

Selected Good Practices

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from the Erasmus+ KA2 project









Good practices from the Netherlands:

1. Gender-awareness training

VHTO has developed a gender-awareness training for teachers and study councillors. The training concerns several themes within the subject of girls/women and STEM, such as theoretical background and research about the causes for women's underrepresentation in STEM, advice and hands-on exercises on how to increase the inflow of girls in STEM-studies, and exercises and advice about teaching in a gender-aware manner and by doing so, retaining the girls who choose STEM-studies (since they often drop out at high rates). This training has proved to be an eye-opener for participants in the past, and sharing it with international partners (the materials as well as 'live' demonstration of the training) has the potential for great impact.

2. Career Events

VHTO proposes the inclusion of Career Events at VET-schools involved in the project. During these one-day Career Events, female VET-students acquire tips and general information about possibilities for their future careers, and meet several female STEM-professionals who can be role models to them. This is meant to be an inspiring event for the female students, to show them enthusiastic STEM-professionals and possible professions, to inspire them to finish their studies and to think about their future career.

3. Mentoring course

At the end of such a Career Event, girls can register for a Mentoring Programme: after gaining inspiration and ideas concerning their future careers, they may want guidance and advice on how to steer for the career they want. Within the proposed follow-up Mentoring Programme, girls can be paired up with an individual female STEM-professional to mentor her towards her first job, with whom they can regularly meet / speak and acquire advice about possible first jobs and salaries, job-searching, possible challenges in the working-environment, etc. Another mentoring possibility is for the female VET-students to join a mentoring-group. These groups are intended for girls in the final 6 months of their VET-studies - during these last 6 months and their first year as a professional, the mentoring trajectory will be carried out. Here, too, female STEM-professionals will take part in the mentoring trajectory, to provide guidance to the group in career choices, the search for a first job, and to provide support in challenges faced by students' in their first job to prevent drop-out from the STEM-field. VHTO currently facilitates, monitors and evaluates such mentoring trajectories, and proposes to translate and share this methodology with project partners and their relevant stakeholders. VHTO also proposes to further develop this methodology within an international working group in the project. This further development concerns, in particular, the implementation of the methodology in study and career counselling.

4. 'Speed dates'/ role models

VHTO has been carrying out 'speed dates' in secondary education for many years now, during which school girls are introduced to female STEM-professionals who show how varied, fun and socially relevant STEM jobs are. Small groups of girls get to speak to several of these professionals





and, through this, are provided with role models as well as a better and broader image of working in STEM. This methodology has proved to be effective and should be shared internationally. Within the project, VHTO can share the methodology and information on how to organise such speed dates and, if possible, provide international partners 'live' examples of how to do this. VET-colleges should be the parties providing the role models, whether these are their female STEM-students or female STEM 'alumni' who have already finished their studies at these colleges and are now working in STEM.

Good practices from Portugal:

1. Local Network for Education and Training and the City Hall

It's a network formed, in 2005 by all the organizations that work with education and training in V.N. Famalicão municipality, namely those that are concerned with the demands and needs of the local enterprises and with lifelong learning. The partners are institutions from formal education (all the schools) and non-formal education (non-governmental organizations, technological centres, universities, the local Business Association, the local Job Centre, and the City Hall). The network's main goals are establishing local agreements between schools and other organizations in what concerns the offer of vocational and training courses; answering local businesses' needs regarding workers' qualifications; sharing experience, knowledge and best practices and fighting early school leaving. This network is also focused in attracting students to VET schools.

2. Project Engine4F: Engineer for the Future

This project addresses a common European need related to the lack of qualified staff within technical and engineering professional areas, especially women. The project aims at intervening among 8th and 9th grade students – and female students in particular. The project supports an "Awareness > Action Plan" methodology in the first two years and the study of the impact in the third year of its application, followed by the development of a set of activities, separated by area, related to STEM (Science Technology Engineering and Mathematics) subjects and to be implemented in Sciences, Maths, Chemistry and Physics classes, as a way to complement them and to enhance student's motivation and predisposition for learning. The project also comprises the creation of a Virtual Learning Environment (VLE). The partnership of this project, composed of 10 partners, from 6 different countries involves schools, VET schools, universities, SMEs and Order/association of Engineers.

3. Continental Mabor

Continental HR strategy is based on corporate strategy and values to enable the company to take on the growing internal and external challenges involved in HR work. They use a number of measures to strengthen their corporate culture, characterized by four values: Trust, Passion To Win, Freedom To Act, and For One Another. They understand diversity as meaning variety among people with regard to aspects such as their ethnic and social origins and their religion, gender, and age. It is an important source of staff development, creativity, and corporate success, and they therefore give it high priority. Diversity is a key factor in HR management.





Good practices from Estonia:

1. Tech Sisters

Tech Sisters is a non-profit organization with a goal to get more women excited about technology and IT. The World needs a more diverse group of people taking part in developing new technological solutions and Tech Girls encourages women to step out of their comfort zone, experiment and learn new things. Firstly, Tech Sisters organizes **networking events** for current and aspiring female entrepreneurs in IT and tech sectors with leading companies. Secondly, they arrange entry level **tech workshops** for women who are interested in experimenting with IT (programming, prototyping and design skills) and mentoring sessions to help women prepare for hackathons. Thirdly Tech Sisters targets teenaged girls (12-19) with an initiative called **Digigirls**. Digigirls is organised as day-long workshops with the aim to inspire, encourage and educate girls about IT. The events take place 4 times a year during the school period in tech companies in different cities all over Estonia. In Digigirls events girls learn from successful women in ICT business about building apps and user-friendly websites as well as what project management, analytics and testing mean in software development. Most of all, however, the students learn about what IT and tech have to offer as a profession and expand the list of options for their future careers.

To sum up, Tech Sisters has three target audiences – female ICT entrepreneurs, women interested in becoming involved in ICT and teenaged girls – and respectively holds three types of events – networking events, preps for hackathons and workshops.

2. "Superheroes"

Superheroes is a leadership programme to empower 13-16 years old girls with strong leadership and entrepreneurship skills through inspirational role models of diverse walks of life, consistent coaching in different 21st century skills and mentorship to practice the skills they have acquired in real project work.

Superheroes encourages to grow a brave new generation of confident and committed women leaders who walk the talk, driven by social responsibility, creativity and collaboration. Superheroes equips girls with skills and a support network to bring big ideas and social actions to life. Teams of five have squads and goals to be prepared for a superhero life. Superheroes roadmap:

Superheroes ran from December 2016 to March 2017. Teams meet 8 times face to face for different leadership and entrepreneurship skills workshops, driven by role-models and coaches and supported by squad mentors and advisors to help squads progress with business ideas and social actions. Superheroes ends with a Gala on 22. March, show-casing success and awarding winners.

More information on thewebsite: <u>www.superheroes.ee</u> and FB: <u>https://www.facebook.com/SuperheroesEstonia/</u>

Good practices from Slovenia:

1. Code Catz

CodeCatz is a coding group in which women are never in the minority. Their main goal is to promote diversity in the tech industry in Slovenia.





CodeCatz started in the summer of 2013 as a follow-up to the first Rails Girls Ljubljana workshops. For almost three years they held regular weekly coding sessions at various startup offices around Ljubljana. Their biggest coding project was developing a web application for adding events to Europe Code Week. In addition to that, each year CodeCatz organize at least one bigger free beginner programming workshop for women, for which they have received over 2,000 applications by women of all ages from all over the country. Last year they developed and launched CodeCatz Tutorial for Beginners, their own open source workshop programme that teaches fundamental HTML/CSS web development skills. Members of CodeCatz regularly speak about the need for greater diversity in the ICT sector, advise companies, and help tech events in Slovenia promote diversity. In 2017, they helped increase the ratio female speakers from 0% to 35% at WebCamp Ljubljana, the biggest event for web developers in Slovenia. They were nominated for person of the year 2014 by Delo, a national newspaper.

2. e-House

e-House is an experimental and educational centre in Nova Gorica. Their aim is to encourage and make children/young people enthusiastic with experiential teaching and learning that they decide more for education and work at STEM areas. Their activities are appropriate already for children in kindergartens, primary school and pupils, with purpose to make children curious about natural sciences and technology.

3. 'Day for girls'

'Day for girls' is a day for girls of 12, 13, 14 years old with diverse speakers. With their stories and experiences they try to encourage girls to choose their profession, study, career path they want themselves without stereotypes on men and women professions.

4. 'Technical day'

'Technical day' is a day for children of 12, 13, 14 from primary schools, who can cooperate in workshops at different school programmes of vocational education (car repairing, computer operator, mechanical engineering, ...) On this day children can meet teachers and pupils from these school programmes and also get practical experience at workshops.

Good practices from the United Kingdom:

1. Girls Do – A Case Study

An overview of activities undertaken by Gateshead College at college, in schools and university events such as marketing, with a focus on role models. This will be set within the context of male to female enrolment figures for STEM related courses and the impact of interventions.

2. Employer perspective: Geoff Ford, Chairman, Ford Aerospace Limited & Ford Component Manufacturing Limited.

Geoff Ford owns Ford Aerospace, which has three sites in the north east and he is also the sponsor of Gateshead College Ford Engineering Academy, which will start 32 learners on a Traineeship (work placement and core skills) in September. Geoff is particularly aware of the



importance of encouraging females into the industry and has a higher than average proportion of his workforce who are female.

3. People Like Me

Research published in 2014 by WISE highlighted that girls self-identify differently to boys. Out of this came the innovative People Like Me resource which supports girls to explore their strengths and through this where their personality traits will support them being happy and successful in the workplace. Girls then have an opportunity to explore inspirational role models with the same personality traits with exciting careers in STEM. This new approach raises awareness of the huge range of opportunities for girls who retain a STEM subject post 16 while showing them that People Like Them can do these roles.

Good practices from Spain:

1. ADA and DIANA programmes. Programming in equality

The aim of ADA programme of training in ITC is to promote the interest of girls in technological studies. Ada Byron's life appears as a common theme in the development of the activities, relating them to different milestones in her life with a gradual process of motivation and discovery. DIANA Programme proposes to realize interventions in schools that break with the stereotypes of gender, taking advantage of the potential of programming to promote creativity, development of logical and abstract thought, teamwork, or resolution of problems.

2. Inspira Project

INSPIRA is a pioneering project in the Basque Country for the promotion of scientific and technological vocation in girls managed by Deusto University. It is based on actions of awareness and orientation given by professional women from the world of research, science and technology. The meetings between mentors and girls try to remove doubts and objections about scientific and technological careers, clarify their motivations and strengthen their self-esteem in case they liked to develop their career in these fields.

3. Ethazi 4.0 values

The VET department of the Basque Government has started the VALUES 4.0 programme, which tries to integrate education in values inside the Vocational training, as a transverse training that impregnates all the theoretical and practical areas of knowledge. The new industry 4.0 needs the best prepared professionals adapted to the requirements of the technological revolution. This revolution needs a deep ethical reflection, from the principle of individual responsibility to the idea of collective responsibility. The value of gender equality is one of the main topics to be integrated in this new challenge.

Good practices from Romania:

1. CoderDojo, MegaDojo and Coolest Projects

Laura Chirila, 13 years old girl and the MindRobot designed by her, European Coolest Projects Award winner <u>http://coderdojo.ro/</u>





In the last 5 years the CoderDojo movement (completely voluntary work and no cost for children) has become incredible strong in Romania and mainly in Timisoara area where are 22 locations, where kids meet every Saturday to learn to code and to produce some amazing apps. Around 30% of the kids are girls.

http://coderdojo.ro/coolestprojectsRO.htm https://vimeo.com/230705907 https://prezi.com/bxkmmknx-3fx/18-03-09-decoding-coderdojo-oew-timisoara/

2. HackTM and girls & women in hackathons

HackTM is the biggest software & hardware hackathon in South Eastern Europe, in 2018 the fifth edition will take place. The previous editions reunited over 500 hackers or geeks, developers or designers, freelancers or employees, entrepreneurs or students, CoderDojo kids or mentors, any talented and creative individual interested in IT&C.

https://hacktm.ro/ https://banatit.ro/ http://www.devplant.ro/

3. Women in Tech

Our mission: Inspire the orientation of more and more girls & women towards technical activities in Romania. Create awareness in the society - Romania and abroad - about the good history and about the current situation of Romania's Women in Tech in respect to other EU countries. http://tabaradetestare.ro/

4. Girls and Women in Automotive. VET dual-education and apprenticeship <u>https://www.continental-corporation.com/en</u>

Good practices from Finland:

1. Gender equality in natural science oriented kindergarten Pilke Oivallus

Gender equality is societally and politically important issue. One obstacle is that women and men are working in different professions. Girls and boys are socialized already in early childhood to conform to adults` gender roles in working lives. In gender equality work day care personnel aim to expand both genders` options. Most Finnish children spend at least part of their early childhood in a kindergarten. That is the reason why kindergartens have a significant role in what children learn about equality. Early childhood education has to support boys and girls receiving the same opportunities in the future.

According to early childhood education law and early childhood curriculum one of the early childhood education targets is to advance the equality of genders. Early childhood education is gender-sensitive. Personnel encourage children from an early age to make their own choices. It is also important that personnel recognize stereotypical thinking about genders. The natural science oriented kindergarten Pilke Oivallus is located at Vantaa next to Helsinki.

Pilke päiväkodit is a Finnish day care provider, consisting in 79 daycare centres around in Finland. We cater to nearly 4500 children and there are about 950 Pilke employees.





In our kindergarten Pilke Oivallus girls and boys are equal. Everyone can wonder and try different kind of experiments or phenomena. Children can play what they feel to, despite the gender. Every child has an interest in exploring miracles of nature. Groups of children go to the forest at least once a week to explore and play. It is important to listen to children and hear what they are interested in. Based on the children's point of interest we plan our activities. Like every kindergarten in Finland we also have art and crafts, music, drama, sport for example and we play a lot. Playing with children, creativity, and the use of senses are good platforms for practicing scientific thinking that develops a child's memory and learning skills.

We can strengthen girls' interest in natural science for example maths in a natural science oriented kindergarten. We can also affect parents opinions about their children's study or professions in the future. What a great job!

2. Increasing girls' interest in technology education as a way to advance women in technology

A concern has been expressed for many years that relatively few women enter occupations in the natural sciences, yet the underrepresentation of women is even more striking in engineering and technology. Technology education has been developed to help people with technology. It has a role in shaping future debates and discourses by developing technological literacy by encouraging critical thinking and by raising awareness of various dimensions of technology. To introduce a more equitable gender balance in higher education, technology- oriented fields, and, consequently, in the corresponding labour market, we must continue to expand our knowledge on the impact of current technology education and focus on gender-related issues. In order to understand technology education in Finnish basic education, it is necessary to consider it within the subject of craft, especially technical craft. In Finland, there is no independent subject called technology education or STEM education in basic education; rather, the education on these topics is currently decentralised and taught through various subjects. Finland's National Core Curriculum for Basic Education 2014 outlines the major change to integrate craft studies into a subject that includes both technical and textile crafts for all pupils in grades one to seven. It also addresses multi-disciplinarity and integration between the subjects and seven overarching themes. Might the hands-on nature and learning by doing in crafts help students conceptualise scientific and technological knowledge by bringing it better into real world uses? Sonja Niiranen, University Teacher, PhD, Department of Teacher Education, University of Jyväskylä has provided findings of her PhD research that was conducted during the years 2009-2016. The research questions were: 1) How can girls' access to and motivations in technology education be increased in Finnish basic education? and 2) What affects women's interests in entering technology-related careers in Finland? What both of these perspectives have in common is whether increasing girls' access to and interest in technology education at the basic education

might ultimately increase the number of women who enter technology-oriented fields. First, the findings suggest that to promote girls in technology education, it would be important that they would have equal possibilities to discover technological topics and gain self-esteem in the field already in primary school. It was also evident that there are differences in girls' and boys' motivations concerning the contents of technology education. Concerning women in technology-oriented fields, the study revealed that the most influential career anchors were their high-level of





competence and familiarity of the field. Also, findings evidenced that there have been, and still might be, gender related issues in technology education and in working life. To conclude, technical craft and technology education should be developed with an eye towards gender-sensitive learning experiences and we should understand that there are individual differences as well as group differences between the needs, behaviours, and attitudes of girls and boys or women and men.

3. FIRST® LEGO® League / Case Team Ruupertti Robotti Kokemäki

Tomorrow's innovators practice imaginative thinking and teamwork. Guided by adult Coaches, FIRST LEGO League teams research a real-world problem such as food safety, recycling, energy, etc. Children are challenged to develop a solution for the problem. They also must design, build, program a robot using LEGO MINDSTORMS® technology, then compete on a table-top playing field. Yearly arranged happenings bring children together to have fun while they learn to apply science, technology and teamworking. The teams must present their solutions with a dash of creativity to judges. They also practice the FLL Program's signature Core Values. Instrument FLL is intended for children age 9-16 years. They form teams of 2-10 participants.

By the numbers

Participants	Teams	Events	Robots	Countries
255 000	32 000	1 500	32 000	88

Proven, verifiable impact! The positive impact FIRST LEGO League has on participants is gratifying and well documented. Over 88% are more interested in doing well in school, and 87% have more interest in attending college. FIRST LEGO League teams get to:

- Research challenges facing today's scientists
- Design, build, test and program robots using LEGO® MINDSTORMS® technology
- Apply real-world math and science concepts
- Learn critical thinking, team-building, and presentation skills
- Participate in tournaments and celebrations
- Understand and practice Gracious Professionalism®

Core values

The FIRST LEGO League Core Values are the cornerstones of the programme. They are among the fundamental elements that distinguish FIRST LEGO League from other programmes of its kind. By embracing the Core Values, participants learn that friendly competition and mutual gain are not separate goals, and that helping one another is the foundation of teamwork:

- We are a team.
- We do the work to find solutions with guidance from our coaches and mentors.
- We know our coaches and mentors don't have all the answers; we learn together.
- We honour the spirit of friendly competition.





- What we discover is more important than what we win.
- We share our experiences with others.
- We display Gracious Professionalism® and Coopertition® in everything we do.
- We have FUN!

How to get girls interested in tech?

Instrument FLL offers possibility to form a team of 2-10 children with different potential of various talents. Because of the pedagogical multipurpose of FLL the team offers a wide variety of tasks. The team coach plays a big role in forming a team and in designing personalized tasks. In practice, many teams have both girls and boys, although the proportion of boys is higher. When there are both boys and girls in the team also girls get involved or at least to be influenced by technology.

Case Team Ruubertti Robortti

Instrument FLL landed in Finland year 2015 when the first happenings were organized. Soon after that some players in Satakunta region interested in promoting automation skills presented the instrument for primary school teachers. In two years a lot success has happened when the teachers strongly adhered to the method.

One interesting short-story is the tale of Team Ruubertti Robortti from the city of Kokemäki. They started as a ten-person team when the sixth grade teacher asked students interest to come in. As a coach she wanted to include both boys and girls which also happened. How come the boys wanted to programme the robot and the girls were more interested in solving the science problem and reflecting the core values and team-working. The team did well in the games and decided to continue as a school club where they were given the opportunity.

But what happened then! For a reason or another the boys did not want to continue in the team when the new season started. In this situation a team of girls was formed and the coach decided to keep so and focus coaching the girls. The girls got the chance and used it immediately. This "GIRLSTECH" team has made since then every coding of the robot by themselves and have been successful.

The talents came to light when the opportunity was given with the help of suitable method.