

WOMEN STEM UP FOR GOOD PROGRAM

Curriculum Design

Submitted by: Stimmuli for Social Change

ERASMUS + KA220-HED - Cooperation partnerships in higher education

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1 Introduction

This document is the Women Stem Up for Good Curriculum and it has been developed by Stimmuli for Social Change with the contribution of all project partners.

The goal of this curriculum is to provide challenge based learning activities, promoting hands-on, result-oriented skills development that cultivates creative and entrepreneurial thinking powered by STEM. With the term curriculum we refer to all the theoretical context based on which the educational content has been created. The curriculum includes templates and activities as well as training modules and the hackathon design and material developed for the program activities.

The curriculum builds on recognized standards in competence development, such as EntreComp & DigComp. Also, the curriculum will offer structure and guidance for organizing and delivering the **Women STEM up for Good programme** that will take the form of workshops, online & onsite campfire sessions and a short hackathon exploiting the rich resources and mentors engaged in the Leadership and Inspiration Academy platform. These activities will be organized to develop entrepreneurial mindset of women students in STEM.

It includes specific methodology to prepare workshops and campfire sessions but also other tools and resources that can be used when organizing Stem and entrepreneurship events while working with mentors.

The following curriculum includes:

- Theoretical Framework on EntreComp and DigiComp
- The objectives of the programme
- The structure of the programme's delivery
- The templates and guidelines necessary for the programme delivery

The ppt's and the templates used for the delivery of the program have been added as ANNEX to this document.

Finally, this document has been updated throughout the planning process of the programme to better reflect the decisions any possible changes while the modules and training material are being created.



2 State of the art

The ESTEAM approach integrates Entrepreneurship, Science, Technology, Engineering, Arts, and Mathematics to provide a holistic educational framework. By combining these disciplines, ESTEAM aims to cultivate a diverse skill set that includes analytical thinking, creativity, and business acumen. This interdisciplinary method is particularly effective in preparing young women for the evolving demands of the modern workforce, where innovation and entrepreneurial skills are increasingly essential.

To implement the ESTEAM approach for enhancing young women's entrepreneurship skills, several methodologies are employed:

- ❖ Hands-On Workshops and Hackathons: These events offer practical experience in problem-solving and innovation. For instance, organizations like Stemettes host hackathons where participants collaborate on STEM projects, fostering teamwork and creative thinking.
- ❖ Mentorship Programs: Connecting young women with mentors in STEM fields provides guidance and inspiration. Programs such as Student to Stemette pair students with professionals, offering insights into career pathways and entrepreneurial ventures.
- ❖ Integration of Arts into STEM: Incorporating the arts encourages creative problem-solving and design thinking. This fusion leads to innovative approaches in product development and business strategies, essential for entrepreneurship.
- ❖ Community Building and Networking: Creating communities where young women can share experiences and resources enhances learning and confidence. Initiatives like the Women ESTEAM community facilitate skill development and peer support.

By employing these methodologies, the ESTEAM approach not only equips young women with technical skills but also empowers them with the entrepreneurial mindset necessary to apply their STEM education in innovative and impactful ways. This comprehensive strategy addresses the gender gap in STEM entrepreneurship, fostering a more inclusive and dynamic future workforce.



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A good number of workshops, festivals, camps and seminars that encourage young women's involvement in STEM and ESTEAM have been organized in the past. Some examples are listed below to provide context.

- **1. VentureLab's ESTEAM® Programs**

VentureLab combines Entrepreneurship, Science, Technology, Engineering, Arts, and Mathematics (ESTEAM) to empower young women by providing hands-on experiences. The programs focus on:

- **Entrepreneurship:** Encouraging participants to develop solutions to real-world problems.
- **Leadership and Problem-Solving:** Students identify issues, brainstorm ideas, and create prototypes for businesses.
- **Creativity:** Activities include integrating arts into STEM for holistic innovation. Participants gain skills to pitch ideas, conduct market research, and build business strategies, preparing them as future innovators and leaders.

More info: [VentureLab's ESTEAM® Programs](#) [VentureLab](#)

- **2. Girls and Women ESTEAM Fests (European Commission Initiative)**

The **ESTEAM Fests** bring together girls and women across Europe to develop **digital and entrepreneurial competences**. Events feature:

- **Workshops** on problem-solving, design thinking, cybersecurity, and AI.
- **Leadership Activities:** Girls work in small groups to solve regional challenges like waste reduction or promoting tourism through ideation and elevator pitches.
- **Mentorship:** Women leaders act as mentors, helping young participants build confidence and learn to present ideas concisely.

For example, the 4th ESTEAM Fest in Mérida, Spain, emphasized solving local problems through teamwork and entrepreneurial steps.

More info: [European Commission ESTEAM Fests](#) (Source: [EISMEA](#))

- **3. Girls Go Circular Program**

Part of the European Commission's Digital Education Action Plan, this program empowers young women to develop **entrepreneurship and digital skills** for the **circular economy**. Activities include:



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- **Problem-Solving Workshops:** Participants work on real-life sustainability issues like recycling, waste management, and resource efficiency.

- **Interactive Learning:** Students create digital solutions, promoting leadership and critical thinking.

This program fosters skills for career opportunities in both technology and sustainability sectors.

More info: [Girls Go Circular](#)

- 4. [**Women ESTEAM Fest-Thessaloniki, Greece**](#)

- Deloitte together with the European Women Association (EWA) and Vlajo are conducting a project for the European Commission and the European Innovation and SMEs Executive Agency (EISMEA) to empower women and girls, in particular, by boosting their digital and entrepreneurial competences and increasing their confidence to choose STEM career paths.

Workshops organized: Design thinking workshop: Imagine + Act = Thrive!

Making the most out of marketing trends and subsidies

From Idea to Market

3. Theoretical Background on Skills Development

The curriculum aims to support students in building skills in entrepreneurship, digital literacy, and problem-solving, emphasizing digital sustainability. It leverages two key European frameworks:

1. **EntreComp (Entrepreneurship Competence Framework)** - for developing entrepreneurial skills and mindsets.
2. **DigiComp (Digital Competence Framework)** - for fostering digital literacy and digital problem-solving skills.

Introduction to EntreComp and DigiComp Frameworks

- o Overview of **some of the basic skills included in EntreComp:**
- o Understanding competencies like creativity, vision, mobilizing resources, and taking the initiative.



- o Overview of **DigiComp**: Focusing on information and data literacy, digital content creation, safety, and problem-solving.

What is DigComp?

- DigComp is a **framework** designed to **identify, develop, and assess digital skills** for individuals, especially in the context of **life, work, and learning**.
- It addresses the growing need for digital literacy in the face of technological advancement and the digital transformation of society and the economy.



- **Main Objectives**

1. **Self-Evaluation of Skills**: Citizens can use the framework to measure their current digital competencies.
2. **Set Learning Goals**: Helps individuals identify areas for improvement and establish clear learning objectives.
3. **Identify Training Opportunities**: Facilitates finding relevant training programs and resources to enhance skills.
4. **Better Career Opportunities**: By improving digital skills, individuals can increase their employability and access better job prospects.

- **5 Key Competence Areas**

The framework is divided into **5 areas**, which cover different dimensions of digital competence:

1. **Information and Data Literacy**
 - o Finding, evaluating, and managing digital information effectively.
 - o Example: Searching for reliable data online and critically analyzing sources.
2. **Communication and Collaboration**
 - o Using digital tools to interact, share, and collaborate effectively.
 - o Example: Online meetings, email communication, and teamwork using shared platforms like Google Docs or Teams.
3. **Digital Content Creation**



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- o Creating and editing digital content in various formats, adhering to copyrights and licenses.
- o Example: Writing blogs, editing videos, or coding basic websites.

4. **Safety**

- o Protecting personal data, digital identity, and systems from cyber risks.
- o Example: Understanding privacy settings, identifying phishing attacks, and using strong passwords.

5. **Problem-Solving**

- o Identifying needs, solving technical problems, and adopting digital solutions.
- o Example: Troubleshooting software errors or using apps for productivity.

- **Skill Proficiency Levels**

The framework provides **3 proficiency levels** to help citizens identify where they stand:

1. **Foundation Level (Beginner)**: Basic understanding of digital tools and concepts.
2. **Intermediate Level**: Confident use of tools and skills for most day-to-day tasks.
3. **Advanced Level**: Specialized knowledge and ability to innovate and solve complex problems.

Applications of DigComp

1. **Education**: Schools and universities use DigComp to integrate digital literacy into curricula.
2. **Workforce Development**: Employers use it to assess employee skills and design training programs.
3. **Policy Development**: Governments use the framework to create policies for digital upskilling.
4. **Individual Growth**: Citizens can apply the framework to boost their careers and adapt to technological change.

Why is DigComp Important?

- It empowers individuals to navigate the digital world safely and confidently.
- Helps address the **digital skills gap** in the workforce.
- Promotes **inclusion** by ensuring all citizens, regardless of age or background, have access to digital tools and skills.
- Supports lifelong learning and **career development** in an increasingly digital economy.



The **Entrepreneurship Competence Framework (EntreComp)**, developed by the **European Commission**, is a reference framework that defines what it means to be entrepreneurial. It provides a common understanding of the skills, knowledge, and attitudes required to foster entrepreneurial thinking and action. EntreComp is designed for individuals, educators, employers, and policymakers to support the development of entrepreneurial competences across diverse settings, including education, the workplace, and personal development.

Main Objectives of EntreComp

1. **Develop Entrepreneurial Skills:** Facilitate individuals in developing the mindset and competences needed to identify opportunities, solve problems creatively, and take initiative.
2. **Support Lifelong Learning:** Serve as a guide for educational institutions and organizations to integrate entrepreneurial competences into formal, informal, and non-formal learning systems.
3. **Promote Innovation and Employment:** Help individuals become innovators, whether as entrepreneurs (starting businesses) or intrapreneurs (innovators within organizations).
4. **Boost Socioeconomic Growth:** Equip people with the tools to contribute to their communities and economies by creating value through entrepreneurial activities.

Key Component Areas of EntreComp

The framework is structured into **3 main areas** with **15 competences** that describe the entrepreneurial mindset. The areas focus on the creation of ideas, turning them into action, and achieving results.

1. Ideas and Opportunities

This area focuses on identifying and evaluating opportunities for value creation.

- **Spotting Opportunities:** Identifying problems, challenges, or opportunities that can be turned into solutions.
- **Creativity:** Generating new ideas and turning them into feasible concepts.
- **Vision:** Imagining a better future and setting strategic goals.
- **Valuing Ideas:** Recognizing the potential of ideas and ensuring their value creation.



- **Ethical and Sustainable Thinking:** Considering the societal and environmental impact of actions.

2.Resources

This area focuses on mobilizing resources (financial, human, and material) to bring ideas to life.

- **Self-Awareness and Self-Efficacy:** Understanding one's strengths, weaknesses, and abilities.
- **Motivation and Perseverance:** Staying determined to achieve goals despite setbacks.
- **Mobilizing Resources:** Gathering financial and non-financial resources to execute ideas.
- **Financial and Economic Literacy:** Understanding the principles of finance, budgeting, and economic decision-making.
- **Mobilizing Others:** Inspiring and engaging others to collaborate on achieving goals.

3. Into Action

This area focuses on translating ideas into action, learning from experience, and achieving results.

- **Taking Initiative:** Being proactive and making decisions to start actions.
- **Planning and Management:** Developing strategies, organizing resources, and setting timelines.
- **Coping with Uncertainty, Ambiguity, and Risk:** Managing risks and embracing uncertainty while taking calculated actions.
- **Working with Others:** Collaborating effectively as part of a team to achieve shared objectives.
- **Learning Through Experience:** Reflecting on successes and failures to improve future performance.

The **EntreComp framework** is a versatile tool for developing entrepreneurial competences in individuals and organizations. It encourages creativity, resilience, and resourcefulness while helping individuals identify opportunities and create value. By integrating EntreComp into education, work, and community programs, people can build the skills needed to thrive as entrepreneurs and innovators in an increasingly dynamic world.



Other elements

- o **Pitch Practice:** Students practice presenting ideas to mentors, emphasizing creativity and vision.
- o **Resource Mapping:** Mentors guide students in identifying available resources and network-building.

2.1 The Women STEM UP for Good Program

Program objective:

- Design and deliver an innovative blended learning program that empowers female students to engage in STEM through an E-STEAM approach for social good.
- Provide skills, resources, and mentorship to enable participants to co-create “Tech for Good” projects addressing gender equality.
- Foster networking and collaboration among students, mentors, and STEM professionals through interactive sessions and an international hackathon.

The programme components:

- 1) An innovative curriculum that will be consisted of training modules
- 2) Train the trainer resources : short training guide & tools like templates for the activities that will be implemented during the camp fire sessions and the 3-days hackathon

Methods of programme delivery:

Blended way: Online and physical activities

These activities will lead to the 3-days hackathon in Greece.

Method of implementation:

Online/On-site activities: Training and campfire sessions

a campfire session: *Much like people sitting around a campfire listening to someone tell a story, a campfire session at a conference is an informal way of presenting and*



discussing topics with meeting attendees. Less structured than a typical breakout session, campfires are designed to allow attendees to easily drop in or out as their schedule and interest level permit)

Physical activities: 3-days hackathon in Greece

- The hackathon will focus on one of the themes developed in the curriculum. It will follow the steps of the design thinking process. Participants will be given a challenge and will be put into teams and will be asked to design an innovative solution and pitch it (day 3).
 - ❖ Suggested Pre-requirements: All participating students should be engaged in at least 2 campfire sessions.

The training modules

Objective: Enable students to recognize and cultivate entrepreneurial competencies as well as digital competence skills by incorporating creative and artistic skills into socially impactful activities and projects.

Module content:

- ❖ Theoretical background: Please provide context on the subject matter as well on the DigiComp an EntreComp Competencies each module will focus on. The goal is to focus on some skills development not necessarily cover all skills and competencies included in the frameworks.
- ❖ Practical Activities
- ❖ Other tools such as business canva templates or tips and ideas for media creation, methods for developing an idea (design thinking process), pitching tips

Module Themes

The selected modules have been included here with the partner's contributions. They were decided after consultation with all partners bringing in their expertise and experience in teaching and interacting with young women.

- ✓ Women Stem Up for Green Digital Skills
- ✓ Women Stem Up for tacking Gender Bias in AI
- ✓ Women Stem Up for designing sustainable & inclusive cities

The training modules were finally broken into the following topics:



- Topic 1: Gender in STEM
- Topic 2: Building a STEM Start-Up
- Topic 3: Gender Inclusive AI
- Topic 4: Designing Sustainable & Inclusive Cities

The modules focus on promoting skills appearing on the **DigiComp** and the **EntreComp**.

Module Structure:

Please use the word template of the project.

Unit 1: Theoretical background (short presentation on the subject maximum 3 pages).

- Module objectives

Form: Word template

Conclusions

Overview of the module and reflective questions

Unit 2: Objectives of the activities. In this unit, the connection of the activities to the skills focusing on should be described.

Activities (in this unit there should be at least 4 activities included with objectives, implementation instructions and tools needed)

Form: ppt template

Practical Activities

Practical Training Activities with Mentors

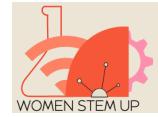
Duration: 1 hour sessions

Hands-On Workshops on EntreComp Competencies

- **Objective:** Encourage students to actively practice skills such as critical thinking, creativity, and resource mobilization.
- **Activities:**
 - **Ideation Workshop:** Using **brainstorming techniques** to develop potential STEM project ideas.
 - **Pitch Practice:** Students practice presenting ideas to mentors, emphasizing creativity and vision.



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- o **Resource Mapping:** Mentors guide students in identifying available resources and network-building.

Digital Skills Development with DigiComp

Implementation of Campfire sessions:

Method of implementation:

- On site campfire session facilitated by one mentor and one partner and/or partner university staff member.
- Online campfire session facilitated by partner(s) and mentors focusing on skills building activities.

Suggestions:

**In the check in sessions for mentors (WP3) we can introduce the idea of camp-fire sessions and get mentors' feedback on the type of skills their mentees might be lacking.*

Number of campfire sessions required: 20

Recruitment of participants:



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3 Camp-Fire Sessions

The following training modules include theoretical background, practical exercises and notes for facilitators and trainers.

The Training Modules break into the structure presented below. The actual material can be found and is accessible for free on the project's website.

<https://women-stem-up.eu/deliverables/>

The implementation of the training sessions is flexible and will be adapted according to each partners' needs and audiences.

Topic 1: Gender in STEM

This topic includes the following ppts and pdfs.

T1_Gender_S1_Bias

T1_Gender_S2_Mindset

T1_Gender_S3_Empathy

T1_Gender_S4_DesignTh.

Session2_Exercises_Fixed Mindset Checklist

Topic 2: Building a STEM Start-Up

Building a STEM Start-Up

Topic 3: Gender Inclusive AI

Topic 3_Gender Inclusive AI_AI for Social Good

Topic 3_Gender Inclusive AI

Topic 4: Designing Sustainable & Inclusive Cities

Sustainable and Inclusive Cities Lesson Plan-Sheet

Sustainable and Inclusive Cities_Session1

Sustainable and Inclusive Cities_Session 2

Sustainable and Inclusive Cities_Session 3

Sustainable and Inclusive Cities_Session 4

Sustainable and Inclusive Cities_Session 5



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Class Resources

City Name_Sustainable and Inclusive Cities
Nairobi_Sustainable and Inclusive Cities
Resource-Sustainable and Inclusive Cities_Session 1
Resource-Sustainable and Inclusive Cities_Session 2
Resource-Sustainable and Inclusive Cities_Session 3
Resource-Sustainable and Inclusive Cities_Session 4
STEM Jobs in Sustainable and Inclusive Cities

The class resources include templates and other tools to run the educational sessions.



4 International Hackathon

- The objective of the international hackathon is to bring together students from all participating countries and institutions to collaborate, further develops skills and use their creativity and their academic background to come up with innovative solutions.

The main topic that was chosen for the hackathon was Designing Sustainable & Inclusive Cities. The challenge that was chosen after discussion and feedback by all project parts is presented below:

"ESTEAM for Sustainable & Inclusive Cities: Innovate Locally, Impact Globally"

Challenge: Identify a sustainability challenge in a city and propose a gender-inclusive ESTEAM based solution.

Soft Skills Focus:

- Local research & empathy mapping
- Stakeholder analysis
- Team collaboration & ideation
- Pitching & storytelling

a. Hackathon organization:

During the hackathon students will be put into mixed groups.

- Group Selection Activity: An ice breaking activity will be used to help participants break the ice. Student participants will be asked to move around the room where there will be posters with three different cities (preselected) with basic info about each city and will be asked to stand in front of the city they would like to work on. They should make sure that in each group there is at least one student from each participating country.



b) The role of mentors:

One mentor will be assigned to each participating group.

Problem Framing Session: Students will use the Empathy Map (mentors at each table will be responsible to introduce the tool. Empathy map is in ANNEX 1. This tool will be provided to facilitate the conversation and get the ideas going.

In addition, mentors will be invited as speakers to offer provide different perspectives and support the students into developing their ideas as answers to the challenge. The speakers will come from the areas of entrepreneurship and/or sustainability and gender equality.

• During the hackathon:

- ❖ Students will be provided some context on the topic of sustainable cities. The hackathon will be structured following the design thinking process. Students will be offered a short overview of design thinking process.
- ❖ The focus of the hackathon will be on ideating & prototyping and not on the entire process since they will know the challenge and they might have attended one or more campfire sessions.
- ❖ Provided that participating students have attended some campfire sessions and/or they already have skills in presenting and pitching they will not be offered training in pitching. A pitching canva will be provided in case participants would like to use it.
- ❖ A jury of 2-3 people will be invited and the criteria will be set before the hackathon.

Agenda (might be slightly adapted before hackathon)

Day 1 (Discover and Define)

14:00 Welcome & Introductions

Short Women STEM UP project presentation

- Ice Breaker,* (HouseRules)& the ESTEAM Approach, the Prototype Template will be explained

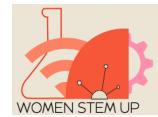
A facilitator will run the first ice breaker and support students with setting “house rules” to make sure there is respect and collaboration throughout the hackathon.

15:00 Keynote speaker: TBD (entrepreneurship/sustainability)

Duration: 1 hour Team Formation-choose a city to work on (Barcelona, Nairobi, Singapore)



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Students will be asked to check out each city (we are going to have small posters around the room and they will need to go and stand under the card of the city they want to work on.

Duration: 1 hour , Sustainable Cities Crash Course

Duration: 1 hour, Problem Framing Session with team mentors

Important Note: Students will not know the selected cities before the hackathon.

Day 2

Morning Check-In (Energizer: Janice)

9:30-10:30 Ideation Workshop, Design Thinking Presentation

The Ideation Workshop will show the design thinking process but the focus will be mainly focused on ideate and prototype. Presentation available [here](#)

The prototype template will be shown again

*All templates are included in the ANNEX below.

10:30-12: Group Work

12:00-13:00 Inspirational Speech

Lunch Break

Group Group

Day 3

9:00 Morning Check In

9:30-12:30 Prototype Finalization

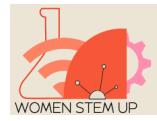
12:30-13:00 Pitch Prep & Practice

A pitching template will be provided in case students need one for their pitching practice.

- ❖ Certificates of participation will be awarded to participants for camp fire sessions and for the hackathon.

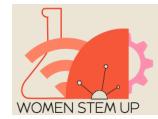


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5 Tools

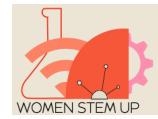
The project templates should be used for all material preparation. A reporting template, a participants list and a certificate template have been created and are available in the ANNEXES of this document. A canva link for the certificate will be provided to partners.

The Training modules are available on the project's website.

All other materials that might be created for the hackathon implementation will be included in the relevant reports.



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ANNEX 1

Reporting Template

Women Stem Up-Camp Fire Sessions Report Template **(for partners to fill in)**

Name of the partner	
Country	
Date (s) of campfire sessions	
Number of participants and participants profile (student departments)	
Short description of campfire session (theme, way of delivery (virtual or on site))	
Participants list (for virtual sessions please download participants from zoom/teams etc. and submit. For on site events please make sure you have signed participants lists)	(you can add this as an annex)



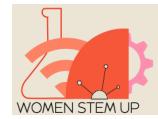
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Photos/ Screenshots	
<p>Participants feedback In this section you can write any feedback/question s you received during the campfire sessions. (please make sure you share the evaluation form with all participants)</p>	
<p>Other Notes (please specify number of mentors who attended/facilitate d this sessions and their titles/positions)</p>	



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ANNEX 2

Participants List

Women Stem Up Campfire Session: _____

Date ___/___/2025

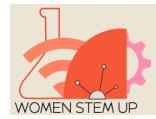
Place: _____

** With this signature on the participants' list I agree that my personal data will be collected and stored by the event hosting institution, following the GDPR description. I also agree that my photos and videos could be disseminated via all media channels.*

Last and First Name	Higher education Institution & Faculty/Organization	Position	E-mail	Signature

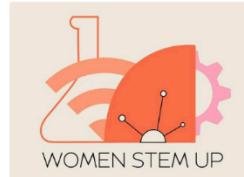


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ANNEX 3

Certificate Template



Presents this

Certificate of Participation

for the Participant

For attending [training name] of the Women STEM UP for Good program for young women in STEM organized by [partner name] in the context of the project Women STEM UP 2022-1-SE01-KA220-HED-000086239
[Dates]

Presented by: _____
[Partner Organization]

enter partner logo

