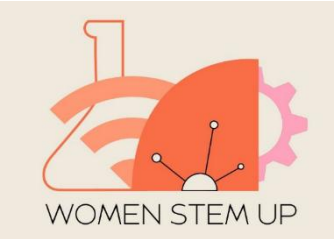
Co-funded by the European Union

ERASMUS + KA220-HED - Cooperation partnerships in higher education

Women STEM UP 2022–1-SE01-KA220-HED-000086239



Women Stem Up
Summary

Diversity and inclusion are essential in STEM to lead to new ideas and products. While the benefits of women's participation in STEM are well-documented, most initiatives focus on broad systemic change, overlooking the **practical integration of gender and inclusion into everyday teaching** and classroom interactions, where real change can take root.

This project includes 5 Work packages:

- WP 1: Project management, governance and planning.
- WP2: Development and implementation of an online training module for teachers.
- WP3: Creation and implementation of the leadership and inspiration academy including a mentoring programme for connecting female students with communities of women STEM professionals and innovators.

- WP4: Design and implementation of a program, offering an immersive, transformative learning experience for female stem students from multiple countries, including a three-day international hackathon to co-create solutions addressing gender inequalities.
- WP5: Dissemination activities, including the production of a generic policy document.

Aim of the project

- **Support female students** through targeted platforms and training programs that build self-esteem, spark interest in E-STEAM, and challenge internalized stereotypes that hinder academic success.
- **Equip educators and staff** with practical tools and skills to embed inclusive practices into daily teaching and classroom interactions.

- ***By delivery***

For Educators:

- Customized training resources with empirical, contextualized examples for everyday teaching.
- An open community offering training opportunities and practical suggestions, adaptable across STEM fields and the European community.

For Students:

- Innovative solutions that emphasize the socio-technical importance of gender and a mentoring program.
- Supportive programs to build confidence, strengthen self-esteem, and address the root causes of the "leaky pipeline" phenomenon.

For Managers and decision makers

A policy recommendation.

Method

The use of a **multidisciplinary perspective** has been central to the project, drawing on fields such as computer science, informatics, entrepreneurship, and gender studies. Participatory Design and qualitative methods, including focus groups, interviews, and surveys, have been combined with an E-STEAM approach to address gender stereotypes and demonstrate the value of socio-technical considerations in STEM. From a methodological perspective the combination of approaches such as Participatory Design and E-STEAM has been an innovation and an opportunity to expand the approaches to study gender and inclusiveness in STEM.

Implementation and Outcomes

WP2. The online training program developed a module that covers the following topics: Gender balance methods into practice, teaching techniques, examples, and practical steps for making both the teaching and the learning environment more inclusive, gender equitable and inclusive teaching material and a strategy focused on career orientation through an E-STEAM approach. The online training module has been tested and evaluated by STEM teachers from Norway, Sweden and Greece. The online programme is available in 5 languages (English, Greek,

Norwegian, Swedish and French and available at the following links: Training programme – Women Stem Up and Deliverables – Women Stem Up).

WP3: developed a mentoring program to increase the confidence of female STEM students by addressing persistent stereotypes and inspiring and leading to questioning the perceived masculinity of STEM fields. The mentoring programme includes videos, story cards, posters and presentations showcasing women role models in academia and a directory of existing networks of mentors and mentoring programmes as well as a guide with strategies for establishing a mentoring programme within STEM areas to connect students with lecturers and a training package for mentors offering guidelines about how to mentor female students. The mentoring programme and the training package for mentors is available in 5 different languages (English, Greek, Norwegian, Swedish and French. See Deliverables – Women Stem Up.).

WP4: The women STEM Up for Good programme designed a blended learning program to support female engagement with STEM. The programme is composed of 2 elements: a) an innovative curriculum and 2) a series of resources to train the trainer and a guide to design the curriculum, All resources are available at: Deliverables – Women Stem Up
The international Hachathon organized as a part of the STEM Up for Good programme offered learning experiences for female students from multiple countries, including a three-day international exercise to co-create solutions addressing gender inequalities.(Women STEM Up Hackathon – Women Stem Up).

WP5: Dissemination activities with the aim of communicating the project activities, events, results and achievements to the widest possible audience.
The dissemination WP includes: the development and implementation of a dissemination plan, social media tools, a sustainability plan, the production of a generic policy document that can be extrapolated to other EU-countries and the development and implementation of the Website of the project. All newsletters, dissemination material and brochure are available at Deliverables – Women Stem Up.

Gathering empirical evidence from the implementation of the work packages, and applying theory in practice, we achieved the following outcomes:

1. **Increase knowledge** on how to embed gender and intersectionality into daily teaching in higher education.
2. **Break gender stereotypes** by creating a targeted training program for STEM educators.
3. **Promote inclusive communication** by encouraging the consistent use of gender-neutral language.
4. **Document teaching innovations** by capturing examples of how educators update and improve their teaching materials, lesson planning, and assessment methods after completing the project's training program.
5. Establishing **a leadership and inspiration academy** that provides training, mentoring, and access to STEM professionals who can serve as mentors and role models.
6. **Demonstrate the benefits of combining the E-STEAM approach** to increasing women's participation in STEM fields.
7. **Develop a generic policy plan** that can guide the implementation of gender strategies and action plans in educational institutions.

8. **Create the "Women STEM UP for GOOD" program**, encouraging female students to design and develop state-of-the-art projects while gaining practical insights into the socio-technical importance of integrating gender into technical work.

The results of the project are linked to the main objective of increasing knowledge on how to embed gender and intersectionality into daily teaching, and in specific to the objective of to:

(i) support educators with customized training resources to innovate daily teaching, to facilitate the understanding of the benefits and opportunities of inclusive teaching, and to offer access to an open community providing contextual based resources and suggestions that are both generic but also specific for the STEM areas.
(ii) Support female students and offer them access to networks, mentorship and role models contributing to build their confidence, strength self-esteem and deepen their interest in STEM tackling the root causes of the "leaky pipeline" phenomenon.
(iii) Innovate in the way to develop supportive programmes combining entrepreneurship with E- STEM approaches in STEM areas.

Contribution of the project

***Innovation and Knowledge Transfer*:** The project delivers **innovative, content-based knowledge** that enables the target groups to clearly recognize the issues addressed and understand the value of the outputs. Beyond delivering tangible resources, we demonstrated the effectiveness of approaches such as **ESTEAM** and **participatory design**, working with **consensus as a guiding principle** to facilitate constructive interaction between the target groups.
Organizational and project innovativeness: The organizations included in this project are not only limited to classical STEAM areas, but also a partner with social inclusion perspective.
Environmental issues: The green perspectives are present though (i) few physical meetings, (ii) most of the project activities have been digital. (iii) digital tools and learning methods used being digital.
Management and control: Risk management and allocation of resources have been carefully planned to match activities with outcomes. Quality control, monitoring and evaluation have been based on empirical and research experience. The previously sampled experiences in Sweden and Norway have been used as a baseline. Allowing to move further and test and apply new perspectives such as the combination of Participatory design, E-STEAM and entrepreneurship.

Future application of the outputs of the project

1. **Within academia:** extending the models and outputs to other faculties beyond STEM.
2. **Industrial level:** innovating recruitment policies and competence development programmes in the STEM areas by integrating ESTEAM principles.
3. **Leadership training:** educating managers and decision makers on the importance of intersectionality for advancement and success to educate the leaders of the future.

4. **Organizational development:** demonstrating diversity, intersectionality, and gender equity enhance problem-solving capabilities, stimulate innovation, and promote stronger collaboration across all organizational levels.
5. **Economic competitiveness:** reinforcing the message that gender diversity and equality are key drivers of the future global workforce.

All outcomes are open source and available at the following links:

Home – Women Stem Up Access to the Website of the project.

- **WP2: Development and implementation of an online training module for teachers.**
  - Training programme – Women Stem Up (Access to the module, offering possibility to navigate through the module, examples and training packages)
  - Training programme translated into 5 different languages available in form of PDF at: Deliverables – Women Stem Up
- **WP3: Creation and implementation of the leadership and inspiration academy including a mentoring programme for connecting female students with communities of women STEM professional and innovators**
  - Mentoring program: **Mentoring Programs – Women Stem Up** (Acces to Mentoring resources, videos, guide, and mentor training programme)
  - Mentoring programme: Available in 5 different languages in form of PDF, and available at: Mentoring resources – Women Stem Up
  - Leadership academy. Testimonies and resources Role Models – Women Stem Up. Testimonials – Women Stem Up: Videos and interviews, role models and testimonies

- **WP4: Design and implementation of a program, offering an immersive, transformative learning experience for female stem students from multiple countries, including a three-day international hackathon to co-create solutions addressing gender inequalities.**
  - Resources and curriculum. Available at : Deliverables – Women Stem Up
  - Hackathon. Examples, outcomes, case studies, Available at: Women STEM Up Hackathon – Women Stem Up
- **WP5: Dissemination activities,**
  - All deliverables, including. the policy document, environmental and sustainability plan, website mockup, dissemination and communication strategy, newsletters, inclusions and diversity plan are available at: Deliverables – Women Stem Up under WP Dissemination.