GEMnet – The European Girl STEMpowerment Network

Review of GEMnet activities

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Co-funded by the European Union

Summary

GEM - Empower Girls to Embrace their Digital and Entrepreneurial Potential (2020-2022) is a European Union co-funded pilot action grant project, which was launched to raise girls' interest in STEM and ICT subjects. The major type of action were STEM summer schools for girls across Europe that were organized by each of the 10 partner countries in 2021 and 2022. All activities had an explicit focus on inspiration and discovery, offering participating girls a possibility to enjoy themselves in the context of STEM and to experience their own STEM powers. Such a feeling of *STEMpowerment* can encourage them to choose studies, careers and become entrepreneurs in these fields. It was a very important part of the project that the positive effects of the summer schools do not fizzle out but are used to keep girls participating in STEM and to potentially accompany them on their way to a career in STEM. Thus, the summer schools were backed up by a strategy to provide long-term support.

Major part of this strategy was the foundation of a dedicated network. This network is called GEMnet and has been operating for almost three years by now. It will be kept alive beyond project duration and is open to all who are interested in girls in STEM and gender-sensitive STEM education. It supports its members to increase their own competence – knowledge, skills and attitudes – in supporting girls, and also to make it easier for all involved to support each other and share relevant information, materials and knowledge. The network also offers events on gender-sensitive STEM education and aids for actors who are interested in organizing gender-sensitive STEM education activities.

This report looks back on the three-year project duration and reviews all types of activities which were performed by the network and its members. This offers interested actors the opportunity to take up best practices, and to involve them in their own initiatives and actions. In addition, this report seeks to motivate further interested persons to join the network as members and to contribute to a gender-neutral world of STEM.

Contents

Introduction

GEM - Empower Girls to Embrace their Digital and Entrepreneurial Potential (2020-2022) is a European Union co-funded pilot project, aiming to encourage girls' interest in STEM and ICT subjects and to inspire them to choose careers and become entrepreneurs in these fields.

To achieve this aim, the project works on two main fields of action:

The first is to provide cost-free STEM summer camps for girls aged 12-18 in 10 European countries with an explicit focus on inspiring participating girls, offering them a possibility to enjoy themselves in the context of STEM and enjoy STEM. The camps intend to create a space where girls learn about, from and for STEM and each other and take a bunch of positive STEM experiences home.

Most STEM events for girls (such as Girls' Days in companies) are one-time events which are not connected to other initiatives in girls' personal and school environments. The same goes for the summer camps which are one-time events as well. However, it is essential to take up on the effects of such events and deepen the impact of these (positive) effects long-term. Positive outcomes of one-time events shall not be lost, but society must enable girls to capitalize on the benefits of gender-sensitive STEM activities to a maximum effect. It is also important to continuously guide and support girls on their way towards STEM studies and careers.

The second main field of action of GEM project thus is the set-up of a network which supports the advancement of girls in STEM education, studies and careers: GEMnet. It aims for an increased capacity of society to support girls to discover their full STEM potential and support them to use it to pursue studies and careers in STEM sectors.

Network Profile

GEMnet is a collaboration of STEM education, policy, industry and society stakeholders across Europe, with the joint vision to create a world without gender gaps in STEM education.

The network's vision: a world without gender gaps in STEM

The network's mission: to increase the number of females in STEM studies and careers

The network is free-of-charge and open to all interested parties.
Subscription to the network is possible via the website link: https://icse.eu/hrf_faq/join-gemnet/
Coordinator of the network: Dita Kreuz

Target Groups

GEMnet has planned a variety of activities within and beyond project duration to reach the following target groups:

(1) **families/friends** must be informed about their relevance in girls' decisions (emotional stimulus such as encouragement)

(2) **businesses/industry** must be informed about how they can help with the continuous visibility of STEM/ICT)

(3) **policy makers and media** must be informed why they must and how they can help addressing existing issues, sharing best practices in education, and how they can support the establishment of a positive STEM image and how they can support female involvement in STEM as the norm

(4) the **education sector** such as teachers, Higher Education staff, or informal learning providers must be informed about their role (to find ways to individually support and encourage girls).

At the beginning of the project, the network has started with a circle of initial members: project partners, ICSE Consortium partners, and National GEM Team (NGT) members. These initial members used their links to STEM education research, practice and policy to win further members. By now, at the end of GEM project in December 2022, GEMnet has 183 members from 22 countries: Turkey, Portugal, Sweden, UK, Czechia, Spain, Slovakia, Poland, Romania, Norway, North Macedonia, Nigeria, Netherlands, Malta, Lithuania, Italy, India, Greece, Cyprus, Germany, Kosovo and Pakistan.

This high number is due to the consortium's joint efforts to offer relevant and meaningful network events, materials and information. The present report reviews these efforts and identifies best-practices which can be further explored beyond project duration and by actors within and beyond GEMnet.

Course of action

There are certainly many ways to increase the capacity of society to support girls along their STEM journeys, and initiatives such as the "Women and Girls in STEM Forum" or the European Institute for Gender Equality have already been providing enriching options to engage. GEMnet sees itself as complementary to such initiatives and works in three main fields of action which have been identified by project partners as most promising at the time:

(1) **consolidation**: members connect to each other and to other actors across Europe who have an interest in a world without gender gaps in STEM

(2) **peer-learning**: all members share their knowledge about ongoing gender and skills gaps in STEM/digital sectors and share best practice strategies to overcome existing challenges

(3) communication and dissemination: members work on measures to raise the societal awareness about the need to create a world without gender gaps in STEM and how to achieve it; as well as share peer-learning content and project results

At the beginning of the project a roadmap was created which communicates the network's strategy to work towards a gender-neutral STEM future. The roadmap can be used by members (and other interested target groups) to get ideas about ways to support the project's and in particular the network's aim and ideas about how to pursue the network's mission long-term.

Activities

The tables below show the types of activities which serve as foundation and impulse-giver for concrete measures on European and national level.

(1) Consolidation actions: connect actors across Europe who have an interest in a world without gender gaps in STEM. A strong and functional network makes it easier for all involved to support each other and share relevant information, materials and knowledge. It also reduces the threshold to get support and engage in accordant activities.

Table 1 Consolidation actions

Types of activities	Executed by	Examples
Design the network's digital appearance (logo, website features, etc.) to attract stakeholders	WP 5 Leader (in coop. with WP 4 leader)	Number of actions: 4
Realize a digital space to share among the network and with the public	WP 5 Leader (in coop. with WP 4 leader)	GEMnet - the European network to support girls in STEM education – ICSE – International Centre for Stem Education Number of actions: 1

Identification of STEM initiatives for girls	Project Consortium	Part of the national dissemination plans Number of actions: at least 5 in every country (5x10)
Identification of STEM/digital businesses and industry in the region of partners (primarily in the partner regions as they are most important for regional schools, their teachers and girls)	Project Consortium	Part of building the national GEM teams for organization of the summer schools. Number of actions: at least 3 in every country (3x10)
Contact responsible persons for these initiatives to identify collaboration potential	Project Consortium	Part of the national dissemination plans. Number of actions: at least 5 in each country (5x10)
Identification of existing platforms, networks and groups on national level which are relevant	Project Consortium	Done partially by involving them to the national GEM teams, inviting to be part of the GEM Network or spreading the guidelines and assessment report
Contact/engage in existing platforms, networks, groups	Project Consortium	Number of actions: at least 5 in each country (5x10)
Involve the ICSE Consortium, an association of around 20 Higher Education Institutions across Europe	WP 5 leader (in coop. with WP 4 leader)	ICSE Consortium is part of the network Number of actions: 20
Cooperate closely with the National GEM Teams to work on national strategies	Project Consortium	Meetings were organized throughout the project Number of actions: at last 2 in every country

Engage with Scientix and discuss accordant issues with the Scientix community	WP 4 Leader	GEM Consortium was represented in STNS and SPOW workshops. More below. Number of actions: 2
Represent GEMnet on EPALE	WP 4 Leader	WP4 leader was posting on these platforms about the GEM Network Number of actions: 3
Represent GEMnet on eTwinning	WP 4 Leader	
Identification of complementary education projects for all topics of gender&STEM	WP 4 Leader for international and EU level, each project partner on national level	Part of the national dissemination plan Number of actions: at least 5 in each country
Introduce GEMnet members (their institutions/employers) on the webspace and via social media	WP 5 Leader (in coop. with WP 4 leader)	Information was sent through the mailing list by the work package leader Number of actions: 1

(2) **Peer-learning actions**: all members share and raise their knowledge, skills and attitudes about ongoing gender and skills gaps in STEM/digital sectors and share best practice strategies to overcome existing challenges. This increases the capacity of the network through increased member competences.

Table 2 Peer-learning actions

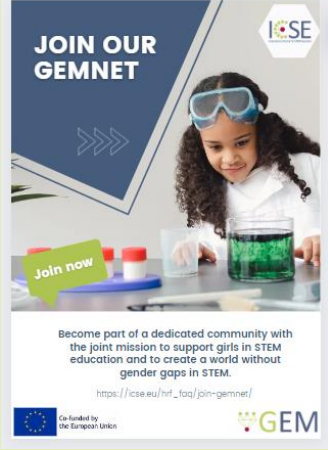| Types of activities	Executed by	Examples
Create a state-of-the-art with project partners and initial members to identify competence gaps with regards to major topics (stereotypes, gender gaps…)	Project Consortium	Each partner identified relevant actors on national and international level and included them into their national dissemination and communication plan, set strategies to get into contact with them and discussed it with the consortium. For example in Spain: Instituto Andaluz de la

		Mujer: https://www.juntadeandalucia.es/instituto delamujer/index.php/inicio, RedGEN DCCSS:https://www.facebook.com/RedGen DCCSS/, Seminario Multidisciplinar Mujer, Ciencia y Sociedad: http://www.ujaen.es/investiga/semmujer/a ctividades/actividades.html, WomANDigital: https://womandigital.es/, and many more were identified and contacted. Number of actions: on average each country identified at least 20 actors (10x20)
Provide materials to project partners and initial members to overcome competence gaps with regards to major topics (stereotypes, gender gaps…)	Project Consortium	For example, during the kick-off meeting the Network materials were provided. They are accessible on the GEM Network website: GEMnet - the European network to support girls in STEM education – ICSE – International Centre for Stem Education Number of actions (materials): 6
Send out regular calls for action to all members which present a low-threshold activity to sharing knowledge	WP4 leader	WP4 leader shared through the mailing list of the network relevant information and invited everyone share their expertise and materials as well. Number of actions: 6
Send out regular briefs about highlight topics to all members to keep key messages from the field of girls-in-STEM-education alive	WP4 leader	WP4 leader regularly shared the highlights through the mailing list. For example, about the role of parents in careers choice of girls, key questions for reflection upon circumstances and framework of an educational event, to make it in a gender sensitive way.

		Number of actions: 6
Regular options to get members together	WP 4 and WP 5 leader	A cost-free online workshop series 1h4Girls in STEM have been created and are organized several times a year. Number of actions so far: 3 Number of actions planed: 2
Engage in existing platforms, networks, groups, e.g. https://www.facebook.com/groups/GenderandSTEM/	WP 4 Leader on EU level	Project leader engaged in the existing platforms, informed about the network and shared information about gender in STEM. For example, EPALE, eTwinning, Number of actions: 3
Engage in and share via existing national platforms, networks, groups	members	Partners engaged in discussions and exchanges on national level. For example, german partners engaged in a working group "girls in Freiburg" and participated in several events, seminars and get-togethers Number of actions: 10
Involve representatives from complementary education projects for all topics of gender&STEM, invitation to impulse lectures	WP 4 Leader for EU level	For example, WP leader organized a session with the representative of https://festemproject.eu/ with the GEM consortium Number of actions: 4
Exchange with representatives from complementary education projects for all topics of gender&STEM	each project partner on national level	For example, Slovakian partners were collaboration in several events with the NGOs Number of actions: 8

Create material (e.g. a flyer) which introduces the network to STEM/digital business sectors (primarily in the partner regions as they are most important for participating girls and their teachers)	Project Consortium	 Number of actions: 1
Discuss the matters at hand with teacher students in STEM education programmes at their Higher Education Institutions	Project consortium	Project consortium as active educators in the initial teacher education completed this task in their universities. Number of actions: 10
Discuss the matters at hand with colleagues at their Higher Education Institutions	Project consortium	Project consortium actively involved the different departments in the organisation of the summer schools and non-official meetings were held. Number of actions: 10
Introduce the project and accordant key issues and best-practices on EU and national policy level	WP 5 leader and Project Consortium	Dissemination measures are listed in the final GEM dissemination, communication and exploitation plan. Number of actions: 4

(3) Communication and dissemination: members work on measures to raise the societal awareness about the need to create a world without gender gaps in STEM and how to achieve it; as well as share peer-learning content and project results.

➔ The monitoring and evaluation of communication and dissemination measures are part of the project's overall quality management and not included in this document. The information is included in the final GEM communication, dissemination and exploitation plan.

Review

The review takes a close look at GEMnet, its activities and their impact and thus the network's potential to effectively continue its course of action.

First part of this review is a **quantified monitoring**:

The key performance indicators (KPI) are as follows:
1) number of GEMnet members at the end of the project
2) number of countries involved
3) number of concrete measures planned (also beyond project duration)

The project successfully achieved and exceeded these KPI target values:

Table 3 Key performance indicators

Key performance indicator	Target value	Achieved value
Number of GEMnet members at the end of the project	At least 100	185
Number of countries involved	At least 11	22
Number of concrete measures which are planned also beyond project duration	At least 100	150* activities *Some of the mentioned examples for concrete activities above on pages 6-11 are overlapping

In addition to these quantified KPI, the review involved **an evaluation** to learn about the network's impact. The evaluation was performed through interviewing GEMnet Members. Qualified indicators are as follows:

- do members feel prepared to act as multipliers to promote GEM and related topics (stereotypes, gender and skills gaps, ICT challenges across Europe, etc.)
- do members feel able to support similar STEM education activities for girls in the future
- in how far has members' personal perception changed of the matters at hand (gender and skills gaps, etc.)
- do members have an idea of their possibilities to engage beyond project duration (goes hand in hand with the project's sustainability strategy)

The questionnaire was spread right after the 1h4Girls in STEM session in November and afterwards also spread through the network mailing list. We received 68 answers, coming from 17 countries:
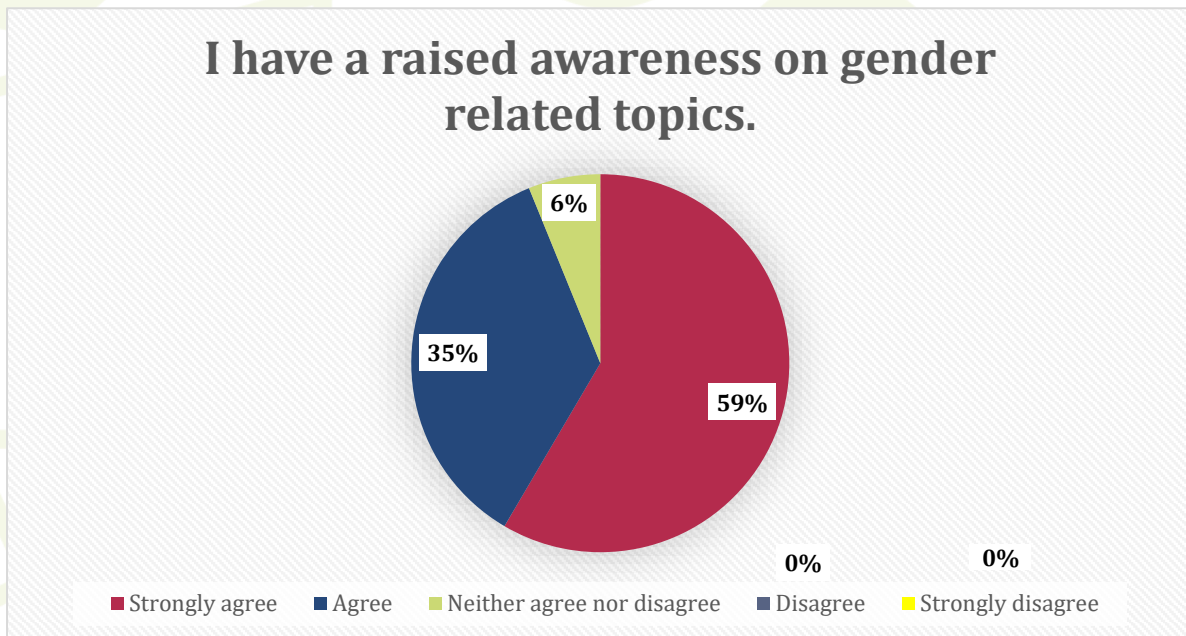
Turkey	1
Sweden	3
Spain	12
Slovakia	3

Romania	2
Portugal	2
Nigeria	1
Netherlands	6
Lithuania	2

Iran	2
Germany	9
Czechia	4
Colombia	1
Austria	2

Malta	1
Lithuania	3
Cyprus	1
No answer	8

- The answers from members all rank on the positive side of the Likerts' scale. They agree or strongly agree the network to have had a positive effect on their learning effects and that they are willing to stay in the topic and act on it. All of the national GEM team members answered, that they are going to organize STEM summer schools or similar events with the pedagogies and methods worked out during the project. Most of the consortium members agreed, that the project has initiated conversations about the role of gender (in STEM), about discrimination, importance of events specifically for girls in their family, friends and professional groups of gathering.

-

I have a raised awareness on gender related topics.

6%
35%
59%
0%
0%

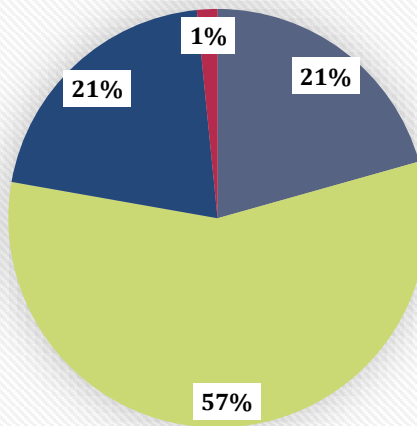■ Strongly agree ■ Agree ■ Neither agree nor disagree ■ Disagree ■ Strongly disagree

I can recognise stereotypes in my every-day life.

5%

51%

44%
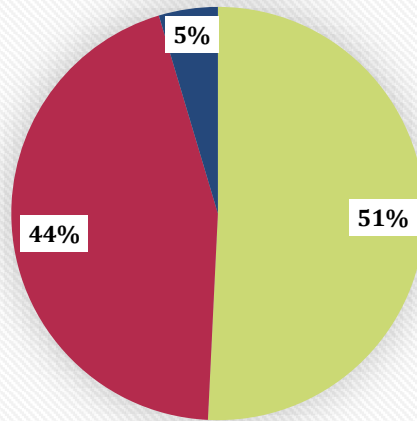
■ Strongly agree ■ Agree ■ Neither agree nor disagree ■ Disagree ■ Strongly disagree

I know how to create a gender-neutral and safe environment.

1%

21%

21%

57%

0%

■ Strongly agree ■ Agree ■ Neither agree nor disagree ■ Disagree ■ Strongly disagree

I know how role models can effectively inspire girls for STEM.

6%

34%

60%

0%   0%

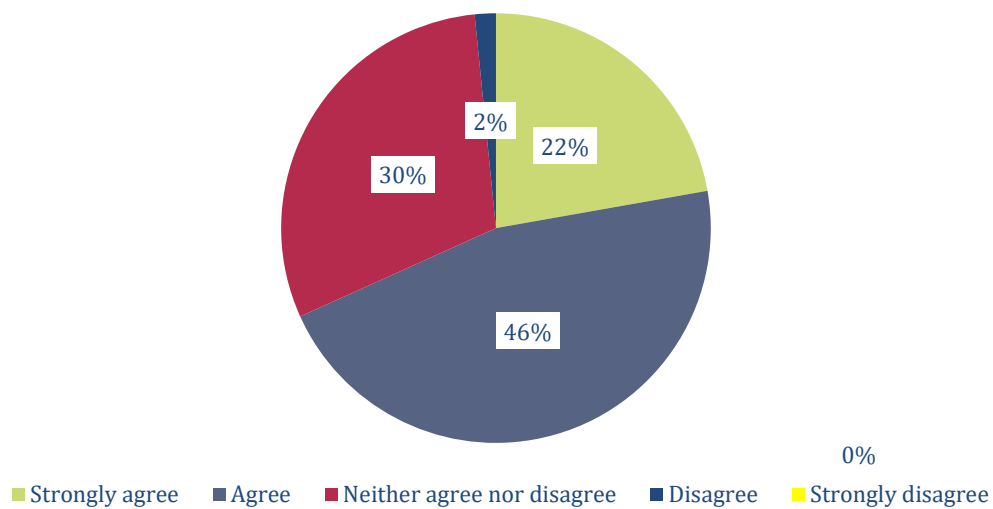- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree
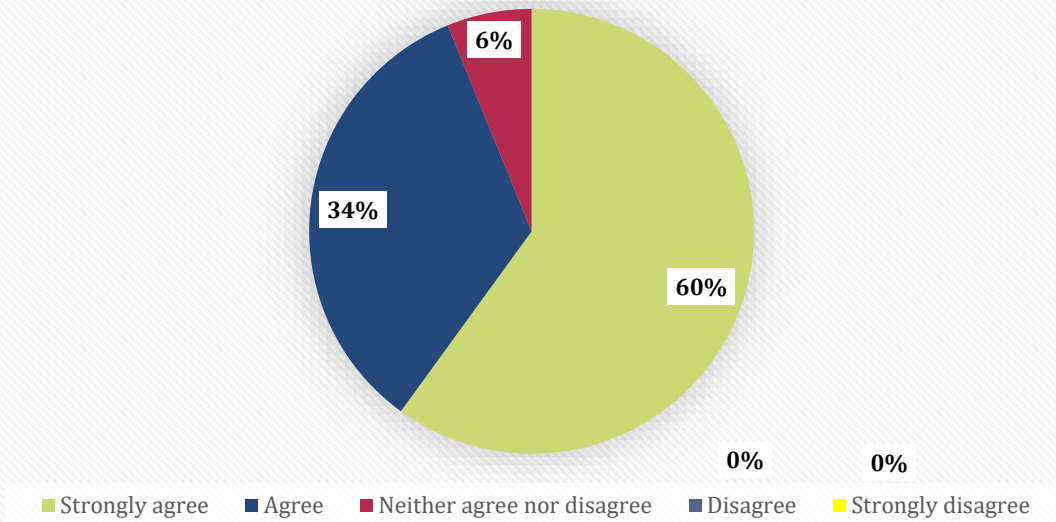
I know how to talk about gender sensitive issues.

2%

22%

30%

46%

0%

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

Information received had a positive effect on my teaching practices.

Pie chart:
- Strongly agree: 30%
- Agree: 62%
- Neither agree nor disagree: 8%
- Disagree: 0%
- Strongly disagree: 0%

Legend: ■ Strongly agree ■ Agree ■ Neither agree nor disagree ■ Disagree ■ Strongly disagree
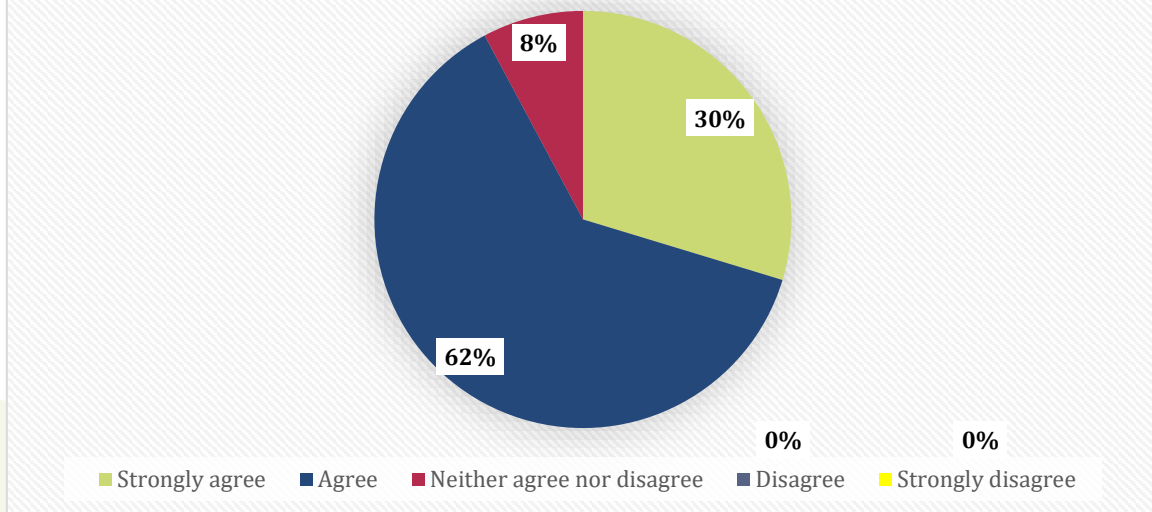
Best-practice I –

offering a framework for knowledge exchange and networking

Some months into the project, a challenge had come up with regards to the consolidation and peer-learning actions. From many years in STEM education, all partners were sure that there is a huge number of people which are interested in a STEM (education) world without gender gaps, and that there is a massive amount of knowledge, opinions, and ideas on the matter circling around the STEM education landscape. However, it has become clear that it is not as easy to identify and attract these people so that they can share (and discuss) their knowledge and experiences.

To overcome this challenge, a process was set into motion which bases on PHFR ICSE's (coordinating institution) regular risk management procedures. This process started with an inspirational session among the whole ICSE team, in which the challenge was presented and each team member could – supported through team work and creative methods – work on solutions. Subsequently, the most promising solution was taken up, was framed in concrete terms, and was presented to the GEM consortium. Jointly, the consortium worked out a final concept and concretely planned necessary steps. Due to its success, this solution is described here in detail, as it combines several actions from table 1 and 2, and most certainly can serve as measure to be taken up by project consortia or

individuals finding themselves confronted by similar challenges: identifying and attracting (motivated) participants and being successful in sharing and discussing relevant issues across Europe. The above announced solution is a series of online events which are called "1h4Girls-in-STEM".

Step 1: Planning

The event series is supposed to work out and communicate key information pieces on supporting girls in STEM education. Each single event has to cover another focus topic, e.g.:

a. How science identities affect STEM teaching and learning

b. The role of intersectionality in gender-sensitive STEM teaching and learning

c. Stereotypes and Stereotype Threats and how they deepen gender gaps in STEM education

d. Didactic measures for gender-sensitive STEM teaching and learning

e. Hands-on learning activities to teach gender-sensitive STEM subjects

Each event is a stand-alone event, lasting no more than 60 minutes, and taking place at lunchtime, so that it is possible to take part while having lunch without disturbing any schedule.

An added value is created through the following approach: first, the focus topic is introduced by an expert on it, shedding light on state-of-the-art of accordant research. After the introduction, participants will be encouraged to share their perspectives (from practice, policy, studies…) on the matters at hand and to discuss ways to transfer the introduced research into practice (classrooms, out-of-schools activities etc). To communicate discussed issues, the participants jointly phrase key information pieces on supporting girls in STEM education which will be shared across Europe after the events (through catchy (social) media posts). This step is part of GEM project's dissemination measures. These key information pieces highlight pressing issues and possible solutions and are supposed to serve as impulse-giving inspirations to others and hooks. Inspired by the provided key information pieces, external audiences presumably are hooked to develop an interest to look

deeper into accordant topics. One desirable option naturally is, that audiences hooked through the provided pieces visit the networks websites, where not only the key information pieces can be found, but all related materials, such as the presentations of the events or links and publications on the focus topics.

Step 2: Pilot

To generally try out the concept, the network coordinator got in contact with another EU project on gender and STEM feSTEM and asked them whether they would be willing to become network members and present their project to the GEM consortium. They agreed and so it was possible to test the registration functions, the developed design elements for (social) media, the basic procedure of one part speech/presentation and another part active digital group work (break out rooms) and plenary discussions as well as the length of the event. This is an important step to make sure that during the "real" events which also involves external people, everything runs smoothly to not loose participants due to inconveniences.

Step 3: Launch of the series

To date there have been three events, with participant numbers ranging from 22 to 69. Through the events, the network gained 102 new network members. This is a huge success.

Organization of the event requires time and personal resources. Here are the steps, that are required:

DECISIONS PRIOR TO THE ONLINE SERIES	Setting the topics to address and the frequency of the series
	Setting a form for becoming a member of the network
	Keeping a list of members' background and contact information
	Creating a logo and colour scheme for visual identity of the series, a PPT template
PREPARING A WORKSHOP	Gaining speakers on the chosen topics
	• research of experts in the chosen topics and contact information
	• approaching the experts and explaining the idea of the workshop and the expectations
	Setting a meeting with the speaker to prepare the workshop
	• format of the workshop, timeframe, location
	• giving the presentation template to secure the necessary visual identity
	• discussing the target group and its needs

	• preparing an introduction text about the workshop for dissemination/preparing a short 60 second (or less) video about the workshop for social media
	Creating the ZOOM room and testing necessary features (break-out rooms, video recording etc.) or booking a room for the event
	Creating an evaluation of the workshop
	Setting up a contract with the speaker if funds are available
	Creating an online application form or another application system. if possible, with automatic message on the date and place the event takes place
DISSEMINATION	Uploading the introduction text on the dissemination channels (website, instagram, linkedin, facebook, twitter), picture of the speaker and background information
	Looking after the comment section and interact with possible visitors
	Setting a participants list
	Including the members in the Network mailing list, if required, inserting personal information and contact information of the members up to date
	Communicating to the speaker information about the participants: how many, background, relevant comments from the participants
ON THE WORKSHOP DAY	Particularly pay attention to the dissemination channels as on the day of the event there are many last-minute applications
	Starting the online meeting /preparing the room
	Welcoming participants, introducing the speaker
	Moderating discussions
	Building working groups if necessary
	Giving technical support if necessary
	Making screenshots, noting quotes and relevant outcomes
	Conclusion of the workshop
	Providing evaluation link to the participants
AFTER THE WORKSHOP	Sharing key messages and photos through dissemination channels
	Uploading materials, PPT if an online space is available
	Evaluating the workshop
	Thank you to the speaker, sharing evaluation of relevant, taking care of the contact
	Controlling if the contract requirements are fulfilled for both sides

It is important to note that the network considerably benefitted from approaching acknowledged researchers and experts directly. The recommendations for possibly interested people had either

come from the consortium (from their established contacts) or from participating in events on gender and STEM.

Furthermore, the format has been so successful, that ICSE and the ICSE Consortium (a partnership of around 20 Higher Education Institutions across Europe) have taken it up as a regular format beyond project duration with the intention to use it as a format to continuously address relevant topics in the STEM education with different target groups that are coming from current projects and additional research, keeping GirlsinSTEM a part of the topics to cover. The PHFR awarded the initiative with an additional budget of 500 Euro to be able to reward the speakers for the efforts they put into setting up and providing their session.

As ICSE partners are altogether working on more than 10 European projects at the moment and are generally engaged in various STEM education initiatives across Europe, vivid and meaningful exchange can be expected in the future.

Topics that network members wish to hear more about in the future:

- Career Guidance
- Artificial Intelligence or Machine Learning
- Women in technology: stereotypes, current issues, challenges and solutions worldwide.
  Encouraging women's interest in technology: existing initiatives, projects, organisations worldwide.
- Robotics - programming robots using Arduino
- Resistencia antimicrobiana
- Experiences on learning activities for 'Girls4STEM'
- Gender stereotypes in textbooks
- Supporting girls from different cultures
- GEM-like summer school activities for teachers (female only?)
- Girls' Self-efficacy
- Stereotypes and the role of women in Europe.
- How to enhance girls self-efficacy in co-educated environment.
- Effects of positive discrimination
- Introduce gender in engineering teaching
- Which of companies support women and girls on education ? How they help ? What is the opportunities for ?
- EDUCATION AND TALENT SHARING FOR GIRLS.
- What are task characteristics that appeal to girls or might hinder their involvement?

- More about gender-sensitive pedagogies
- In the field of Technology that blurs the gender gap when boys and girls work the same tasks and aspects that were always carried out only by them. It is important to empower girls in STEAM aspects in projects with boys.
  You should never create specific activities for girls to try to get them involved in the STEAM disciplines.
  They have to see that they are as good as they are in those disciplines by working hand in hand on the tasks.
- to learn how talk about gender sensitive issues
- How to engage other teachers in gender-balanced teaching-practices (my PhD is about this subject).
- Robotics and computational thinking workshop.STEAM dilutes the gender gap and fosters
- How to communicate gender sensitive issues
- Special STEM career for girl
- Historic developments of gender-issues in STEM
- Strategies for involving girls in robotics
- gender sensitivity
- How to help teachers of adolescents or girls so that they teach taking gender into account and thus motivate girls?
- gender stereotypes for boys

Best-practice II – active networking on EU level

Through our active networking another meaningful opportunity for extending the width of the gender in STEM came up. GEM was part of some important activities that were linked to the European School Net and Scientix, the community for science and mathematics education in Europe:

1. the SPOW series reaching teachers: science projects online workshops, where a leader of a topic can address new methodologies and discoveries to a community of teachers. During the first webinar, the leader introduces the background, gives general information about the project and sends out preparatory tasks for the teacher audience that is taking part in the track. In the following week, an online session of 90 minutes takes place to go into detail into the content. Teachers then receive a hands-on task and meet again in the week three to discuss and network.

2. the STNS seminar reaching ministries: Science Topics Networking Seminars address a specific topic or challenge in STEM education and brings together key stakeholders: Ministries of Education (MoEs), teachers, researchers, industry partners, project coordinators, managers and other representatives, from European and national science education projects. In 2022 GEM representatives were one of the key speakers on STEM Female Leaders: Bilgin_et_al_2022_STEM_Female_Leaders_STNS_Final-ready-for-publishing.pdf (eun.org)

3. career advisors' network connecting business representatives and pupils: during the 1h4Girls in STEM sessions we want to connect the businesses more and provide meaningful events for networking as part of our GEM network activities in the future as well. We also thought that it is beneficial for extending collaborations by connecting to existent networks so we guided our business representatives towards the career advisors network Welcome to the STE(A)M IT Career Advisers Network - STE(A)M IT (eun.org) to be involved more, connect and contribute descriptions of career profiles to be used at schools.

Drawing similar strings as the event series from Scientix, but also events of other existing networks and institutions is a successful way of disseminating relevant STEM education topics across Europe. These formats concretely respond to interests identified among STEM education researchers, academia and practitioners, covering topics which are highly relevant and intensively discussed among all involved. For GEMnet it has brought clear added value to engage in these formats, not only to extent it reaches, but also to be able to learn about most discussed topics among the Scientix community (and thus across Europe) and receive feedback from involved actors.

Best-practice III – active networking on local level

Alongside with the networking on EU level and adding ourselves to exiting initiatives and events, it was extremely beneficial for the members to network on the national and local level on their own. There were many good collaborations taking place because of the GEM network, to name one for each level in Germany:

1. PHFR networking on national level: joining STEMconnected network in Germany (*MINTvernetzt*).

Through the networking activities that were part of the GEM Net agenda, PHFR came across STEMconnected and identified the overlapping aims. After taking up the contact, a couple of meetings arose. PHFR were part of a widely visited online conference from STEMconnected, dealing with gender issues and participated in discussions of 2 gender cafes where it was possible to connect with other important actors who are organizing STEM activities for girls and benefit from each other's experiences and knowledge.

1. PHFR networking on local level: developing cooperation with Youth Centre in Freiburg, Germany (*Jugendhilfswerk*).

Through the active searching of relevant local stakeholders, a closer collaboration was established with the local youth centre that is active and experienced in organizing STEM activities for girls. Network members disseminated each other's events with the overlapping target groups and topics. Representatives from PHFR also were leading sessions during their maker-day for girls and representatives from the youth centre were mentors in the GEM summer school in 2022.

Another point, that is also connected with the 1h4Girl in STEM series and that are important for networking on specific subject, is approaching experts in the field and inviting them to be apart of it and share their expertise. Each national expert can contribute to the knowledge extension of the whole European network and is crucial for creating a common knowledge base.

Conclusion

There are three measures that, following the review, stand out with their effectiveness. For a network to stay active, there is a need for an active coordinator, that provides networking options and gives new impulses. A network is not a self-runner. At the beginning of the project we tried out providing space for network members to share their knowledge, experiences and relevant materials. The activity lessens with progression of time.

First: Making the effort to providing events which, in a simple but effective way, enable knowledge-share and exchange and which can easily be involved in one's schedule. Besides making sure that the registration is simple, and the timeframe fits in most schedules, it is particularly important that

the presented topics are highly relevant. Identifying such topics might be a challenge, the GEM consortium clearly has had the advantage that their members have been active in the field of STEM education for years and are aware of pressing issues. It has also become very clear that participants must be involved in a way to allow them to engage and share themselves. This can either be realized directly through organizing the events in a participatory manner (group work, panel discussions etc), or through offering them options to engage after the event, e.g. by providing a space to share, for example, their work on the topics at hand, such as publications.

Such events have a huge impact, as they serve as door-openers, but also have the potential to convince people that the network (or any organisation which offers the events) has something meaningful to offer and that it is beneficial to be part of it.

Second: Making the effort to represent the network in acknowledged formats on EU level to promote European STEM advancement with joint forces, such as the Scientix formats. Similar to the events which are offered by the network itself, such established and popular formats serve as door-opener and makes it possible to establish contacts with people with similar interests. Also, it allows to receive feedback and collect information which then can be shared among network members to increase the knowledge capacity of the network itself. Besides Scientix, there is a number of organisations, platforms and regular events which are relevant in the area of STEM education, and with which interested parties could engage.

Third: Making the effort to do the desk research on your own and discover relevant actors in the local surroundings and national level for exchanging the competences and knowledge, and actively use the collaboration potential. Not only local institutions, non-governmental organizations, policy makers, company representatives, but also possible speakers/experts in a field, that might be interesting for the network target groups are of huge interest. Getting in contact with acknowledged researchers and experts has immensely benefitted the network in two ways: on the one hand, the network was made aware of further existing work, and available data and materials on relevant topics (besides what is available from members' own repertoires) by the contacted people. On the other hand, without exception, they all agreed to engage in one way or the other, be it as speakers themselves, be it by suggesting further possible interested people and projects or be it as potential collaboration partners for future projects.

The positive experiences collected through establishing the network and making it work has considerably benefitted the whole project and consortium, opening new cooperation possibilities joining forces in making STEM accessible for girls.