate partner is Junior Achievement (JA) Finland, which is one of the leading organizations in entrepreneurship education in Finland.

Launch of the project in spring 2020

During the spring of 2020, we clarified the project responsibilities, objectives, concept definitions, events and schedules with the project staff team. For example, we had a discussion with the funder's representative about the age limits for SEN youth (under 19 at the beginning of the project). STEM was defined as broad and flexible, as almost all companies utilize technological solutions.

The project began with the recruitment of schools and teachers in each country, as well as members of the steering group. The aim was to involve five vocational schools from Finland and Estonia and four from Latvia in the project.

Technical solutions

Zoom was chosen as the online platform for the project for teacher and mentor training. In meetings with Student Teams and staff, we used Microsoft Teams because it allows for discussion, file sharing, co-writing and saving, and the creation of channels for different teams. The different teams were the Student Teams, the teacher team, the mentor team and the project staff team. Teams channels provide a good platform for team meetings on a voluntary basis. The teams were given the opportunity to use other virtual communication applications as well. The materials were produced with PowerPoint, Word and Excel. The accessibility of the documents was checked by an accessibility check.

The enrolments of the teachers and students to the project were gathered with an online form created with Webropol. Because personal information data were handled during the project Privacy Notice was generated with the help of Haaga-Helia's lawyer. Feedback was collected through surveys conducted with both Webropol and Mentimeter programs. The overall results were examined with the same programs as with Excel. More advanced analyses were also performed with SPSS.

A website (sensationalstem.eu) and a Facebook page were produced for the project. Some videos were posted on Youtube. Students create visual brochures for their companies using the canva.com program, for example. Some of the teams also set up an Instagram account for their business idea.

The events for the pilot group

The pilot program was launched with a two-day teacher training. After that, there were six common online events for all. In between the events, Student Teams met in Teams with teachers and worked on their business ideas. In addition, project staff met the teachers in G&A meetings. When the pandemic subsided, it was also possible to organize some live events for some of the pilot group members in Helsinki, Tallinn and Riga. The following chapters present the main events of the project in more detail. (Figure 1)

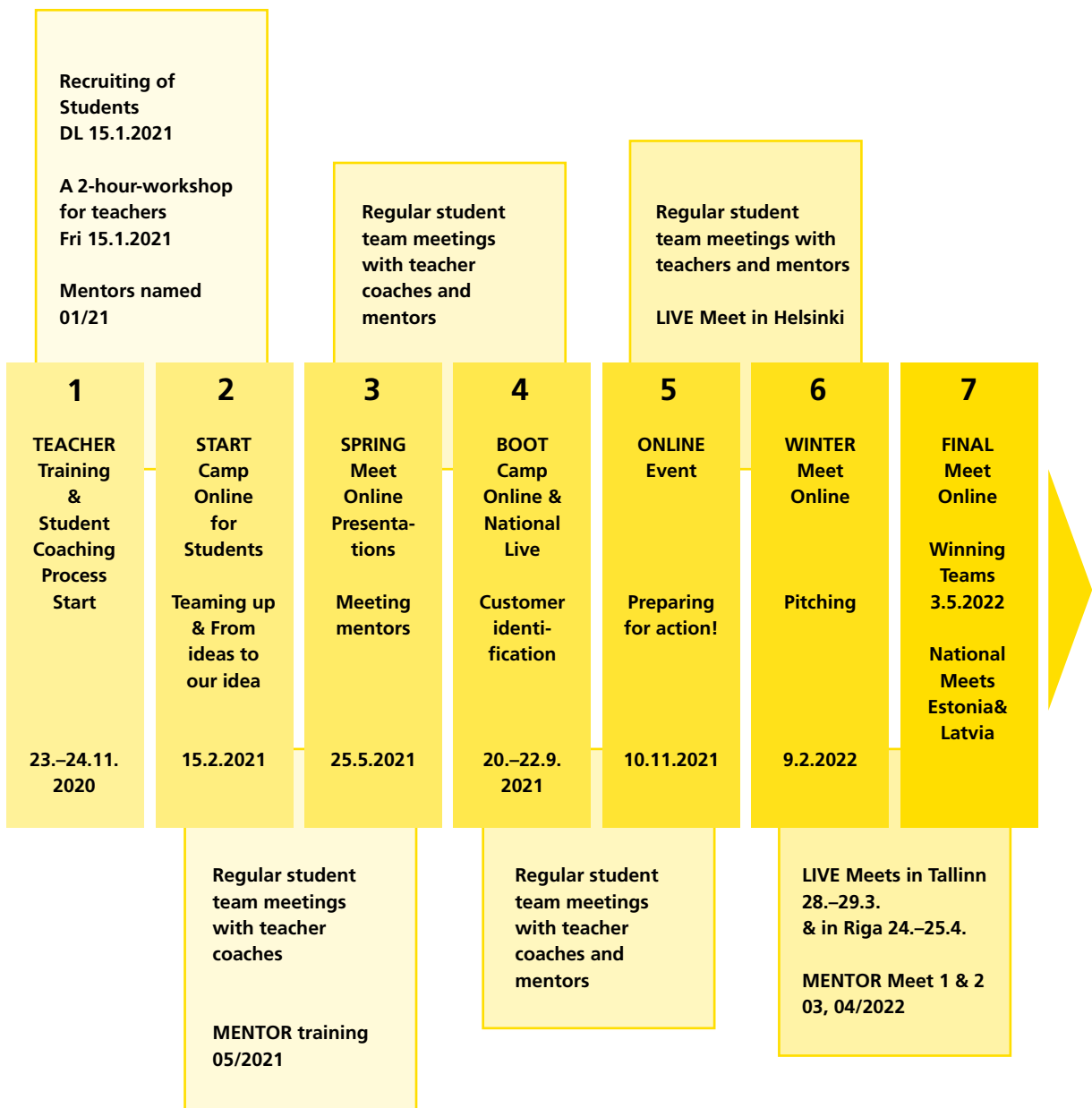


Figure 1. Timeline of the program: Actions, training and events during the SENSationalSTEM pilot program.

TEACHER Training Online 23 – 24 November 2020

The project's event activities began with a two-day teacher training on 23 - 24 November 2020. It was implemented virtually in Zoom. Haaga-Helia planned and implemented the training in cooperation with JA Finland. The aim of the training was to clarify the goals of the entrepreneurship training and to go through the same program, which is also intended to be implemented for students, but over a longer time span. In addition, teachers got to meet and network with other teachers.

The program started with a presentation of the project and what entrepreneurship and entrepreneurship education are. We emphasized the wide definition of entrepreneurship: Entrepreneurship is about wellbeing, personal development, creativity, tolerance of uncertainty, initiative and risk taking and action orientation (becoming entrepreneurial). The narrow definition of entrepreneurship (becoming an entrepreneur) is about opportunity identification, business development, self-employment, venture creation and growth. Our target is to have a positive experience and increased self-efficacy: *"Yes! I/we can do it!"*

The concepts of communication, entrepreneurship and SEN youth were went thru by means of improvisational theatre as Q-theatre's actors carried out a 1½ hour workshop session. Participants were asked to tell their personal experiences of communication situations where entrepreneurship and disability combine. The actors improvised a mini play from their experiences. Entrepreneurs and mentors of VamY (Finnish Disabled Entrepreneurs Association, vamy.fi) introduced case stories.

Teachers' Bootcamp was held at the end of the first day of training. The purpose of this was to gain practical experience of the students' future program. In addition, based on experience, teachers had the knowledge and opportunity to affect student future events and assignments.

Teachers' Bootcamp – Practical Experience with the Program

- Getting Started
- Warming-up exercise:
 - 'Hämmilä' i.e. 'From confusion to insight' workshop: Teams were asked to create and present a poem, aphorism or rap in a limited time.
- Team interests and skills, the spirit animal of the team
- Team presentation
- Brainstorming (target group: problem-solution)
- Evaluation of solution
- Business Model Canvas
- Pitching the business idea

The second training day began with pitch preparation followed by the pitching of the business ideas. Each teacher teams received feedback on their pitch from the mentors and Mari Laakso-Suutari from JA Finland. Evaluation of the Teachers' Bootcamp and discussion of the Student Program were two important phases at end of the training program.

Teachers experienced passion, curiosity, courage, happiness, joy, etc. and on the other hand confusion, frustration, anger, exhaustion, communication and technical problems, etc. Still got the job well-done. These were valuable experiences, as their students will probably go through the same emotions.

The student program is to be implemented with the same type of concept as the Teachers' Mini Bootcamp. Thus, the opinions of the teachers have an influence on the modification of the concept, as they know their SEN students' conditions and competence levels the best. During the training, an Appreciative Inquiry workshop was executed for teachers. The main question was "What kind of entrepreneurship education should be offered to the SEN students?" The more specific questions were:

1. **Discovery:** What is? '*Appreciating*' What was good in the learning process that you just have experienced as a team in the teacher training?
2. **Dream:** What might be? '*Visioning and debating*' If everything was possible, what might be the best way of training the SEN students for entrepreneurship/entrepreneurial behaviour?
3. **Design:** What should be the ideal? '*Co-constructing*' Working together to construct a model that might be ideal for the target group
4. **Destiny:** What can be? '*Sustaining*' Collectively experimenting what can be.

Contribution to future plans was made through a Webropol feedback survey.

Next steps and tasks given to teachers:

- Give feedback and contribute to future plans
- Recruit Students DL Friday 15 January 2021
- Attend the 2-hour workshop for teachers Friday 15 January 2021
- Support your students to orientate to the START Camp on Monday 15 February 2021
- Support your students during the START Camp for Students 15 February 2021

START Camp Online for students 15 February 2020

The first meeting of the students was on February 15, 2020. Before that, the students had enrolled for the project and had been divided into 13 Student Teams with representatives from all three countries. In team divisions, we take into account the wishes sent by the teachers. There were five teacher teams and we tried to keep them almost the same as in teacher training. One teacher team was assigned to each Student Team to support the Student Team. Each teacher team was responsible for 2 to 3 Student Teams.

The START Camp started with the introduction of the Teams site of the project and its properties and possibilities. The user experience of Teams varied, so we wanted to ensure that students' and teachers' technical skills were at a good level. Still, there were occasional problems with Teams.

The code of conduct was introduced next:

- Respect others: have a positive attitude, listen to others, encourage and support others
- Be responsible: follow the timetable, be active, do the tasks
- Remember: everyone is needed and important and ask for help!

After the common part for all, each Student Team and their teachers joined their team channel meeting. **The first team task** was to introduce oneself to other team members and talk about one's skills and contribution one can make to the team. They had to decide together a spirit animal that describes the team the best. The spirit animals were introduced to other teams later in the program.

The second team task was to brainstorm several business ideas and narrow them down into one idea for the team. Student Teams were asked to decide the name for their team's product or service (what?), talk about the potential customers (to whom?) and the ways to find the customers (how?).

The third team task was to evaluate the idea and the team. Before hitting the market, it is important to evaluate the business idea from different points of view. The SWOT analysis method was presented as a way to evaluate both the business idea and the team's competences.

Next step was to clarify the business idea with the Business Model Canvas (BMC) during the spring 2021. BMC was introduced as a tool to describe the beginning stages of business ideas and gives answers to the questions what, why, to whom and how.

At the end of the START Camp students were asked to fill in a Webropol survey asking for their feelings and feedback about the event. The results of the survey can be found in the article START Camp Online – students’ reflections.

SPRING Meet Online – Meeting the mentors 25 May 2021

The aim of the last common meeting in the spring was to hear the teams’ presentations of their business ideas and present them to the mentors. During the spring, a total of 20 mentors from all three countries had been recruited for the project and provided with training 5 May 2021. Two mentors had been nominated for each Student Team, but mentors also supported other teams flexibly as needed.

Mentors’ role was introduced with the following list:

- Do not work for your company – but help you to go into the right direction.
- Give ideas of possibilities – but don’t make the decisions for you.
- Ask questions, suggest, brainstorm with you.
- Give examples (of pricing or evaluating, for example).
- Give you honest and constructive feedback.
- Help with networking (for promoting sales or marketing, for example).
- Give you time and support, are your trustworthy companions when needed.
- You have to ask for help when you need it!

Before the event, Student Team presentations were instructed to be prepared with the Company Presentation Canvas which has these five dimensions:

1. **INTRO:** Introduction of your Team members and skills.
2. **PROBLEM:** What is the customer’s problem that you are solving?
3. **SOLUTION:** Your solution to this problem.
4. **BUSINESS MODEL:** Who are your customers? Where does the money come from?
5. **CLOSING:** Wrapping up. End the presentation by saying thank you!

Student Teams’ presentations were divided into three sessions with a break between. Eleven Student Team presented their team and business idea. This was the first time mentors heard about the business idea the students had developed. Especially mentors were instructed to give feedback for all teams.

The presentations were also recorded to be viewed later. The business ideas are introduced in the article “The core of the business ideas: wellbeing of people, animals and environment”.

As a next step, Student Teams were asked to have an online meeting with their mentors. At the end of the event the autumn 2021 and spring 2022 themes and events were introduced. In the spring 2021, it was considered possible that the BOOT Camp in September could be a live event in Tartu.

BOOT Camp online & National Live – Customer identification 20 – 21 September 2021

According to the original plans, the autumn 2021 BOOT Camp was to be held as a 4-day live event in Tartu. Unfortunately, due to the pandemic, we had to change these plans to 2 days, the first day being implemented as an on-line event for all participants and the second being implemented as a live event in each country. A more detailed description of this event can be found in a separate article: BOOT Camp online & National live event in Pasila – feelings so far.

ONLINE event – Preparing for action 10 November 2021

Goals for the ONLINE Event in November at 10.00 – 15.00 were the following

- Start working with the Business Plan
- Plan your company activities such as selling: organize a pop-up, etc.
- Discuss taking part in Online Competitions (DL 20.3.2022)
- Fix the date and time for the next Student Team meeting
- Work in Students Team Channels with your mentors and teachers

The Christmas markets or fairs would have been great events for our students to introduce their business ideas or even sell their products, but unfortunately, due to the pandemic, they were not organized.

In order to take part of the Online Competitions students have to establish their JA Company by registering their company in the JA Company Program. Before registering students should have a founding meeting when they, for example, choose the company’s CEO and other officials. It is also important to agree on cooperation and rules for their JA Company with the cooperation

agreement. Templates were provided for both the founding meeting and the cooperation agreement. A video tutorial was also made of the establishing process to facilitate registration.

Bookkeeping is important in staying in control of your business finances. At this point, it is time to get acquainted how to record their company's financial transactions. Students were given homework to study single entry bookkeeping as it is an easy way to started. To make it easier, a template Excel file was provided for the students.

At the end of the event, we went through the schedule, events, and tasks for the rest of the year and spring 2022.

LIVE event – Marketing Plan 15 and 16 November 2021

With the ease of corona restrictions, travelling began and this gave the students the opportunity to travel and have a cross border event to meet their team members. Since there was a lockdown in Latvia, unfortunately they had to join the event online.

The project personnel visited Haaga-Helia, Pasila campus along with the students, teachers and mentors. During this event, the students were able to interact along with their team members in English and work on their business idea. They continued to develop their business idea with the mentors and teachers.

The tasks they had to accomplish on day 1 were:

- Continue working on the Business Plan and Marketing
- Plan how you are going to test your business idea in real life
- Discuss taking part in Online Competitions

There was a session planned on how to use tools such as Canva to design logos and create interesting Social Media posts. They had a task to create their marketing plan and also their company's Instagram account and upload the post they created.

Later there was a visit planned to Fame Museum and a 7D stimulator followed by dinner. This was a relaxed way for students to network with their teammates.

The next day the students continued to work on their business plan. They later had a session with JA Finland where they were introduced to topics on how to establish a JA Company:

- Have a founding meeting of possible
- Prepare the cooperation agreement
- Register your Student Team Company in the JA Company Program group.

WINTER Meet – Pitching your idea 9 February 2022

The winter meet was specially designed in a way that the students could prepare their pitches about their business idea.

“ The best sales pitches make me feel like the train is just about to leave the station and it is not going to wait for me unless I jump aboard myself.” Jon Callaghan, True Ventures

Mari Laakso-Suutari from JA Finland shared the presentation about how to pitch with the students along with simple guidelines. A PowerPoint template file was added to each Student Team’s Teams channel, which they utilized to prepare the pitch with the help of mentors and teachers. Few examples of inspiring pitches were also shared with the Student Teams along with guidelines of Do’s and Do Not’s for a good pitch (Table 1.)

Table 1. Do’s and Do Not’s for a good pitch

DO’S OF PITCHING	DO NOT’S OF PITCHING
Attract attention – a first impression can only be made once	Language that the target audience does not understand
One fact per slide	Small fonts
Tell a story	Guessing
Use single words or short slogans	Too many details
Use images: one picture tells more than 1,000 words	Long text

To make the student teams feel confident, they were given an easy template to use in preparing their pitch. Later Student Teams had an opportunity to present their pitches to the teachers and mentors and they shared their feedback with the students.

After the WINTER Meet, links to the reflection surveys were sent to students, mentors and teachers.

Riga Meet – 25 and 26 April 2022

The Riga event was planned for all the Student Teams to meet face to face and further develop their business idea. Students from Finland and Estonia travelled to Riga, Latvia along with their teachers and mentors.

The 1st day everyone visited Jurmala, Social Integration State Agency where the day started with introductions and introducing everyone face to face, then the Student Teams started to work on their business ideas along with their mentors. The next day was held in SUSTENTO where the Student Teams worked on their business ideas and presented them.

There was also a very inspiring talk by Jānis Palkavnieks, presenting the brands of the Draugiem Group, starting from print products, smart home solutions and ending with strengthening friendships and providing wonderful gifts. All brands share one thing in common – technology. The clever minds of Draugiem Group are always ready to look for the best possible solution for any challenge. This was very inspiring for students to see that an entrepreneurial employer can see an employee as a whole and not just as an employee.

This was the perfect example of how a simple idea could grow global and the importance of welfare of employees and entrepreneurial attitude in work life.

At the end of the presentations, Student Teams were asked what they have learned or received today. The answers were: *“Teamwork makes dreams work,”* *“Friends,”* *“Communication,”* *“A big problem to small pieces.”*

Final Meet Online – Awards ceremony! 3 May 2022

The final event was planned so that the students could share their final pitches with the Jury (the mentors and project staff). After the presentation the Jury held a separate discussion meeting regarding the winners.

There were 10 categories for the students and the winners were:

- **Best Teamwork**
 - Criteria: How the teams have excelled in teamwork, which is the most important working life skill, particularly in cross-border contexts.
 - Winner: Rehome

- **Joy of learning & Best STEM idea**
 - Criteria: How the teams have progressed in learning and acquiring new skills and knowledge in area of STEM.
 - Winner: Kenga

- **Best Innovation**
 - Criteria: How the teams have come upon something new and innovative, not just copying but creating and developing new possibilities.
 - Winner: BeFood and Plain Spoken

- **Most Creative business idea**
 - Criteria: How the teams have elaborated their business idea to cover different aspects of the idea and creativity.
 - Winner: Octoarts

- **Best logo**
 - Criteria: How the teams have created an attractive and catchy logo to represent their business.
 - Winner: Owl's Nest

- **Best pitch and written presentation**
 - Criteria: How the teams have prepared and presented their pitch and written presentation and created background material about their company.
 - Winner: Healthier

- **Most environmentally friendly business idea**
 - Criteria: How the teams have contributed to solving an ecological problem, helping to mitigate the effects of the climate change by creating an environmentally friendly business idea for example in use of resources, etc.
 - Winner: Safe-Fash, Keys and Karm Disain

- **Most socially responsible business idea**
 - Criteria: How the teams have created a socially responsible business idea that carries in itself the values and principles of social responsibility.
 - Winner: Owl's Nest
- **Most active participation**
 - Criteria: How the teams have excelled in active participation within their team, and with the mentors, project staff, other teams etc. while developing the business idea.
 - Winner: Karm Disain
- **Grand prix**
 - Criteria: The business idea that incorporates all the previous aspects.
 - Winner: Kenga

Feedback was collected from all regarding what they learned during the entire project. Below are the results and the feedback from the students, mentors and teachers:

Participants found working in an international team interesting (91%), fun (73%) and useful (55%). About one-fifth (23%) regarded teamwork difficult. Only 9% thought that teamwork was easy or on the other hand time-consuming. Students were asked on a 5-point Likert scale what they have learned during the project. They had learned the most social relations, communication and working life skills (average 3.9). The next most learned skill was courage (average 3.6). Entrepreneurial behaviour and economic skills also exceeded the neutral average (average 3.3). Possibilities and positives of working in a team were asked with an open-ended question. The figure 2 below illustrates the provided answers.



Figure 2. The possibilities and positive aspects of working in an international team

START CAMP ONLINE – STUDENTS' REFLECTIONS

Pirjo Saaranen & Sari Ruotsalainen

Due to the corona pandemic, we implemented a virtual START Camp for students in SENSationalSTEM project in February 2021. The aim of the START Camp was to enable interaction and community spirit and to arouse positive feelings and enthusiasm for entrepreneurship for young people under 18 years of age with Special Educational Needs (SEN) from Finland, Estonia and Latvia.

For the first time, young people from different countries encountered each other in a virtual learning environment. In addition, their teachers took part in the START Camp. In the implementation of the camp, we cooperated with the experts of the JA Finland.

Towards E-community

The term E-community refers to the experience of community through technology and the functioning of social relations in virtual environments.

In a virtual environment, community can be supported by creating a secure atmosphere, making extensive use of online tools, creating interactive and collaborative tasks, and providing clear instructions for tasks. It is also necessary to ensure that students know whom to contact when encountering problems.

We chose Microsoft Teams as the virtual learning environment for the project, as it provides a permanent platform for virtual events, file sharing, and assigned workspace and versatile online tools for each Student Team.

We anticipated possible technical challenges by involving a technical expert already when designing the START Camp, who also solved the problems that occurred during the camp. In addition, their own teachers supported the students.

It is good to enable informal small group discussions in online teaching. At the START Camp, through given tasks, we supported students' interaction and familiarization. For example, the team members introduced themselves and discussed their own strengths. As a conclusion, they also selected a spirit animal to describe their team.

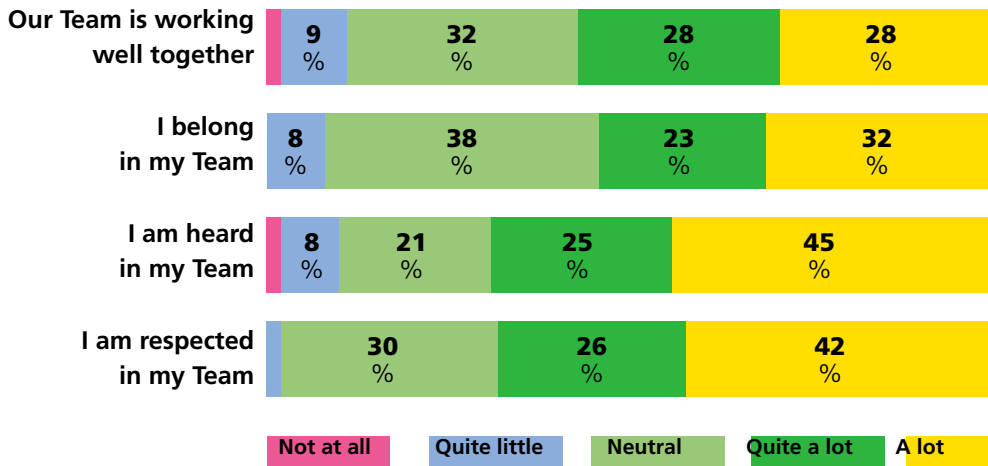


Figure 1. Students' experiences at the end of the START Camp (n=53)

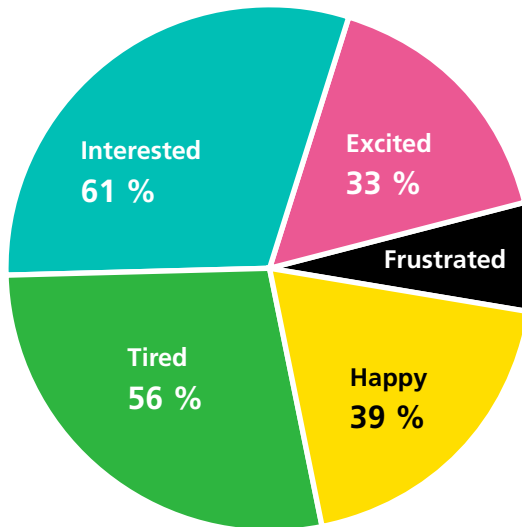


Figure 2. Students' feelings at the end of the START Camp.

A good atmosphere brought success

During the camp, we noticed that for some students, technical challenges made it difficult to participate in teamwork. It was great to note that the students who were fluent using technical tools took naturally responsibility for advancing teamwork.

“ Since we are doing this on pc, I might not know how to do some things.”

Communicating in English was difficult for some students. However, constructive and encouraging guidance can have a significant effect on students' fear and tenderness of failure. At the START Camp, we paid special attention to creating a positive and encouraging and respectful atmosphere so that the barrier for communicating in a foreign language was as low as possible. Every effort was made to make everyone's voice heard, and already at the beginning of the camp we introduced the code of conduct: Respect others, Be responsible, Ask for help, Remember everyone is important.

“ Quite interesting project, it's a little bit hard to communicate because of language barriers, but I hope that it will be better on next times. Thanks to the organizers! ”

Despite the challenges, the experiences of community were positive at the end of the START Camp. As many as 70 % of the students (n = 53) who responded to the survey we conducted at the end of the camp felt that they had been heard on their team and 68 % felt that they were valued as a member of the team. In addition, just over half felt that they were part of their team after the START Camp, and just over half felt that the co-operation was working. No one felt that he was not valued at all as a member of the team. (Figure 1.)

At the end of START Camp, the students' emotional scale was on the positive side. They felt happy (39 %), interested (61 %) and excited (33 %), but also tired (56 %). For anyone, a six-hour virtual event can be exhausting, so we are proud of the students participating in our project! (Figure 2.)

“ It is cool but I am tired.”

Teachers played an important role

Students' own teachers had an essential role in the success of the START Camp. They knew best what kind of support their students needed!

In addition, the structure, clarity and accessibility of the tasks and e-learning environment, safe and encouraging atmosphere, the possibility of free discussion and the availability of technical support were important factors.

It was particularly important to invest in advance preparation and planning. The START Camp would have been even more successful if all participants had been able to familiarize themselves in advance with the learning environment and the usage of the online tools.

Overall, we achieved the goals we set for the START Camp. The day exceeded our expectations.

- “ It was very interesting and teachers was so nice and understanding! ”
- “ This seems to be an interesting thing to be a part of. For now, at least I'm happy I joined. ”

BOOT CAMP ONLINE & NATIONAL LIVE EVENT IN PASILA – FEELINGS SO FAR

Namrata Sethi

Online event

As the corona restrictions eased in each country, there was a need for the students to meet and interact with each other, hence it was decided to have an online event and a National event in each country where the students from different Vocational schools could meet along with the teachers and mentors.

During the online event the students worked on their teams and interacted with the mentors. This gave them an opportunity to discuss about their business ideas with the mentors and get feedback. The Guidelines for the getting to know the mentors were:

- To form a meaningful relationship, be open and respectful.
- Ask & listen, give & take – it's a mutual responsibility.
- Share your thoughts, expectations, goals, etc.
- Both parties learn, both parties win.

One of the most important stages in any business is to understand the customers. The second part of the event focused on teams working together to make their customer profile. This helped the students to define and think about their customers and their customer journey and hence they could accordingly work on building their business idea.

Face-to-face national event for Finnish students in Haaga-Helia Pasila Campus

The second day was a live event held in each country. This was the first time the students met their teammates for the first time. The day in Finland started with asking them about their feelings and how they felt being in the event. Later the students, mentors and teachers were divided into different workshops.

Imagine, you're a 16-year-old working on a business idea for over a year, online on Teams, with people you haven't met in person. It's been a challenging year as online platforms can be limiting team trust and networking.

“ The encounters have been really nice and inspiring. ”

In August 2021, as the restrictions eased, we had an opportunity to have an event in person for students from Finland. The face-to-face event gave an opportunity to interact and made it exciting to work together and form bonds. Teachers and mentors also attended the event, which gave the students the opportunity to meet their mentors and discuss their business ideas face to face.

“ The group's mentor corporate story is a superb example. ”

SMALL GROUP WORK ON ROUNDABOUTS:
1) Interaction Exercise (Q-theatre)
2) Sales Lab presentation (Heidi Kock)
3) Meeting a young entrepreneur (Aatu Pulkkinen)
4) Idea workshop: My favourite place and feelings so far (Virve Vainio & Tarja Römer-Paakkanen)

Figure 1. Small group work on roundabouts

Workshop 1: Drama pedagogy as a tool for interaction

At the start of the event we divided the students into smaller groups to attend workshops on different themes. One theme was improvisation games by Q-theateri. The drama worked well and made it easier for the students to open up.

Young people may have learning difficulties. For example, in reading, writing or perceiving, and other different psychological factors. The challenges of activities and attention can be reflected in learning in many different ways. Special support is provided in vocational training, when students need long

term and regular learning and study support due to a learning disability, illness or any other reason.

Workshop 2: Sales Lab

Heidi Koch introduced Haaga-Helia's Sales Lab to the students, teachers and mentors. The Sales Lab utilises tools that measure the emotional responses and their strength in individuals. The students tested the tools where the camera could track their emotions. This was a new experience for the students and was insightful how customer experiences can be tested through innovative methods.

“ SalesLab was a great experience. ”

Workshop 3: Young entrepreneur Aatu Pulkkinen - Learning working life skills, that is, how I became a young entrepreneur

Aatu Pulkkinen is a young 19-year-old NY entrepreneur who has started three companies since primary school: Järkkäysjätkät “Boys Energy for a Small Community”, HottisGrilli “Includes Hot Grill and Hot Boys” and AbsolutArma “Quality Army Wear Made Afford”

Entrepreneurship education had given him the following skills:

- Problem solving ability, the ability to handle situations.
- Perceiving one's own strengths - and weaknesses.
- Ability to tolerate failures and learn from them.
- Ability to work as a team even in challenging situations and with different teams.
- Courage, self-management, initiative, self-determination.
- Future-orientation.

Aatu inspired students with their own business stories and experiences - both successes and failures. Students were able ask him for advice on their own business ideas.

“ The NY entrepreneur's story was certainly of interest to students. ”

Peruna (potato) movie

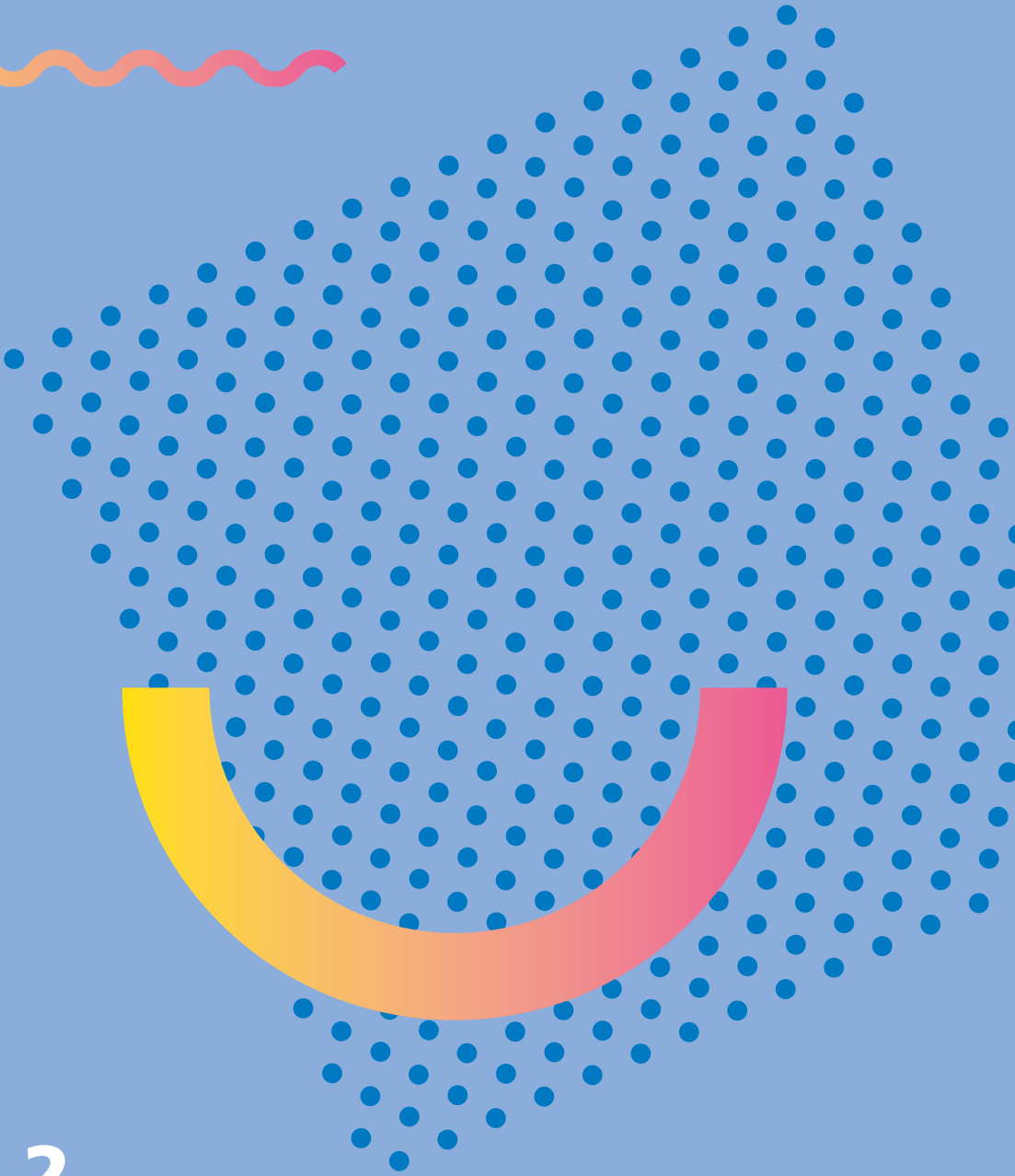
After working on their business ideas and the workshops, the groups then proceeded to watch a movie about a start-up entrepreneur who tries to import potato to Finland in the 17th century when the most important vegetable in Finland was turnip.

Peruna movie that takes the viewer through the different stages of entrepreneurship and gives an overview about the journey of a start-up entrepreneur. The movie reflects the different stages from idea to execution, to team building and funding and covers the entire journey, but with comedy elements. This was definitely a fun way to learn about the entrepreneurial world.

Positive experience and having fun together

The pandemic has resulted in a spurt of individuals having to deal with their mental health. While planning the face-to-face event special thought was given to introduce various activities that could gauge the mood and expertise of the participating students. We wanted students from different schools to interact and also be inspired by other young entrepreneurs who have established their own business.

This was a positive approach as the students had been shy while developing their business ideas on the online platform. The teachers played an active role to encourage the students to interact with other participants and to mingle with their team members. The face-to-face BOOT Camp seemed to help the students in team building, to feel positive about entrepreneurship and to move ahead more confidently. When asked, the students felt motivated, excited and happy.



2.

REFLECTIONS FROM PROJECT ACTORS

LEARNING INTERNAL ENTREPRENEURSHIP IN INTERNATIONAL BUSINESS PROJECT – TEACHERS’ EXPERIENCES OF THE PROJECT

Heidi Havumäki & Mirjami Lehtikoinen

A small group of students and teachers from Perho Business College had an opportunity to participate in SENSationalSTEM project. Our students were first year business students with special educational needs.

The purpose of the SENSationalSTEM project was to create new business ideas and concrete actions. Our students are talented in many ways. But on the other hand, some of them have multifaced learning disabilities. Most of them are shy, timid and sensitive, and not very active to create new activities and marketing ideas. They have challenges in communicating with people and working in group, especially in English.

In this project, there were also many areas that the students were not familiar with, for example all marketing and entrepreneurial concepts. Because in this project there were so many new things for the students, they were not able to process deeply these concepts. Also the small international group in which our students were, changed during the whole two-year’s project period, which created also some difficulties. At first, we were a bit disappointed because the goal of the project did not seem to actualize: the project seemed to be too difficult for the students.

In the beginning, perhaps our and the whole project's expectations were too high. Students had difficulties in both communication as well as starting the project and creating ideas. When we understood and accepted these realities, it was easier to advance the project on the basis of the students.

Although there were challenges, the whole project team found ways to help and to support students. The project team encouraged the students to do the project based on their abilities and interests. Some of our students were for example very skilled with computers, so those students coordinated the cooperation with JA company program and registrations and made marketing material by using Canva software. English language was difficult for some of our

students as well as students from Estonia or Latvia. In the beginning of the project, some students were advised to write their ideas in their own language and teachers and project members helped to translate them. In addition, in online meetings some students communicated in the chat instead of speaking.

Instructions, examples and models, which the project team gave to students, were easy to follow and clear. We also added extra support for those students who needed. For example, we discussed about the concepts and themes in our classes in Finnish.

Haaga-Helia also arranged one live meeting for Finnish students. During those days, our students learned many new skills. Our students found especially interesting the discussions with the entrepreneurs and different communicative activities, where students had to train how to interact with each other.

In spite of different challenges, we were happy that our students created business ideas and business plans. Some of the results were actually good, for example marketing of the business idea in social media.

Our students learned especially internal entrepreneurship skills. In the beginning of the project, some of our students hardly could communicate with people or express their ideas, but in the end they had courage to present their business ideas to other teams and mentors. One of our students had long and interesting discussions with one of the mentors and got many new ideas. The student expressed his ideas well.

One of our students describes the project:

- “ I learned to work in an international group with different kinds of people. I especially liked when we were at Haaga-Helia in Pasila and we were able to work together in real life. I succeeded in speaking English pretty well. ”

- “ I learned what things that you have to think and do before you establish new company. The whole project was ok. ”

As a teacher, it was interesting to work with other teachers and mentors. In the teachers training day we created own business plan with other teachers. It was very useful to feel all the same positive and negative feelings and emotions which students also had to meet later when they created their business plans. We also learned new aspects of entrepreneurship and marketing. It was quite difficult but useful to work mainly virtually and coordinate schedules and at the same time support and motivate students to work with each other.

As a conclusion, this project turned to be more challenging that we expected. At the same time the project was very encouraging. We were delighted to

see the positive progress of the students. This project had a very big positive impact in some of our students' self-confidence. It is important to organize these kinds of projects for sen-students to value them and help to find their strengths and special needs. The methods developed and used in this project would be useful also to other students without disabilities. In the future, we hope we will have an opportunity to participate in similar kinds of projects.

MENTORING IN SENsationalSTEM PROJECT

Riikka Saastamoinen, Heidi Hamari-Martimo and
Helena Tähtinen-Kivikäs

In the spring of 2020, Haaga-Helia's Sari Ruotsalainen contacted VamY (Suomen vammaisyrittäjät ry./Finnish Disabled Entrepreneurs Association, 2022) and asked our willingness to take part of the project by providing mentors for the students. The project was introduced to VamY on June, 2020 at an online meeting. The actual mentor training was held in May, 2021. At this stage, it would also have been interesting to hear about Gunta Anca's work in EU organizations and her opportunities to make a difference on entrepreneurship of people with disabilities in the EU.

The total number of mentors who signed up for the project was 20, of whom six were from VamY. The project aimed to support the self-employment and entrepreneurship among SEN youth. We as VamY's members are entrepreneurs with disabilities ourselves, we are experts by experience and that is why we can offer our expertise and encourage young people to pursue towards their own dream through entrepreneurship. The project started with a meeting of teachers and other staff from Finland, Estonia and Latvia. We found that to some extent there were linguistic and technical problems.

The mentors were acquainted with the Student Teams in the online SPRING Meet held in May, 2021. Mentoring was presented to students in such a way that mentors:

1. do not work for your JA company – but help you to go into the right direction
2. give ideas of opportunities – but don't make the decisions for you
3. ask questions, suggest, brainstorm with you
4. give examples (of pricing or evaluating, for example)
5. give you honest and constructive feedback
6. help with networking (for promoting sales or marketing, for example)
7. give you time and support, are your trustworthy companions when needed.

After the SPRING Meet two mentors were assigned to each Student Team and students were guided to ask for help whenever they need it. However, the role of the mentor remained somewhat unclear to both mentors, teachers, and

students. Students had difficulties with schedules and not all were able to meet at the same time. In addition, the Covid 19 pandemic ran globally, and for this reason, most of the appointments were online. At the beginning, there were technical problems with the meetings, but towards the end, students' activity and attendance increased. In addition, their technical skills of the online tool improved significantly.

The students were enthusiastic and active, but unfortunately, some students left the program as they graduated or changed their field of study and school. Also, some mentors had scheduling problems due to their other duties. Some students were shy to discuss both in online and in person-to-person meetings. Mentors and teachers often had difficulties in getting answers from the students to the questions that would help the project progress. The mentors actively commented, asked questions and by giving examples and telling their own experiences, they inspired the students to move forward. The students' projects proceeded in a controlled manner. Concrete tasks and plans were implemented. In addition, the teachers encouraged the students to participate in discussions and acted as interpreters when needed. The active mentors were valuable to both teachers and students.

Unfortunately, in-person meetings were not possible to organize at the beginning of the project. The in-person meeting in Riga in April 2022, just before the online FINAL Meet, was found very important. Plans for products or services were admired at the Student Teams face-to-face meeting in Riga. For example, if the presentation by Draugiem Group Ltd / Jānis Lindermanis had been at the beginning of the project, it would have been beneficial and inspiring for students' creativity, collaboration and teamwork.

We Finnish entrepreneurs with disabilities as mentors want to encourage SEN students to find their own specialities and special skills, with which they can make their dreams come true – and to earn their living through entrepreneurship. The SENSationalSTEM experience has been empowering for students, teachers and mentors!

VamY sincerely thanks Haaga-Helia's staff for the project. We will also be available for future international projects.

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JA FINLAND'S COMPANY PROGRAM MODIFIED AND APPLIED IN THE SENSationalSTEM PROJECT

Mari Laakso-Suutari

JA Finland acted as an external expert in the SENSationalSTEM project providing a modified version of the JA Company Program to be used as a base of the students' learning process. Modifications to the JA Company Program included changes not only in the time frames, but also in the contents and methods. Some aspects were added, some omitted, and all the aspects were carefully monitored to make sure that the project would get the most use out of the JA Company Program and that it would suit the needs of the participating students and teachers. Normally the JA Company Program lasts a maximum of one year, but in this project, the timeline was stretched for the program to last from the autumn of 2020 until the spring of 2022. Thus the program implementation in the SENSationalSTEM project took about two school years. The needs of the target group and the significant role of the mentors were taken into consideration in modifying the material of the JA Company Program as we made the tasks more concrete and with shorter instructions and also added a training session and material for the mentors.

The process in a nutshell

The participants came from vocational schools in three countries; Estonia, Latvia, and Finland. The language used in the project was English, so the JA Finland Company Program material was modified not only to suit special needs students, but also to be used by students who are not native speakers of the English language but speak it as a foreign language. This was to ensure the relevance and validity of the project for each participant and help the students gain maximum profit from the learning process both individually and in Student Teams. Also, it was necessary to provide the teachers with the kind of material and support they needed in order to make the project a successful one for the schools involved – not to mention the mentors who were an added bo-

nus in the project to give the Student Teams practical advice and guidance. We feel that a good level of success was achieved in the project. If ever there were occasions of uncertainty or problems with the project work, we would revise the materials, organize more training sessions, write additional instructions of help, and make videos about how to resolve the problems.

The process of learning and teaching entrepreneurship, work readiness and financial literacy in the SENSationalSTEM project started with a two-day introduction meeting with the participating teachers. During the two days, the teachers were taught what the project is about and how things are done, what the Company Program is, what the materials are like and how to put it into use effectively, and what are the goals this project aims to achieve. The teachers were also made to go through the whole process of the Company Program in a very fast time frame as they also had to think of possible business ideas, form teams, and complete the same steps through which the Student Teams learn in the Company Program. This gave the teachers insight on the process and the possible difficulties that might arise during the tasks and helped them gain understanding on how to best help and support the teams' learning – it made it easier on the teachers to teach the process since they had experienced the same process firsthand.

Project implementation and results

Because of the world pandemic situation, the teachers' meeting could not be organized live – we had to meet via Teams instead. And the same situation marked the whole project as only a few smaller meetings could be organized live at the time. Working remotely caused some issues, mainly related to technical obstacles and difficulties. Not all participants had a laptop in their possession, so working online was not possible for everybody since some of the tasks could not be adequately completed without a device or by sharing a device with another participant. Also, there was somewhat of a language barrier since the English language presented a bit problematic to some participants. However, we did our best to overcome those obstacles by modifying the language used in the materials so they could be more easily understood and by simplifying the processes and really explaining the core of all activities and processes to help the students and teachers work together effectively despite the ongoing world situation.

So, the project also fulfilled the goal of engaging the students interacting socially with their peers from other countries. Even if they were unable to meet each other live they managed to make friends and form good working

relations with young people from other schools and other countries than their own as well as work together using the English language.

The companies were varied

The aim of having international Student Teams was fulfilled. Creating and running companies together was achieved despite the pandemic restrictions. However, not all students and Student Teams registered themselves on the JA Finland web page as users of the Company Program. This might be the result of different viewpoints and attitudes towards submitting one's personal data to authorities for reasons of taxation and such. We had a tremendously hard time trying to get everyone to register on the site. Even though we organized live events for registering together as well as Teams meetings showing how to register, and submitted written step-by-step instructions plus made a video showing the whole registration process, the struggle of having all participants' register was not completely resolved. Perhaps there isn't enough trust in the authorities in all the participating countries? The comments about judicial liabilities in justifying not getting registered suggested something of the sort.

In spite of some prejudices concerning the global situation and some legislative there were, however, Student Teams *Plain Spoken*, *Kenga*, *Healher* and *BeFood*, who did register onto the JA Finland platform. The feedback they gave was positive, stating that it was easy and convenient to access all the materials after the registration. The materials could be found in the project Teams channels as well, but after registration, the Student Teams had access to some extra materials as well, which was useful. The fact that the project lasted two years brought about the issue of students graduating and leaving school because of that. We had new students to replace the ones who graduated – and we had to initiate them into the process, too. Furthermore, some Student Teams decided to change their business ideas either partly or completely during the two years in the project.

It was interesting to see all the Student Team companies' presentations in the last meeting. Because a competition was organized to cheer the students on and because the quality of the company presentations was high, each company was awarded a prize in some category in the competition. They were also given constructive feedback as of which elements to work on to further improve their skills. In retrospect, the business ideas and the companies were varied, reflecting the teammates' strengths and interests. In the process of the Company Program containing ideation, company formation, branding and marketing, sales, etc. – all the aspects of forming and running a company – the students

got to use their talents and develop their skills in innovative ways. The feedback from the students and the teachers was good as they feel they achieved their goals and got to learn new things when putting the Company Program into practice.

Feedback and reflection

JA Finland also created content for the project mentors. We had training sessions for mentors and material for them to use in the project, and we created material for the Student Teams, too, to use in order to get the most out of the mentoring experience that the project offered them. According to the feedback in the last meeting, the mentoring proved to be a mutually beneficial and useful experience although initially some had found it a bit tricky. The material and the meetings with good guidelines helped to make the project implementation and the mentoring, too, a success and we are content with having been a part of the process.

At JA Finland, we were delighted to have gained more experience in modifying the JA Company Program to suit the project's needs and made it possible for yet another group of students and teachers to familiarize themselves with the program and learn entrepreneurial financial literacy skills as well as work-readiness through its implementation. The material is flexible and can be adapted to many kinds of teamwork – also international teams of students with learning difficulties working remotely.

ACCESSIBILITY OF MATERIALS – THREAT OR OPPORTUNITY

Pirjo Saaranen & Sari Ruotsalainen

As we became more familiar with accessibility requirements, we noticed that considering them actually serves all students and thus promotes learning for all, not just for SEN students.

How to make the learning material work with a screen reader as well? We set out to find answers to this question in collaboration with a student using a screen-reading program.

Accessibility promotes learning for all

Accessibility is based on the UN Convention on the Rights of Persons with Disabilities and the Act on the Provision of Digital Services (306/2019) which obliges to serve digital services equally. Educational content does not have to meet accessibility requirements when it is produced in the context of teaching and its use is limited to a limited group.

However, instructional material made for permanent use should be accessible. Accessibility requirements depend on the type of teaching material in question.

Achievable materials are, among other things, clear, structured and readable with a screen reader. As we became more familiar with accessibility requirements, we noticed that taking them into account actually serves all students and thus promotes learning for all.

The screen reader converts text to speech

The screen reader reads the content displayed on the computer screen to a visually impaired user and converts it into either synthetic speech or braille. From the point of view of the functionality of the screen reader, it is important to take into account the accessibility of the learning materials, so that, for example, the screen reader does not get stuck, and the contents of the files are read in the correct order.

In one of the courses, we had a dialogue about the accessibility of the

materials with a student using a screen reader. We received valuable and concrete feedback from the student. This was a great opportunity to make the teaching clearer and more equal. It's important to consider the following, among other things:

- Structure your document clearly and write in an understandable way.
- If you are using images or graphs, add an alternative description (alt text).
- In tables avoid split and merged cells. In the worst case, the screen reader may get stuck in them.
- All Power Point slides must have a title.
- In Excel files the first cell A1 must contain text so that the screen reader does not interpret the file to be empty.
- Give the Excel workbook a title and a descriptive file name, and name also each tab.
- Provide descriptive visible text for links, especially if the link address is difficult to understand.
- It is recommended to format the objects by redefined file styles. For example, headings as Headings, tables as Tables (Format as Heading/Table). In this case, the screen reader will recognise and announce texts accordingly.

From monstrous to opportunity

We took up the challenge and started to take over the principles of accessibility step by step. Consideration of accessibility requirements for Excel, Word and PowerPoint files is now partly routine and we are constantly learning more. We regularly update our learning materials, so we can in routine manner check that they meet accessibility requirements.

An easy way to get started is to do the first accessibility check on an existing document. The check can be done using the Check Accessibility feature, which can be found in Excel, Word, and PowerPoint on the File tab, under the Check for Problems button in the Information section (File> Info> Check for Issues> Check Accessibility). In this manner, it is possible to check and correct the incorrect issues reported by the Accessibility Checker and learn at the same time. More tips on how to prepare accessible documents can be found, for example, on the Celia's saavutettavasti.fi website or www.webaim.org. There is a wide range of instructions and tools on these sites. Microsoft's own website also has good instructions for all types of documents: Make your content accessible to everyone.



3.

**RESULTS –
LEARNING
OUTCOMES AND
CURRICULUM**

THE CORE OF THE BUSINESS IDEAS: WELLBEING OF PEOPLE, ANIMALS AND ENVIRONMENT

Pirjo Saaranen & Sari Ruotsalainen

International teams of secondary students in need of special support have studied business ideas based on their own strengths and interests. The students' self-initiated business ideas shared interest in the wellbeing of people, animals and environment.

The SENSationalSTEM project encourages secondary school students who need special support to study to believe in their own skills and find their place in the future labor market in Finland, Estonia and Latvia.

Special support can be provided in vocational training if the student needs long-term and regular learning and study support due to a learning disability, disability, illness or other reason. Young people may have learning difficulties, for example in reading, writing or perceiving, but also different psychosocial factors and the challenges of activity and attention can be reflected in learning in many different ways.

The project will develop an entrepreneurship study program on the basis of the Company program (Vocational and Upper Secondary Schools) in cooperation with the JA Finland. The aim is to support young people in identifying their own skills, entrepreneurial skills and attitudes and employment opportunities.

Since the spring of 2021, about 80 young people under the age of 18 from Finland, Estonia and Latvia have developed business ideas in international Student Teams, reflecting on their own strengths and challenges.

Corporate ideas emphasize caring, circular economy and STEM

International Student Teams have innovated business ideas in the Teams environment based on their own strengths and interests. It was interesting to note that these self-generated business ideas of the students shared interest in the wellbeing of people, animals and the environment.

Among other things, the company ideas aimed to reduce the loneliness of

people of different ages and to support people with mental health or learning difficulties. The students thought that loneliness could be reduced, for example, through virtual reality and by offering different places and opportunities to meet people. The business ideas focused not only on people but also on the welfare of rescue animals.

“ Together we can do everything. ”

The circular economy and responsibility for the wellbeing of the environment were reflected in the students' ideas. Recycling and the use of responsible materials and manufacturing methods were highlighted in clothing-related business ideas. For example, one of the Student Teams wants to make ecological sportswear that pays special attention to water consumption. Excessive water consumption and the reduction of environmental impact are a major challenge for the textile industry.

“ Less water wastage, more rationalization. ”

The project aim was to solve the challenges of activating students through STEM (science, technology, engineering and mathematics) based entrepreneurship. The project mentors also had experience of STEM entrepreneurship and provided students with valuable experiential knowledge. contribute to the project aims. STEM was clearly visible in the business ideas:

- virtual reality to reduce loneliness (vr game, Virtual Help)
- learning website for mathematics (Kenga)
- helping people with mental problems and who need support (Owl's Nest)
- second-hand clothing (Keys)
- sharing and delivering home-cooked food by robots (Be Food)
- elderly communication application (El Com)
- sustainable clothing (Safe Fash/Eco-liikunta)
- rehome pets and video games (Rehome)
- healthy food application/website for helping people stay well and healthy (Healthier)
- pet salon with photo studio (Paws & Beauty)
- customized arts or products in different forms (Octoarts, Karm disain and Plain Spoken).

At the FINAL Meet all the active Student Teams were rewarded. The learning website for mathematics Kenga was granted the grand prize as they progressed in learning and acquiring new skills and knowledge in area of STEM. Below are some screenshots of the victorious business idea presentation.

Let's introduce ourselves first!



Sara
a good supporter

Ninive
loves to draw and design

Taika
loves to draw and design

Jānis
a friendly mathematician

Stefa
draws and creates

Gunta
supports, actively communicates, compiles and leads

Kira

Elizaveta

Key points of our idea



Our Learning website helps!

Our study materials

- require less attention and effort from the student
- include easier-to-understand information than regular textbooks
- are appealing, engaging and enjoyable

In a result children, parents and teachers are happy - children understand everything in the math curriculum. Hopefully - mathematics becomes their favourite learning subject!

Our solution



Learning website

where students from 3rd to 5th grade can learn math in a simple and pleasant way!

+ we offer practical learning ideas (games), and tips, explanations on how to use our materials for parents and teachers

Customer gets:

- knowledge
- help with education (mathematics)
- customized study materials, which include easier-to-understand information
- recycled plastic geometric spatial shapes to help learn geometry

Figure 1. Excerpts from Kenga's presentation.

THE PEDAGOGICAL THINKING BEHIND THE SENSationalSTEM PROCESS AND CURRICULUM

Tarja Römer-Paakkanen & Virve Vainio

The general perception of learning is traditionally this: teacher prepares the material and teaches the things and information to the students. Many subjects are taught in the classroom by this way. This kind of teaching is subject- and teacher-based and the role of the student is to listen to instructions and do assignments. The resulting contradiction with learning objectives has been widely highlighted. According to IBE-UNESCO (2018):

“It is acknowledged that producing ‘competent’ and confident young people, along diverse life, citizenship and work domains, is the most important aim of the curriculum, against a traditional conception of students memorizing and repeating information, with the purpose of passing examinations. As competent individuals, students are expected to graduate with a basic set of knowledge, skills, attitudes, beliefs and values that will enable them to be successful in their lives. Knowledge cannot be assumed as fitting into one discipline in a strict manner, but as applicable to multiple situations, where the connection of different pieces of knowledge can lead to imagining multiple ways of doing things and solving problems.”

In the traditional form of learning, the student’s *enthusiasm*, *curiosity*, or *risk-taking* are rarely unleashed. These concepts are the focal points of our SENSationalSTEM-process. Therefore, we must abandon the traditional teacher-centered way of teaching and focus our attention on the students and the learning process itself.

Embodied learning

By integrating the physical activity and mind-building makes us to think learning from a new perspective. Instead of dichotomies, such as theory-practice; thinking-doing; brain-body, learning is approached from a holistic perspective, where these dichotomies merge. (Nathan 2022) Learning is very

much entangled in behavior and changes in it.

In SENSationalSTEM project, students' activities and tasks related to their experience are the starting point for all learning. The learning of substance should focus on analyzing and reflecting on the student's actions: When student explains, what was planned and done and what changes were needed, he/she learns to use the appropriate terms and practices through the reflection and guidance. As Glenberg (2010) states:

“Embodied learning is a call to analyze those processes as arising from the recurrent, dynamic interactions of behavior, brain, bodily processes, and changes in the physical and social world.”

According to Wall and Leckie (2017), students' own experience is an important starting point in learning, which should focus on what students are familiar with - things, people and environment. Further curriculum integration is seen here as a student-centered approach, grounded in democracy and enacted in ways that support students academically and affectively. Wang and Zheng (2017) divide embodied curriculum for three basic dimensions, which are:

1. returning to the life-world and promoting the integration of the curriculum narrative framework and the student's learning trajectory;
2. introducing the embodied experience and realizing the continuous interactions among the learner's body, mind, and environment; and
3. integrating the functions of technologies to provide a powerful mediating tool for the construction of embodied curriculum.

Those dimensions are very suitable to use in construction of SENSationalSTEM-curriculum, too.

Because learning in the SENSationalSTEM project took place in Student Teams, it would have been very important for students to get to know each other in a face-to-face camp. Due to the situation of Covid19, we were not able to carry out the initial start camp but had to carry out also the first training camp online – as well as almost the entire training, too. Due to the lack of a face-to-face meeting, the students were asked to do an introductory video of their own country, hobbies and environment to help team members get to know each other better. Unfortunately, sharing videos online was not possible for security reasons. Hence, the acquaintance of the students remained a more superficial online discussion, which may have made it difficult for some teams to find a common idea and goal for the team. Some of the students changed teams and thus found themselves more inspiring in the idea, but on the other hand, some students might have left the project because of this.

In the curriculum analysis of IBE-UNESCO (2018) the diversity of learning has taken into account and is defined quite clearly:

“In order to form competent individuals, not all students need to learn the same content. Students can become competent by learning the foundational skills and knowledge, and then pursuing their interests within the curriculum, so that learning is more enjoyable and relevant to their lives...” (IBE-UNESCO 2018)

In SENSationalSTEM project’s pilot program it was essential that, the students and Student Teams were able to move forward at their own pace as their ideas evolved.

Model for Passion and risk-taking pedagogy

In SENSationalSTEM project learning-by-doing pedagogy (i.e. collaboration and mutual experience acquired through action) and entrepreneurial learning pedagogy (i.e. curiosity, risk-taking, passion and ownership of the mutual project) are implemented. (Figure 1) Also, Opportunity-Centred Entrepreneurship (Rae 2007; Suonpää 2013) was used for creating the curriculum for international SEN Student Teams.

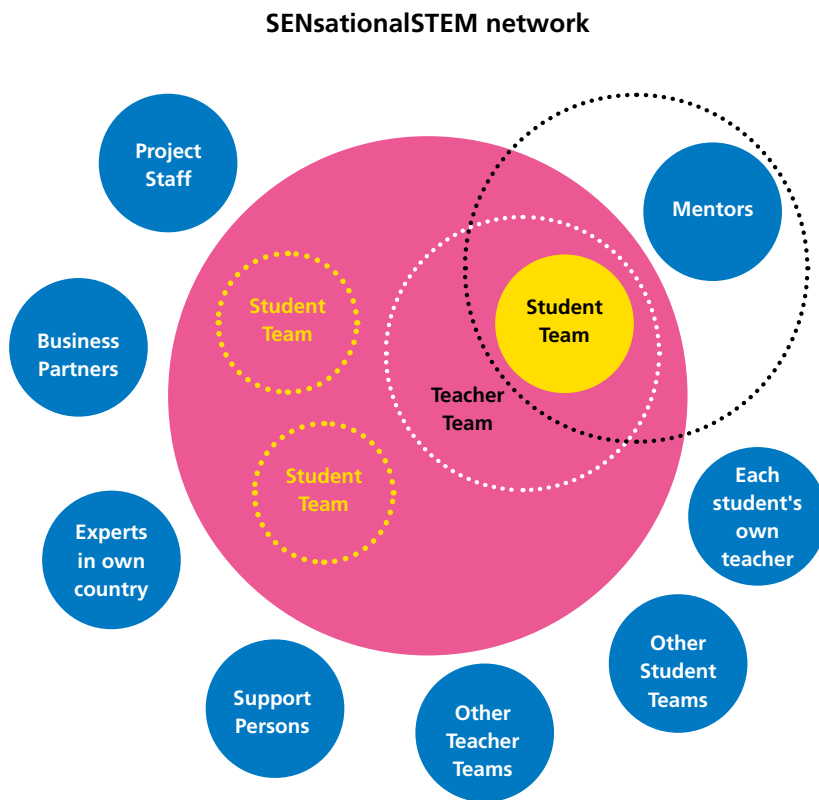
Figure 1 presents how passion, readiness to take risk, and curiosity together activate and maintain the entrepreneurial learning process. In entrepreneurial learning, both the students and the teachers are learners who are curious to find new solutions, conclusions and new ways of doing things. The teaching-learning system affects students’ learning performance and outcomes. According to Passion and risk-taking – pedagogy, learning takes place in collaboration with students and teachers and with the real life actors in enterprises and other organizations. In this kind of learning process teachers are the facilitators of learning. For the students the most important task in the learning process is to find and grasp the opportunities around them. Learning experiences are acquired through action in real life environments, which requires commitment and indication of interest from all parties of the process. It also requires continuous assessment of learning, as well as reflection and sharing. Both students and teachers should be active and willing to develop, test, learn more, and take risks also in learning.

PASSION AND RISK-TAKING PEDAGOGY



Figure 1. Passion and risk-taking pedagogy (modified from Römer-Paakkanen and Suonpää 2014)

The SENSationalSTEM process emphasized collaborative learning and teamwork. As can be seen in the Figure 2 the core actor in the SENSational-STEM process is a Student Team. Each Student Team has a named Teacher Team as a facilitator. Entrepreneur Mentors guide Student Teams by providing experiential experience of entrepreneurship. The other actors in addition to the mentors are all valuable partners to Student Teams and Teacher Teams in the process.



International student teams are core actors in learning process.

Teacher Teams facilitate Student Teams.

Business Mentors as expert by experience mentor Students Teams.

Other Student Teams are peer support and test groups.

Figure 2. The model for collaborative learning and teamwork in SENSationalSTEM project

Facilitation of learning

According to Vygotsky (1978), every story starts from someone's experience and activities in real life. When ideas are grounded in one's own experience and activities, the meaning of the ideas is well within reach and learning follows by the *zone of proximal development* (Vygotsky 1978), step by step. This means that each student can find his/her potential with the help of his/her teacher. Students also benefit from the social interaction with the peers and environment. The goal must be clear to both, the student and the teacher. The goal must be common that it is possible to return to it in every guidance situation and reflection session.

The guidance given by the teacher is facilitation, where teacher asks questions only when confirming the student has tried his or her own solutions. The support and guidance is provided with the idea of scaffolding and discovery learning (Bruner 1960). Learner must be able to recognize a solution to a particular problem before he/she is able to take a step leading to it without assistance. Mcleod quoting Bruner says that students should discern the structure of subject content - discovering the links and relationships between different facts, concepts and theories - rather than the teacher is simply telling them (Mcleod 2021). The role of the teacher is to inspire, encourage and ensure. The teacher also maintains direction by making it worthwhile for the learner to risk a next step. Teacher guidance has to be faded into the background when scaffolding is not needed.

Teachers and students are often conceptualized as separate systems between teaching and learning. Scaffolding is looking this traditional way of thinking teaching and learning from a different angle. Students are not only objects of a pedagogical process but also subjects of it. Teachers can also make discoveries about their students and might be guided by their students. (Bakker 2018.) When teachers and students work in a common system, the learning becomes finding and making the right questions together.

During the learning process, the teacher may think repeatedly: When it is a good time to intervene? What needs to be repeated or practiced more? This requires an accurate assessment of the situation and a subtle approach of the teacher. When does the student cope on his/her own, when he/she needs outside help.

The scaffolding process originally created by Bruner has got many developers. Still the six core functions work well today. (Wood, Bruner & Ross, 1976). This shortened description is borrowed from Mcleod (2021)

- **Recruitment:** ensuring that the student is interested in the task, and understands what is required of them.
- **Reducing degrees of freedom:** helping the student make sense of the material by eliminating irrelevant directions and thus reducing the “trial and error” aspect of learning.
- **Direction Maintenance:** ensuring that the learner is on-task and interest is maintained and achieved.
- **Marking critical features:** highlighting relevant concepts or processes.
- **Frustration Control:** stopping students from “giving up” on the task.
- **Demonstration:** providing models for imitation or possible (partial solution).

These six functions can be combined with SENSationalSTEM curriculum activities and guiding by teachers.

Recruitment: Who we are. A video made by students of their hobbies or interests in every day life. It is important for teachers to encourage students to make choices outside of school work. The informal learning is often forgotten in degree-oriented education and yet it is one of the most effective and motivating forms of learning. When students have found the real life connection of their activity, the common goal can be defined. Students and teachers should make this together.

Reducing degrees of freedom: This involves simplifying and making the selected business function task suitable for the students’ activity. The scaffolding means here that the teacher customizes the difficulty level of the task according to the progress of the students. For example, a business plan can be divided into sections and each of these sections can be taken into account in detail at the point where students themselves perceive a dilemma in their operations. As a teacher, this requires careful observation and the ability to ask clarifying questions. Asking the right questions in the right place is essential in scaffolding and already part of the next step.

Direction maintenance: The teacher has to be awake to take care of the direction. Sometimes you have to balance the objective with attractive siding activities. It should be performed subtly so that the students do not lose the motivation. For students the activity can become the goal itself and the original one is forgotten. For this reason, it is important for the teacher to return frequently and recall the commonly agreed goal. All the authentic assignments are good because they offer a variety of activities for different students.

Success can also serve as a distract from the ultimate goal. After successes, the teacher encourages the Student Team to take a new risk.

Marking critical features: The SENSationalSTEM -process aims to strengthen the student's self-confidence through success. In addition, efforts are being made to increase students' resilience. The teacher together with team peers of students and entrepreneur mentors form a safety net to every student. By help of this net the solution is found, how the activity will be continued even if the first attempt did not produce the desired result. In this network, the teacher acts as a facilitator, he/she can suggest to the Student Team who in the network could be good to consult.

In the student teamwork, the teachers help the Student Teams to focus on certain essential features of the task. By asking questions like "How did you end up choosing this option out of these two?" or "What else did you try?" the teacher instructs the Student Team to compare things with each other and by trying to answer students learn to interpret discrepancies in their own actions. Reflection sessions provide a very good learning platform to reinforce justifications for the choices, so that the action and the correct theoretical concepts are combined.

Frustration control: Frustration is a very critical aspect of a learning process. Frustration plays an essential role in maintaining motivation. In the traditional subject- and teacher-centered teaching it has been a major problem for teachers how to maintain the motivation of the students. Trying to solve the motivation problem by teachers, the process often leads to a fruitless struggle against frustration. Wood, Bruner and Ross (1976) warns about a risk creating too much dependency on the tutor, in our case on the teacher. In SENSationalSTEM process, the motivation is seen as an internal to the student. The activities are planned by them and the frustration arises mainly from failed activity. If we want to increase students own control of frustration, we also have to practice this kind of failed operations. The teacher plays an important role in discussing these case studies with students carefully. The resilience of students is strengthened by every discussed Student Team activity. The good resilience is a growth based for curiosity and risk-taking.

Demonstration: Student Team demonstrations can be different kind of solutions to a different kind of activities. As referenced earlier in this chapter (IBE-UNESCO 2018) different pieces of knowledge applied to multiple situations may lead to new ways of doing things and solving problems. It can also involve an idealization of the act to be performed and it may involve com-

pletion or even explication of a solution already partially executed by the Student Team itself (Wood, Bruner and Ross (1976). Especially in online sessions, the videos and photos illustrate the demonstration of Student Team activities. Students are in the main role in demonstration of their outcomes. It is very important that teacher is interested in the results of students and asks clarifying question, like:” Whether you have something to add to this point? or ” Do you have an example of this?”. The material produced by the students is serving as a guidance tool as well and facilitates interaction in study guidance discussions.

SENsationalSTEM learning process and it's facilitation

In the same way as the whole SENsationalSTEM project implementation the curriculum creation has formed a collaborative process. Figure 3 summarises the learning process described by three different kinds of activities: goal setting and reflection, authentic tasks and documentation.

In SENsationalSTEM curriculum there is no distinction between subjects and stages to be taught as separate subjects. The learning does not follow the business planning process and the main outcome is not a business plan, but tasks emerge as a whole when a practical need arises. The students themselves perceive a problem in the authentic environment that needs to be solved, by which they will be able to move forward in their project (= authentic task).

For example, if a student team wants to develop a new idea, they must first get to know each other and think about what they know and want to do together. Then they must ask themselves like Saraswathy and Dew (2005) advises: Who am I, what do I know, and who do I know? And, if students want to learn what skills are needed to complete a project, they can implement a small-scale project, which is familiar for them, such as a home party. (Figure 3 Authentic tasks)

Videos and photos (Figure 3 Documentation) are very useful tools in multisensory learning (auditive and visual). In the process, the material produced by the students is an important guidance tool, as well. Versatile use of auditory and visual documentation facilitates communication.

Goal setting (Figure 3 Goal setting) is a dynamic part of the learning process. The student team, teacher team, and the mentors must have a common goal that is reviewed from time to time. If the goal is not the same, the self-direction of the student team can be disrupted. In Reflection sessions, activities and findings are reviewed and assessed in relation to the goals.

Interplay between procedural and conceptual learning is essential through the whole learning process. In reflection session, also the critical points in the operation of student teams are taken into account. Discrepancies should be interpreted: what has been produced and what was intended to be produced. This kind of reflection is an excellent learning situation.

Also, self-assessment and collaborative evaluation of learning process and the outcomes belongs to the reflection session. Based on the activities, documentation and reflection sessions the target of each student team can be specified, which can also generate new ideas.

SENSATIONALSTEM IN PROCESS – Growing into entrepreneurship

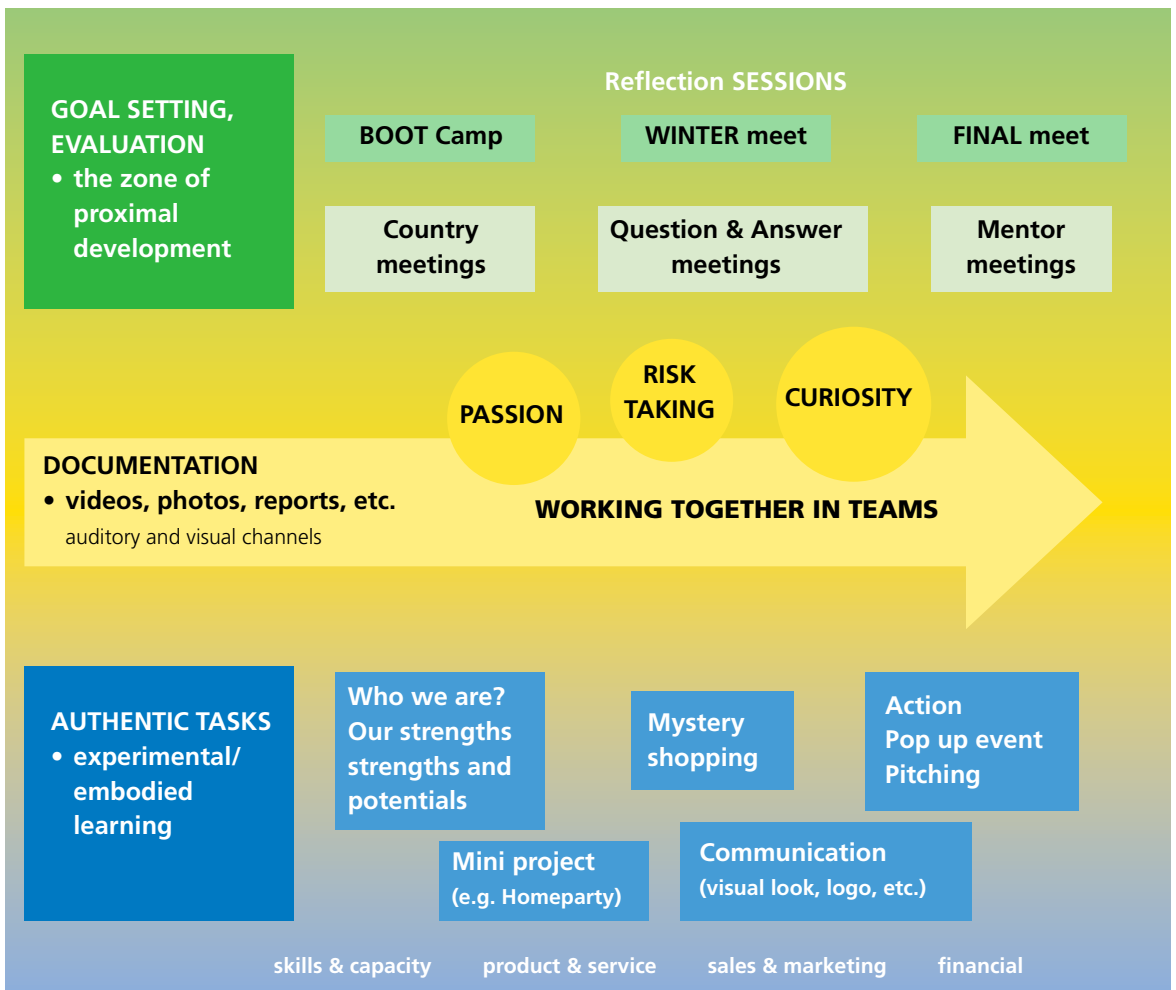


Figure 3. The SENSationalSTEM learning process

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ACTION RESEARCH AND LEARNING OUTCOMES OF THE SENSationalSTEM PROJECT

Tarja Römer-Paakkanen & Pirjo Saarinen

It is important to note that either the SENSationalSTEM project or the JA Company program do not just aim to teach business skills and create new businesses. They both aim to encourage the students to find their strengths, to learn teamwork, to learn to take responsibility for their own actions, and to learn to find their own path in work life and in society.

In SENSationalSTEM project learning-by-doing pedagogy (i.e. collaboration and mutual experience acquired through action) and entrepreneurial learning pedagogy (i.e. curiosity, risk-taking and passion and ownership of the mutual project) were used. We also used some entrepreneurial pedagogy that trains the students to get used to new and uncertain situations or processes, to communicate with new people coming from different countries and cultures, and also learn to tolerate projects that are not going straight way to the desirable destination.

Research methodology: Constructive research approach (CRA) and Action research (AR)

The SENSationalSTEM project team had both practical and research experience in entrepreneurship and entrepreneurship education and also, in teaching and coaching SEN students from different projects and different points of views. To generate ideas for developing and constructing the curriculum the constructive research approach (CRA) and the action research (AR) methodology were implemented.

We followed the CRA process that Kasanen, Lukka, and Siitonen (1993) proposed as a specific opportunity for management accounting researchers to engage in problem solutions that are relevant to managers (Labro & Tuomela, 2003). CRA is a problem-solving process through which new constructions are created. The new construction of a model, plan, or other procedure can

provide a more functional solution to managers in an organization (Kasanen et al., 1993, p. 224). CRA involves seven steps (Kasanen et al., 1993; Lukka, 2000), which we also implemented when researching the curriculum development process in SENSationalSTEM project (Table 1).

Table 1. The CRA process that was implemented in SENSationalSTEM project (modified from Kasanen et al., 1993 and Lukka, 2000)

Step	Stages in CRA	Stages in this research
1	Find a practically relevant research problem that also has potential for theoretical contribution.	There is a need for encouraging SEN students to plan and reflect on their professional development and growth in entrepreneurship.
2	Examine the potential for long-term research co-operation with the target organization(s). Both primary parties should be committed to putting significant effort into the project.	All SENSationalSTEM project organizations and the project team members are committed to this development project.
3	Obtain deep understanding of the topic area both practically and theoretically.	The project team members have a deep pre-understanding of the topic, both from their practical work and from prior research. To gain an understanding of the students' point of view, surveys for the students were arranged.
4	Innovate a solution idea and develop a problem-solving construction that also has potential for theoretical contribution. Conceptualizing the problem area so that useful communication between the parties can take place.	The existing JA Company program will be constructed for the use of SEN students in vocational schools (SENSationalSTEM curriculum) by discussing with the project team, the teachers, the entrepreneurs and the students. <ul style="list-style-type: none"> • includes teacher training • includes mentor training
5	Implement the solution and test how it works. This is the first level practical test (market test) of the designed construction.	The pilot entrepreneurship course for the SEN students from the participating countries was arranged.
6	Ponder the scope of applicability of the solution.	Surveys, polls or discussions with the piloting teachers, mentors, and students were arranged.
7	Identify and analyze the theoretical contribution.	After piloting and testing the program, also the theoretical contribution was evaluated.

AR aims to change common practices and solve different kinds of problems by involving and activating the actors, requiring participation in the research. The researchers participate in the process too, and they are part of the everyday action of the organization or team. The researchers bring their own experiences from previous research projects, practices found in other research, and best practice. (Kuula 1999) According to Mertler (2012, 14), numerous authors and researchers have proposed models for the AR process. Because this process is somewhat dynamic, models can look different from one another but will also possess numerous common elements. AR models begin with a central problem or topic. They involve some observation or monitoring of current practice, followed by the collection and synthesis of information and data. Many AR processes follow similar steps that include planning, acting, evaluating, and reflecting. For example, Bachman (2001) presents the spiral process, where the participants gather information, plan actions, observe and evaluate those actions, and then reflect and plan for a new cycle of the spiral based on the insights gained in the previous cycle.

Participatory action research is a learning process that changes people’s doing, interactions, intentions, and values, as well as their way of understanding and interpreting their own world (Kemmis & McTaggart 2007, 276-279). Authors of action research feel that they are research experts, facilitators, or ‘echo bases’ of members of an organization, which often requires them to be actively engaged and collaborated with the target group (Palmu 1998).

The action research continued with the progress of the pilot training curriculum development process as follows: action - observation - reflection - change of plans - action - observation- reflection - change of plans - action, etc.

Table 2. Action research activities during the SENSationalSTEM project

Action	Theme	Action research activity	Target group
Recruiting schools and teachers	Objectives of the project	Background research and discussions	Teachers and management of schools
TEACHER Training Online	Objectives of the project Teachers’ Bootcamp	Appreciative Inquiry Teacher Training Feedback (Mentimeter, n = 25) Teacher Survey (Webropol, n = 15)	Teachers

Action	Theme	Action research activity	Target group
Recruiting students by the teachers			Students
Forming international Student and Teacher Teams		Background research and discussions	Students and teachers
Teacher Online meetings with project staff		Reflections	Teachers
Haaga-Helia Business Innovation Conference HHBIC 2020, 17–18.11.2020, Online.	Implementing JA Junior Achievement Company Program for Vocational Colleges in SENSationalSTEM project. HHBIC 2020 conference proceedings, Römer-Paakkanen	Conference presentation and article External experts' discussion	Entrepreneurship education professionals
START Camp Online	Teaming up From ideas to our idea Evaluating our idea and team Next steps: Business model canvas and Business Plan	Student Survey (Webropol, n=54) Observations	Students
Recruiting mentors		Reflections	Mentors
Teacher Online meetings (2) with project staff		Discussion and feedback	Teachers
MENTOR Training	EPIKoda's training for mentors	Reflections	Mentors
Teacher Online meeting with project staff		Discussion and feedback	Teachers
SPRING Meet Online	Student Team presentations	Student survey (Webropol, n=10) Teacher survey (Webropol, n=8)	Students and teachers
Teacher Online meeting with project staff	Q&A	Discussion and feedback	Teachers
Mentor Online meeting with project staff		Discussion and feedback	Mentors

Action	Theme	Action research activity	Target group
BOOT Camp Online	Getting to know your mentors Customer identification	Observations	Students
National Live events	Customer identification	Feedback and feelings	Students, teachers and mentors
YKTS 2021, Entrepreneurship Education Conference 29. - 30.9.2021	Action research: How does an international entrepreneurship education project work during COVID-19 pandemic? Römer-Paakkanen, Vainio & Saaranen	Conference presentation and article External experts' discussion	Entrepreneurship education professionals
ONLINE Event	Developing your business idea with the mentors and teachers	Observations	Student Teams
LIVE Meet in Helsinki	Preparing for action! Business Plan, Online competitions, Establish a JA Company	Observations	Student Teams
WINTER Meet	Sales pitch and company presentation	Observations	Student Teams
LIVE Meets in Tallinn & Riga	Further developing the business idea	Observations	Student Teams
MENTOR Meet 1	Winning team categories and criteria	Discussion	Mentors
MENTOR Meet 2	Winning team categories and criteria	Discussion: How to encourage students to entrepreneurial way of working/ entrepreneurship?	Mentors
		Student survey (Webropol, n=12) Teacher survey (Webropol, n =3) Mentor survey (Webropol, n =9)	Students Teachers Mentors

Action	Theme	Action research activity	Target group
3UAS Virtual conference: Future-proof Business - System Leadership Competences, 28.4.2022	Networking and learning of SEN youth in an international entrepreneurship education project, Römer-Paakkanen, Saaranen, Vainio	Conference presentation and blog article External experts' discussion	Entrepreneurship education professionals
FINAL Meet Online	Presentations, feedback and Awards ceremony	Overall feedback (Mentimeter, n=22)	Students, teachers and mentors
3E Conference – ECSB Entrepreneurship Education Conference on 11-13 May 2022 in Dijon, France	How to implement JA Junior Achievement Company Program for SEN students? Römer-Paakkanen, Saaranen, Vainio	Conference presentation and workshop External experts' discussion	Entrepreneurship education professionals

Results and impact of the project

According to Allardt (1976), 'having', 'loving', and 'being' are the key components of human wellbeing. For wellbeing, one needs to have for example appropriate housing, sufficient income, and satisfactory health (standard of living 'having'). One also needs loving relationships and a feeling of belonging to a community (sense of community - 'loving'). Furthermore, one should be able to influence one's life and to make a difference in relationships or the surrounding community (self-realization - 'being'). In practice, these dimensions are intertwined. For example, appropriate housing is closely related to belonging to a community. (Allardt, 1976, pp. 32-33.) Seligman (2011) proposes that wellbeing consists of five aspects: positive emotions, engagement, relationships, meaning, and achievement (PERMA). When basic needs are satisfied, people can feel happiness, and if one can influence their own wellbeing, they can also gain flourishing. (Seligman, 2011; Seligman, 2018; Coffery et al., 2016)

The wellbeing of an individual can also be examined by so-called balanced participation theory. An individual can feel participation when they have enough tangible resources (having), when they can actively influence the decision-making processes concerning their own life (acting), and they have meaningful and important social relations with other people (belonging). The lack

or decrease of participation can increase an individual's risk for social exclusion. (Raivio and Karjalainen, 2013, pp. 15-17)

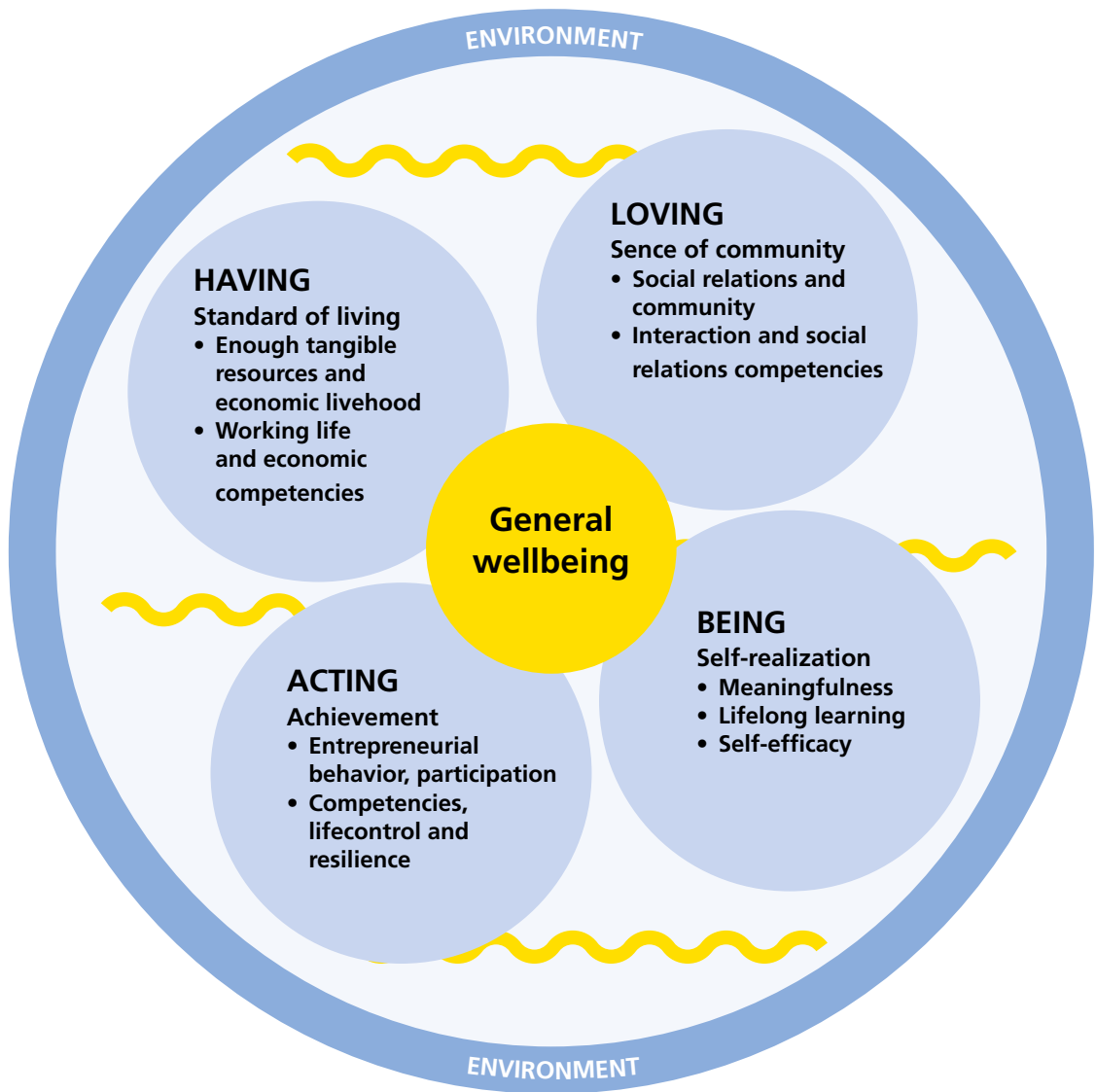
According to our research, SENSationalSTEM project equipped SEN youth with the competencies with which they can cope in the future society and working life. The learning outcomes of the project are working life and economic competencies, interaction and social relations competencies, self-efficacy, and entrepreneurial competencies that include for example life-control and resilience. Broadly speaking, we can conclude that the pilot program had a positive impact on all aspects of the overall well-being of SEN youth. (Figure 1)

The changes in the labor market also change the way of working, and already today, entrepreneurship offers an alternative way of working besides the traditional way of working as a wage earner. Everyone requires entrepreneurial skills and competencies, which enables them to grasp opportunities and to complement their livelihoods if they lack 'enough' work. Entrepreneurship also influences other sectors of wellbeing by offering an opportunity to actively influence one's work or other fields of life, by offering a sensible and meaningful way for self-efficacy, and by offering a social environment and networks (Kauko-Valli, 2008).

According to an impact report (JA Worldwide 2019), cultivating an entrepreneurial mindset through JA's entrepreneurship programs, students not only create new ideas and new businesses, but also learn to overcome adversity and rise to the challenges that they face. The students also show that they are interested not only in improving their financial situations but also in improving the world. Experiential learning also gives young people the opportunity to develop skills that are critical to employment success, including STEM and digital-literacy skills. In addition, JA alumni have attained degrees in higher numbers than non-JA students, using traditional educational paths to further build skills, unlock the imagination, and open a world of opportunities.

Extracts from the Finnish JA program's primary and secondary feedback survey averages from 2013 to 2018 (N:2962) the students stated among other things that:

- I learned how to take responsibility 82 %
- I understand the importance of an entrepreneurial attitude 77 %
- My own initiative increased 74 %
- My teamwork skills improved 68 %
- I understood the value of my work 58 %
- The program strengthened my employability skills 54 %



NON-FORMAL
learning environment
i.e. Hobbies

FORMAL
learning environment
i.e. School

INFORMAL
learning environment
i.e. Family and Working life

Figure 1. The learning outcomes of the SENSationalSTEM project (constructed from Suonpää and Römer-Paakkanen 2018)

In Johansen's study (2018, 7) the teachers, students and parents in all the countries mentioned a wide range of learning outcomes of JA Company Program, such as knowledge (how to start and run a company); generic skills (creativity, conflict solving and presentations), and attitudes (school motivation, responsibility, self-efficacy and self-confidence). Both students and teachers also mentioned that a by-product of the learning process was that more students came to understand the usefulness of the other subjects that they were taught.

In the FINAL Meet of SENSationalSTEM pilot program the students were asked to give overall feedback by a Mentimeter questionnaire (n=22). According to the results of that questionnaire, 75 % of the respondents made new friends during the pilot program. The students also had learned to work and learn with different people in an international team, to solve problems themselves and together with others and to look at things from different perspectives. The students also agreed that they had learned to operate in uncertain situations and without precise instructions. They had also learned to identify their own interests, strengths and areas of development. They felt also that after the program, they recognize opportunities and can produce and evaluate new ideas. They had also learned the principles and objectives of a business plan.

When reflecting the results from SENSationalSTEM project's student survey with some previous research made on JA Worldwide's and from JA Finland's Company programs we can argue that the SENSationalSTEM project had good impact on the SENSationalSTEM piloting students' competencies and skills that are needed on the future work markets.

Although the target group of SENSationalSTEM project was SEN students, based on the experience of the project, it can be said that SEN students do not need their own separate entrepreneurship program. SENSationalSTEM curriculum is suitable for all entrepreneurship education. Similarly, no special STEM program is required, as STEM is part of the operations of any company in every case.

The most important learning outcome is that the student had learned team work, as one SENSationalSTEM student stated: *"Team work makes dreams work!"*

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