




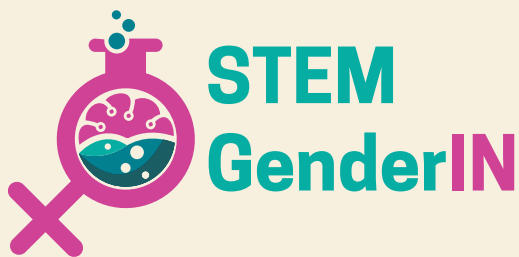
A GUIDE FOR INCLUDING
A GENDER PERSPECTIVE
IN STEM SCHOOLS AND
EDUCATION: **Main recommendations**
on a three-dimensional model

Rosa Monteiro, Lina Coelho and Inês Simões





Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.



ERASMUS+ PROJECT

**STEMGenderIN: A bridge to close the STEM gap with gender-inclusive
education and teaching**

Project n° 2023-1-BE01-KA220-SCH-000157164



Co-funded by
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A GUIDE FOR INCLUDING A GENDER PERSPECTIVE IN STEM SCHOOLS AND EDUCATION: MAIN RECOMMENDATIONS ON A THREE-DIMENSIONAL MODEL

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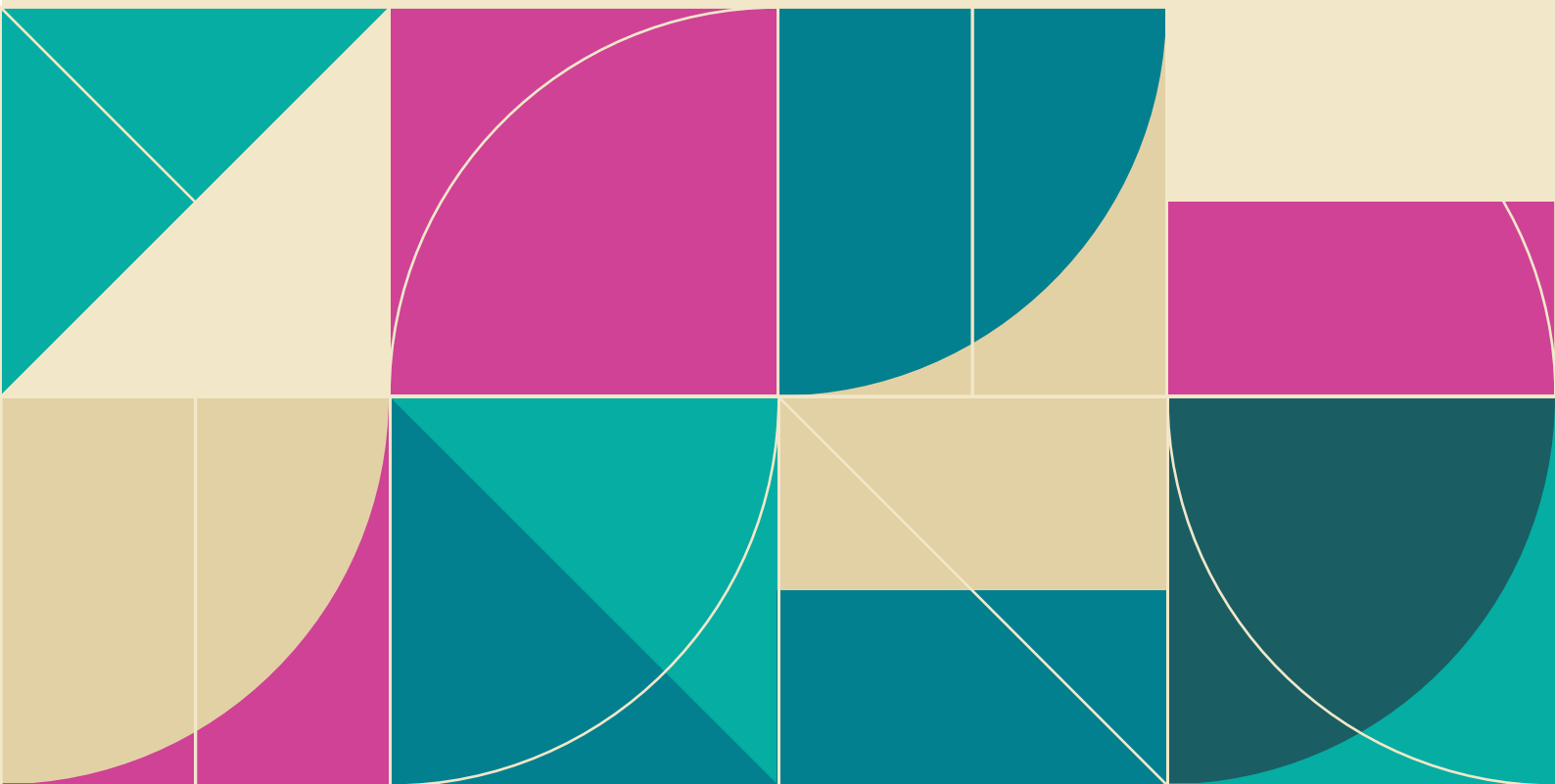
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“Just as gender is not synonymous with sex or women (...) gender-responsive teaching is not teaching about women; it is teaching that considers sex and gender as key analytical and explanatory variables. It involves paying attention to the similarities and differences in the experiences, interests, expectations, attitudes, and behaviors of women and men, as well as identifying the causes and consequences of gender inequality in order to combat it.”

(translated from AQU, 2019: 13)





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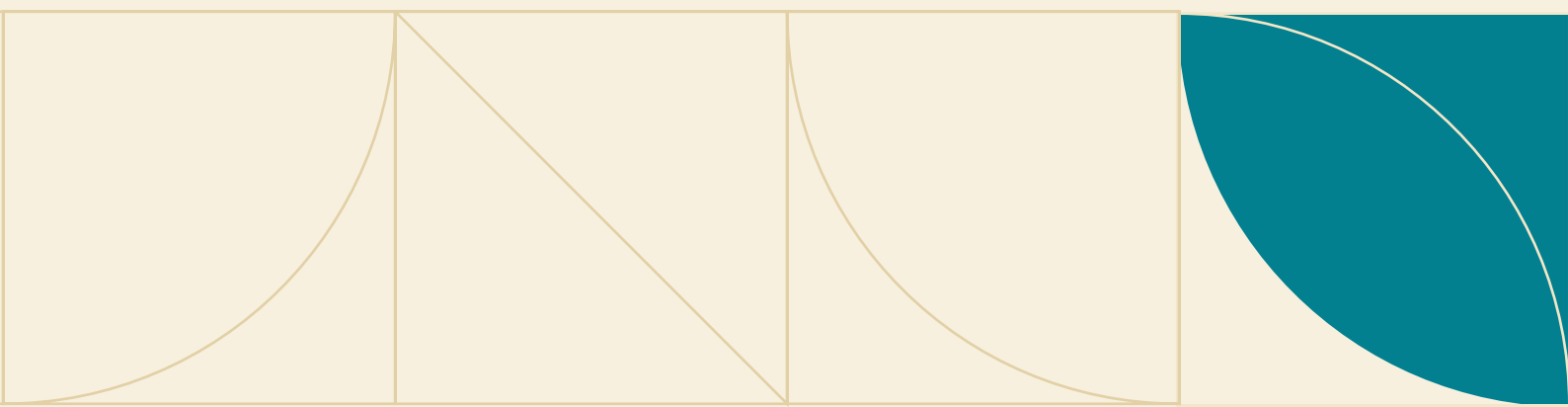
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FOREWORD

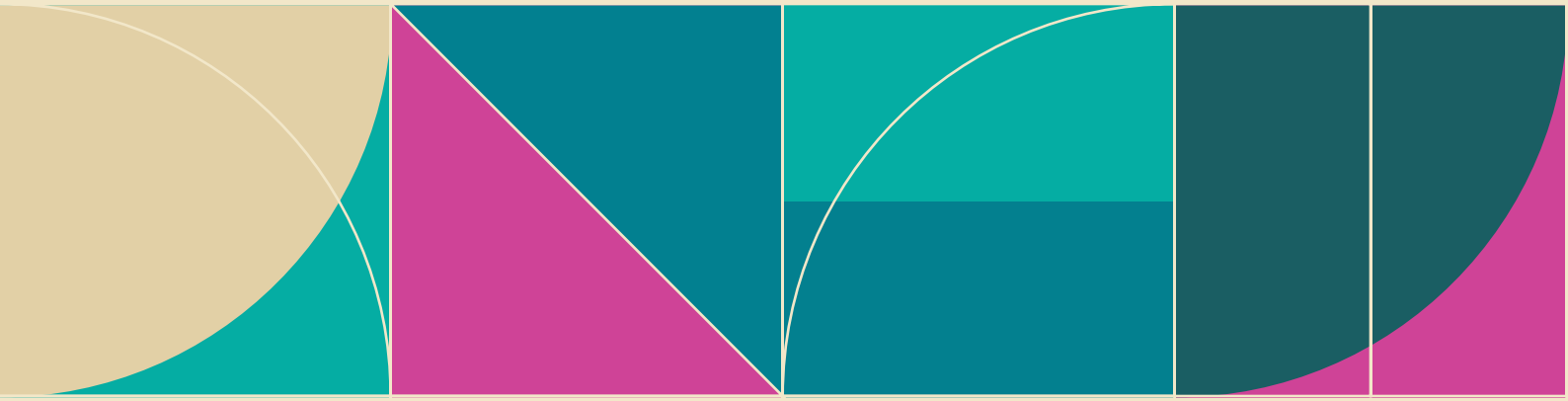
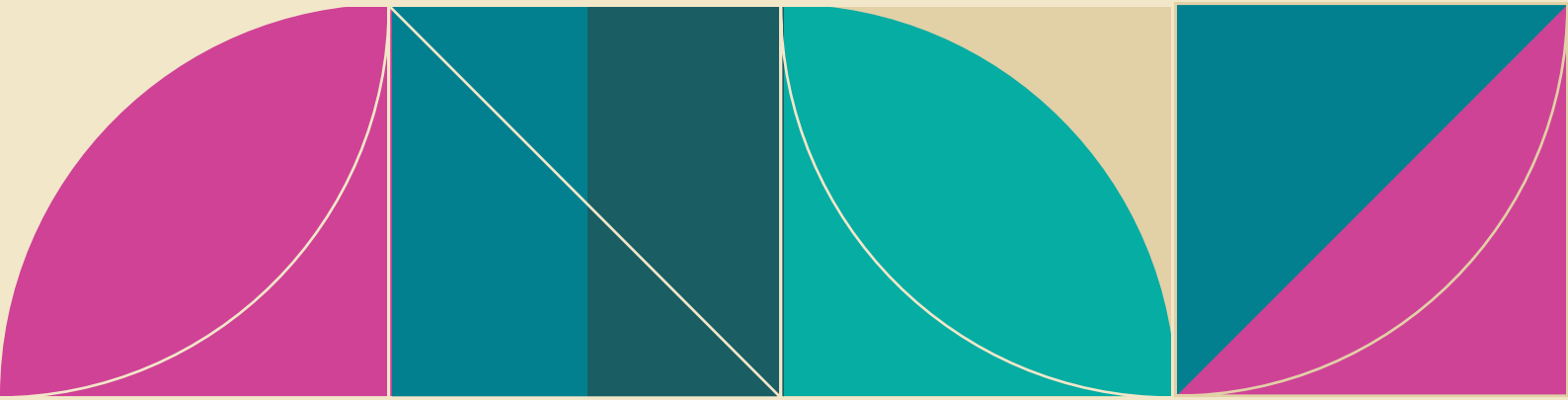
This publication presents a Guide with some main practical suggestions and recommendations for the adoption of a gender and equality pedagogy for the teaching of STEM subjects, as part of the Erasmus+ project **STEM GenderIN: a bridge to close the STEM gap with gender-inclusive education and teaching**.

It should be read in conjunction with the primary document **Equality pedagogy in STEM: an EU framework**, which outlines the approach and analytical tools for addressing gender inequalities and gaps in STEM fields, as well as the challenges faced in STEM education that contribute to the persistence of this gap. It also provides an overview of the European regulatory framework on this issue as a source of legitimacy for interventions in this area. The document presents the findings of research conducted with teachers from the four countries involved, as well as a systematic analysis of reference practices for gender-sensitive STEM education. In addition, the publication provides a list of annotated literature, as well as a list of essential inclusive language manuals for each country.

This specific **Guide for including a gender perspective in STEM schools and education: main recommendations on a three-dimensional model** presents, in a synthetic way, concrete proposals for adopting a gender perspective in STEM education, produced from an in-depth study of this topic (Part I), a list of resources that may be useful in this area (Part II), and a set of recommendations extracted from the main European and international regulations (Annex I).

Both were produced by the Centre for Social Studies of the University of Coimbra, under the coordination of Rosa Monteiro.

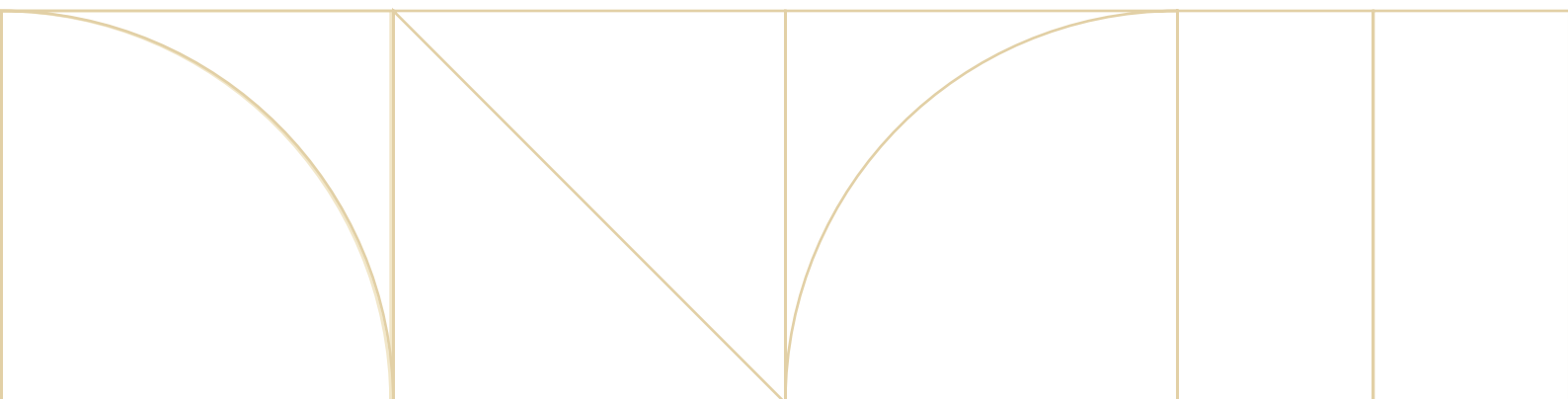






PART 1

Recommendations for an effective gender and equality pedagogy in STEM education: a three-dimensional model



“The planning and implementation of science education activities within institutions does not take place in a vacuum. Science educators, whether they work in schools, science centres, research institutions, or industry, carry out their planning and implementation work within a complex environment that constrains and conditions their work in a variety of ways. This means that the science education programmes that take place in these settings are the results not only of the careful planning and implementation of the science educators, but also of the various constraints and conditions that influence their work (Achiam & Marandino, 2014). Clearly, the masculine gendering of science education... can be an unintended outcome of these influences”

(Achiam & Holmegaard, 2015: 14).

A gender-sensitive pedagogical approach in STEM education should not be confined to STEM teaching practices (in an individualised way) or to the disciplinary and curricular dimensions. It requires a holistic teaching approach that enables the management of the entire educational and school functioning universe to align with and embrace the principles of gender equality and non-violence.

It's not just classroom practices that need to be examined and modified, as gender occurs within the very functioning of the school and of the education system as an institution where a critical gender analysis has been notably absent.

Our approach in the STEMGenderIN project and in this guide for schools and teachers defines “practice” as any school and pedagogical practices that enhance STEM education while also addressing gender stereotypes and inequality. It is also grounded in the belief that equality, non-discrimination, and citizenship should be integral to the school's culture, fostering participation and shared responsibility.

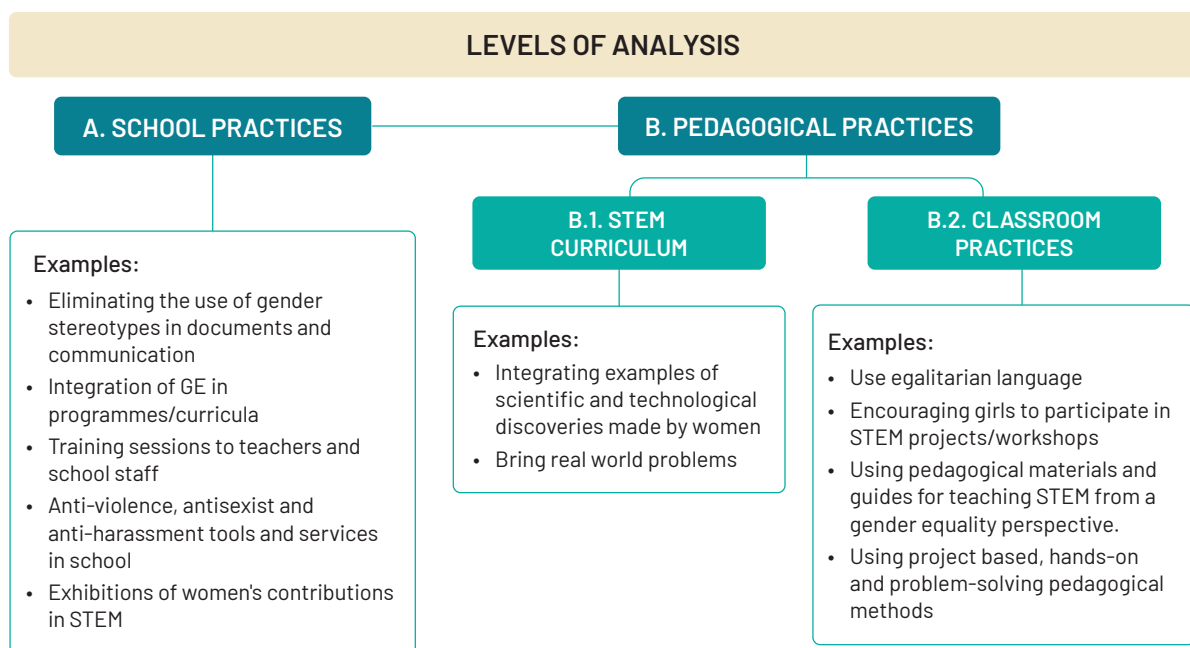
Considering that gender-sensitive pedagogy teaching is a mission for the entire school, it is proposed that the implementation of concrete practices follows a **Whole-School Approach**, recommended at EU level (EC, 2023), based on the following objectives, as defined by Monteiro, *et al.* (2017: 6):

“It stems from sustained practices over time rather than mere isolated interventions. It is integrated into the curriculum, in both instructional and non-instructional activities, in the daily practices of school life and its connection with the community. It is based on educational practices that promote inclusion. It relies on the continuous professional development of teachers. It involves students in active methodologies and provides opportunities for the development of personal and social skills. It is integrated into the policies and practices of a democratic school, engaging the entire school community. It promotes individual and collective well-being and health. It involves working in partnership with families and communities. It is aligned with the specific needs of students and the priorities of the educational community. It is supported by monitoring and evaluation to ensure effectiveness and participation.”

(Monteiro et al., 2017).

We propose a framework organised into two main domains: school practices and pedagogical practices, further divided into Curriculum and Classroom practices. As stated in FAWE (2018: 31) Toolkit: “in the context of classroom settings, pedagogy is a term that includes both what is taught and the methodology used for teaching.” Regarding these assumptions, we’ve constructed the following three-dimensional model.

Figure 1. Equality pedagogy in STEM model



A. School practices

- Implementing a specific action plan at the school level to foster a culture of gender equality from a young age (a Gender Equality Plan).
- This Gender Equality Plan must include: - general and specific goals, indicators, and targets (see **box 1** and **box 2**).

Box 1.

Gender-sensitive indicators have several characteristics:

1. They disaggregate data/information by gender so that differences between men and women can be easily seen.
2. They collect qualitative information to assess and link gender issues, attitudes and perceptions to social and cultural values.
3. They demonstrate changes in relations between women and men over a period of time.
4. They assess empowerment by looking at changes in men and women’s knowledge, attitudes, behaviours, and professional conduct that reflect gender equality.

(UNESCO, 2015: 96)

Box 2. An example of table of objectives from a school equality plan

Objective	Indicators	Targets	Observed Progress/Date	Means of Verification
School leadership, itself, has the training and resources it needs to support teachers in their implementation of GRP.	EXAMPLE: Members of school management are trained in GRP.	EXAMPLE: By mid-year, at least 50% of male and female school management is trained; by year end, 100% of school management is trained.	EXAMPLE: At mid-year, 100% of female management trained, but only 10% of male management.	EXAMPLE: Copies of training certificates
School leadership is promoting and modelling gender responsive best practices.				
Policies for hiring teachers, determining promotion, and selecting school leadership are gender responsive.				
A teacher Code of Conduct that includes prohibition of gender-based violence, including sexual harassment, and discrimination is developed with teachers and is enforced.				
A student Code of Conduct that includes prohibition of gender-based violence and discrimination is developed with students and enforced.				

(FAWE, 2018: 142)

- Eliminating the reproduction of gender stereotypes in documents and communication initiatives (written, visual,...), like the reproduction of the cultural images of STEM as not a girls thing. See the following image, which is representative of a very bad example. It was collected in June 2024, in a public secondary school, in Coimbra (Portugal). The poster is a call from the University of Porto for a physics summer school, and the image doesn't show a single girl.

Image 1: Poster in a public secondary school, in Coimbra, calling for a summer school of physics, only presenting boys in the photography. Photo: R.Monteiro



- Eradicating any sexist stereotypes in the information provided about professions and training paths.
- Integrating the theme of gender equality into orientation support materials, as well as all spaces dedicated to orientation, information, and guidance.
- Applying the use of gender-neutral language and the feminization of job titles, functions, grades, and titles (see the list of *Inclusive language guides*, chapter 6.2 of the Equality Pedagogy in STEM: An EU Framework, Monteiro et al. 2024).
- Inclusion of a “promotion of equality” section in every school project.
- Promoting school sports participation, especially among young girls, to empower body control and self-confidence (see [Conclusions of the Council and of the Representatives of the Governments of the Member States meeting within the Council on women and equality in the field of sport](#), from 2023).
- Assessing the treatment of gender equality in the current programs/curricula, which will be considered at each program renewal.

- Ensuring gender parity in all governing and representative bodies of schools.
- Promoting parity in student elections for the representative bodies.
- Promoting awareness of gender equality in textbooks and educational materials.
- Integration in community, local, and/or national projects on the gender gap in STEM.
- Encouraging parents' associations to undertake specific actions related to gender equality.
- Partnership with feminist academics, networks, and NGOs.
- Partnership with universities and research centres.
- Listing experts who can participate in gender equality in STEM training programs (from NGOs, women in STEM networks, universities, and research centres).
- Including training on gender equality and the dismantling of sexist stereotypes as part of the training requirements for teaching, educational, and guidance staff.
- Deliver training sessions to teachers and school staff about gender inequality, gender stereotypes, and STEM.
- Deliver specific training on gender stereotypes and gender horizontal segregation to vocational professionals or counsellors.
- Implementing anti-violence, antisexist, and anti-harassment tools and services in school, and information about these issues, to promote school as a safe space.
- e.g. Develop with teachers a Teacher Code of Conduct that includes prohibition of gender-based violence, including sexual harassment, and discrimination. Develop with students a Student Code of Conduct that includes prohibition of gender-based violence and discrimination.
- Celebrating symbolic days, like International Day of Girls in ICT and Girls in ICT days.

Image 2: Poster of a national Portuguese initiative celebrating Girls in ICT Day 2022. Photo, INESC pub.



- Implement mentoring and role-modelling programs and sessions with female STEM professionals, teachers, and students.
- Organising exhibitions of women's contributions in STEM and STEAM.
- Creating partnerships with institutions such as museums, science centres, NGOs, and universities (they can provide schools with both in-school and extra-curricular opportunities to facilitate teachers' implementation of a STEM curriculum).
- Organising STEM labs.
- Organising study visits to STEM companies, technology centres, and universities.
- Organising theatre and participatory arts activities, debates, and seminars on gender segregation of professions.
- Producing or disseminating campaigns to combat the segregation of professions and promote equality between women and men.
- Supporting school-community links to promote gender equality.
- Promoting communication initiatives for professional and economic sectors where gender desegregation is a priority, through community and company partnerships.
- Enhancing cooperation with the professional world concerning apprenticeships, internships, mentorships, and other forms of hands-on learning to reinforce and promote the role of women and gender diversity in employment-rich sectors.
- Implementing "future job" initiatives and fairs with a gender equality and desegregation focus.
- Incorporating gender equality in actions for parental support and for associations/organizations.

B. Pedagogical practices

B.1. STEM curriculum

- Revamping STEM course *curricula* to offer a more inclusive and socially relevant content.
- Analysing and assessing the level of gender sensitivity in textbooks, in text, pictures/illustrations, and activities (see Box 3).

Box 3. Analyse the level of gender sensitivity in textbooks:

PICTURES/ILLUSTRATIONS

- Are there an equal number of boys/men and girls/women represented in the picture/illustrations?
- Are there images depicting both women/ girls and men/boys engaged in active doing, not just watching or assisting?
- Are boys/men and girls/women depicted doing a variety of tasks and non-traditional activities in the illustrations (for example, they show boy cleaning or caregiving and girls driving a truck or working as a doctor?)
- Are there any incidents of gender stereotyping or discrimination?

TEXT

- Are both pronouns of boys and girls mentioned in the text? What is the percentage for each gender?
- Does the textbook include such gender-inclusive terms as “firefighter” instead of “fireman,” or “flight attendant” rather than “airline hostess”?
- Does the text provide empowering examples, stories, and roles that represent both girls and boys?
- Does the text provide relevant and real-life examples?
- Are there any elements of bias in the text that favour one gender over the other?

ACTIVITIES

- Are the activities suitable for both boys and girls?
- Does the activity engage the participation and diverse learning styles of learners?

(FAWE, 2018: 58–59)

- Integrating examples of scientific and technological discoveries mostly benefitting women (e.g. Contraceptive pill, ...).
- Integrating in STEM curriculum and materials more women protagonists and voices.
- Using inquiry-based and real-world learning activities to engage students in STEM and computing.
- Showing as many facets and interdisciplinary applications of STEM and computer science as possible, as early as possible, to attract students from diverse disciplines.
- Articulating with non-STEM disciplines colleagues and processes.
- Emphasising the social impact and interdisciplinary nature of STEM work.
- Giving more emphasis on the process of thinking, designing, and problem-solving.
- Taking students to events and excursions, sharing with them stories and role models from the history of STEM.
- Portraying work in STEM as helpful, altruistic, and community-oriented.
- Providing opportunities to do STEM activities as part of a group.

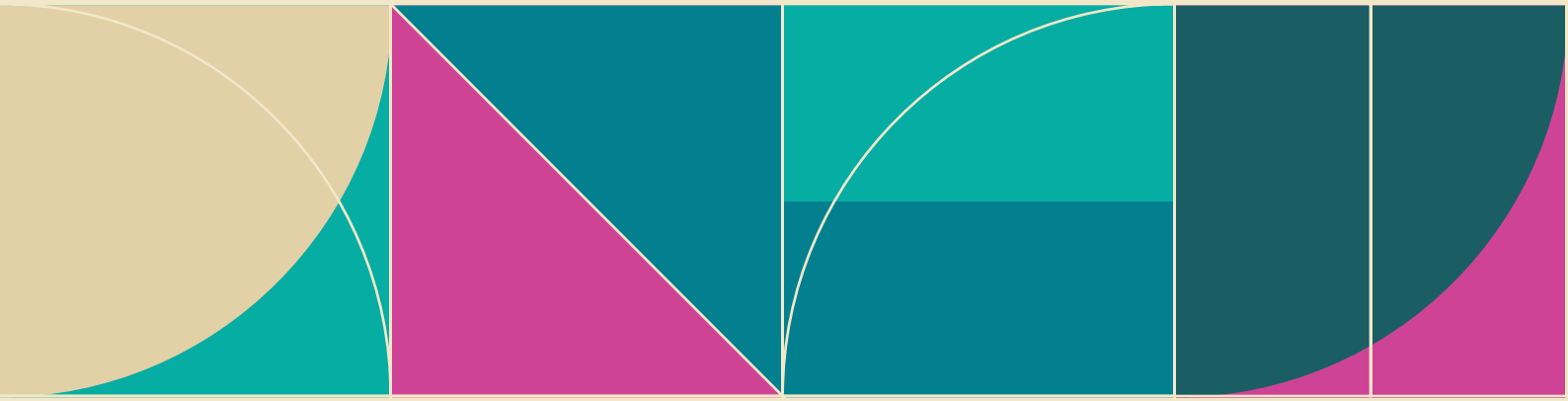
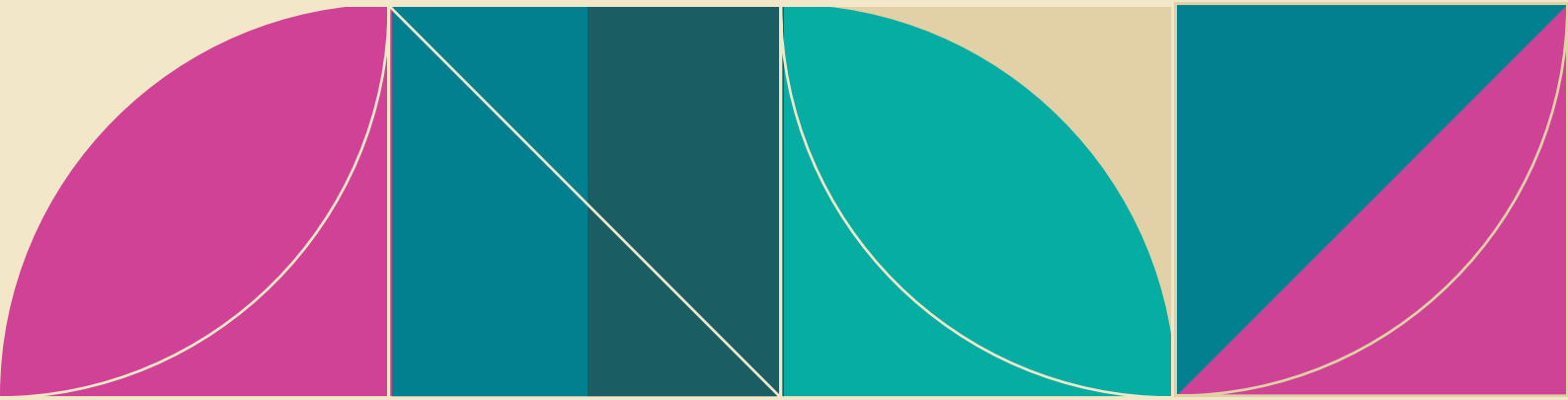
B.2. Classroom practices

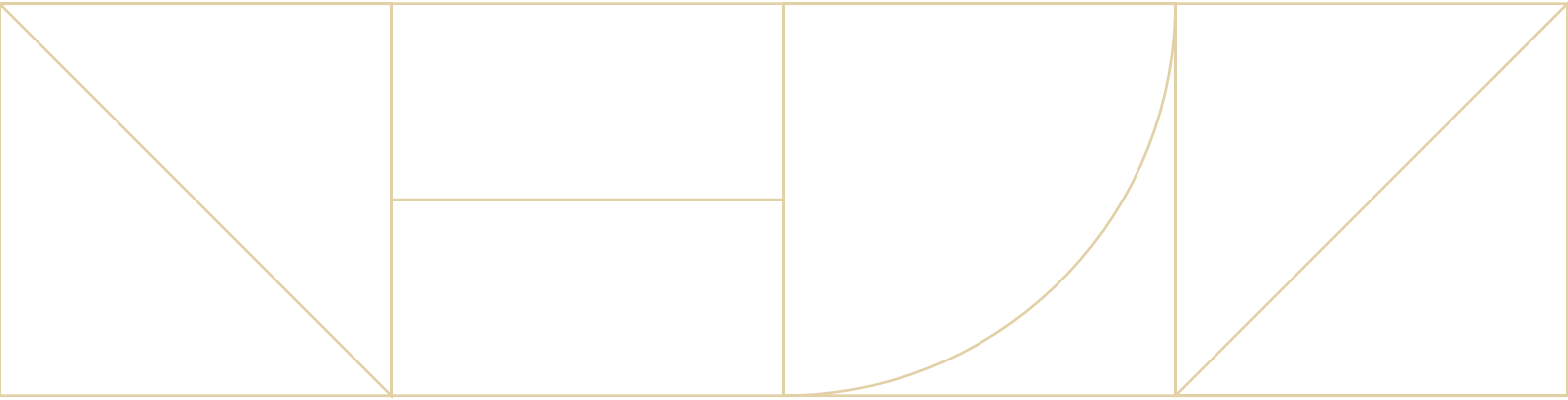
- Encouraging students to work in mixed-gender groups (creating learning environments that foster gender collaboration).
- Developing activities to understand students' misconceptions and stereotypes, but also their capabilities.
- Eliminating the use of non-egalitarian language, as the generic masculine.
- Giving priority to participatory and inquiry pedagogical methods, avoiding memorising subjects in classroom as a pedagogical strategy.
- Including content and activities in classroom programming to promote gender equality in STEM.
- Interspersing conventional or interactive presentations with short quizzes or gaming activities.
- Integrating technology and innovative educational tools to motivate students.
- Employing learner-centered pedagogies or student-centered pedagogies, focusing on connections, students' needs, and self-efficacy feelings.
- Installing a growth mindset anchored in the belief that abilities can be improved with effort, strategies, and mentoring.
- Adopting a positive, constructive attitude toward failure as a valuable learning opportunity.
- Bringing real-world problems to the classroom.
- Encouraging cooperative learning.

- Encouraging active learning in classes that use structured exercises, challenging discussions, team projects, and peer critiques.
- Teaching in an interdisciplinary way, doing articulation with non-STEM disciplines (exploring the intersections of design, arts, science, and mathematics, engineering [and drawing] on nearly all aspects of the human experience, including history, politics, economics, arts, and societal aspirations).
- Using project-based, hands-on, and problem-solving pedagogical methods.
- Using investigation activities in STEM classes (observing, questioning, searching for information, planning research, reviewing previous knowledge, interpreting and analysing data, discussing and communicating results, explaining and arguing), that stimulate students' participation and creativity.
- Employing contextualised learning experiences that take into account students' experiences, interests, and everyday concerns.
- Using stimulating activities and tools, like math riddles, physics experiments, or coding challenges, and technological devices, games, gadgets...
- Using pedagogical materials and guides for teaching STEM from a gender perspective.
- Providing special incentives for female students to participate in STEM-related activities.
- Respecting the different gendered styles of learning.
- Encouraging girls to participate in STEM projects/workshops.
- Giving positive reinforcement and motivation to girls.
- Visibilising women in STEM fields.
- Using digital gaming and creative arts activities designed for girls.
- Introducing mentorship and peer support to girls.
- Giving equal voice and opportunity to speak to boys and girls.
- Bringing to the classroom examples of scientific or technological discoveries made by women.
- Encouraging boys and girls to share their experiences in STEM learning (expectations and obstacles) in the classroom as a pedagogical strategy.
- Addressing in the classroom gender differences in the production, visibility, and consequences of scientific and technological discoveries.
- Considering students' gender-specific misconceptions and capabilities.
- Providing low-stakes opportunities for girls to experience success.
- Collaborating with other STEM courses colleagues in developing empathy across gender.
- Collaborating with non-STEM colleagues in developing empathy across gender.
- Developing classroom activities to deconstruct stereotypes about STEM professions, STEM professionals, and gender stereotypes (e.g. draw a scientist, draw an engineer...).

- Developing activities and materials targeted to students' parents to deconstruct stereotypes about STEM professions, STEM professionals, and gender stereotypes (e.g. draw a scientist, draw an engineer...).
- Change the learning environment in classrooms and schools (e.g. eliminate physical symbols and images that reinforces STEM as a boy's domain, as Image 1).
- Avoiding the "brilliance narrative" - one that associates high levels of raw talent and brilliance as essential to success (generally related to stereotypically masculine traits such as assertiveness, competitiveness, dominance, and strong identification with work).
- Eradicating the "geek" and frat-like "programmer" cultural images in visual and verbal communication.

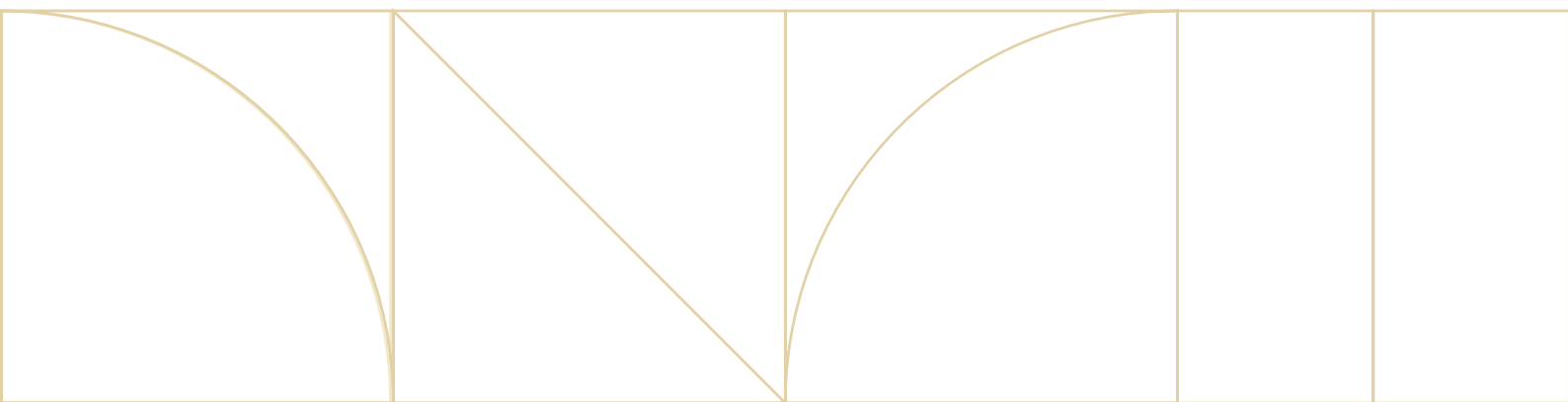
Promoting measures, such as those recommended in this guide, involves systematic and participatory work. This ensures that actions go beyond one-time events and engage various dimensions and relevant stakeholders in the effort to combat gender stereotyping in STEM. For more detail see the principal document **Equality pedagogy in STEM: an EU framework** (Monteiro, *et al.*, 2024).





PART 2

Useful resources and tools



Here, we have compiled a list of European projects that provide a range of resources including toolkits and analysis tools. These resources are aimed at supporting the development of effective STEM and gender practices at the lower secondary level. The goal is to assist STEM teachers in implementing inclusive STEM activities and programs in secondary schools.

The following projects were chosen from the Scientix platform, which encourages collaboration among STEM teachers, education researchers, policymakers, and other STEM education professionals across Europe. These projects were selected based on specific criteria: they include the keyword “gender,” were active between 2015 and 2024, and do not solely focus on primary school education. After applying these filters, we found the projects mentioned below (two of which were also analysed as part of the STEMGenderIN primary document):

1. **[Gender4STEM project](#)** (2017-2020). Erasmus+. (No: 2017-1-LU01-KA201-023926).
2. **[Hypatia project](#)** (2015-2018). Horizon 2020 (No. 665566).
3. **[MISStoHIT: from misconceptions to learning insights through inquiry with playful physical objects](#)** (2015-2017). Erasmus+. (No: 2015-1-ES01-KA201-016001).
4. **[AR4STEM: Augmented Reality for STEM education](#)**(2021-2023). Erasmus+. (No: 2020-1-LV01-KA226-SCH-094530).
5. **[Robogirls - Empowering girls in STEAM through robotics and coding](#)** (2020-2022). Erasmus+. (No: 2020-1-HR01-KA201-077760).
6. **[GEM - Empower girls to embrace their digital and entrepreneurial potential](#)** (2020-2022). Project co-funded by the European Union under grant no. LC-01380173.

Alongside the aforementioned projects, we will also present two other projects that are not listed on the Scientix platform:

7. **Girls Go Circular** (2020-). Funded by the European Union.
8. **KINDER Project** (2021-2023). Funded by the European Union's Rights, Equality and Citizenship Programme (GA 101005800).

1. Gender4STEM project

(2017–2020), Erasmus+. (No. 2017-1-LU01-KA201-023926).

which has now given way to the new project:

Fairness In Teaching (FIT) project (2022 – 2024). Erasmus+ programme, Key Action 2: Partnerships for Cooperation (No. 2021-1-LU01-KA220-SCH-000029569).

<https://www.fairnessinteaching-project.eu/>

Goals

The FIT project aims to develop an advanced approach to improving fair teaching practices, specifically in STEM disciplines. This will provide equal opportunities and access to STEM education for a diverse range of students, including boys and girls, as well as those who are less privileged. The project extends the competency framework of fairness in teaching, which originated from the Gender4STEM project, from a focus on gender to an intersectional approach. It will observe a continuum between primary and secondary school education. Through a design thinking process, FIT will collaboratively engage its three target groups in a community of practice known as the FIT CoP.

Toolkits/Resources

One of the most interesting contents of the website is a set of [32 real situations](#). These 32 boxes depict specific situations where gender inequality manifests in interactions with classes and with students, parents, colleagues, or institutions, and present important solutions and ways of acting/reacting”

A [questionnaire](#) with a situational judgment test (SJT) aimed at assessing the fairness of teaching in primary & secondary school. The questionnaire is full of real situations examples and solutions for teachers:

A useful argumentative framework to justify positive actions for girls in mixed education in STEM. The guidelines provide answers to possible resistance to activities implemented only for/with girls at mixed schools.

[“Positive actions for girls in mixed education Frequently asked questions when implementing “girls only activities” at mixed schools”.](#)

Diverse tools, videos, and exercises to support teachers’ daily teaching activities to introduce gender perspective in STEM contents and courses. Comprise various themes, such as (<https://youtu.be/Wl8Aw3cN1dg>):

- “How robotics can increase girls’ interest in STEM at school”.
- “Science experiments”.
- “The digital atelier”.

- “What do programmers actually do?”.
- “Masculine and Feminine content in STEM teaching”

Examples

Situational Judgement Test

“Situation S16:

You carry out a geometry activity which involves the reproduction of a figure. When grading the results, you realise that the boys did better than the girls. You decide to carry out an experiment and perform a similar exercise by categorising it as a creative activity for visual art class; You notice that the girls’ score greatly improved and that of the boys dropped slightly.

Proposed reactions:

- It confirms that girls always have more difficulties in math.
- You will interview boys in relation to math and you will favor girls in visual art.
- You will pay attention to the way you present your exercises.
- You compare the results and share them to the pupils to show them that there is no reason for there to be a difference between girls and boys in terms of success.

See an example of content related to this situation below. To access all related contents, take our SJT questionnaire.

Proposed Content/Workshop: [Organize mathematics’ workshops in an amusing way: the method MATH.en. JEANS.”](#)

Frequently asked questions when implementing “girls only activities” at mixed schools-Positive actions for girls in mixed education:

“Question 2: Can’t this (girl only activities) convey the idea that it is “strange” for a girl to do STEM? Isn’t it common to choose a STEM career?”

- In an ideal world, we would not need to separate activities for girls and STEM.
- Unfortunately, this is not the reality. The low numbers of girls choosing a career in STEM are proof that we are not there yet.
- Yes, it is normal for a girl to follow a career path in STEM - since girls have at least equally good grades for STEM as boys.
- But it is not normal enough yet, looking at the lack of female STEM role models.
- Girls only activities can be embedded in the curriculum together with other mixed-gender STEM activities. Together these activities have a strong effect.”

2. Hypatia

project (2015–2018). Horizon 2020, No. 665566.

<https://www.ecsite.eu/activities-and-services/projects/hypatia>

Goals

With a robust theoretical framework, the project proposes several important tools, with specific activities to work with 13–18 year old girls, both in and out of the school environment. To do this, Hypatia brought science centres and museums, schools, research institutions and industry together with gender experts and teenagers themselves.

Toolkits/Resources

Resources are provided for 3 groups of entities: **Schools, Science Centres & Museums, Industry & Research Institutions.**

Hypatia toolkit is a ready-to-use digital collection of activities (modules) aimed at teenagers to be used by teachers, informal learning organisations, researchers, and industry.

<https://www.ecsite.eu/activities-and-services/resources/hypatia-toolkit>

The modules that compose the Toolkit are divided into three contexts:

Schools

- Find Gender Stereotypes in STEM Representations.
- Gender Inclusiveness in your Science Teaching.
- Inquire: Shape and Action.
- Play Decide Game & Debate.
- Science Ambassadors and Ambassadors.
- STEM Women Cooperative Card Game.
- Test Yourself.
- What's your Opinion?

Science Centres & Museums

- Find gender stereotypes in STEM Representations.
- Science Café or Café Scientifique.
- STEM Women Cooperative Card Game.
- Test Yourself.
- Wearable Technology.
- Your Role in Research: Inquiry into Chemical Reactions.

Industry & Research Institutions

- Gender optimizing software programming.
- Science Ambassadors and Ambassadors.
- Skill Game.
- Speed Dating.
- Your Role in Research: Inquiry into Chemical Reactions.

Examples

Activity “Find gender stereotypes in STEM representations” (School), for students from 13 to 18 years old, 90 minutes duration. *“The workshop focuses on gender-stereotyped representations of science and technologies in advertisements for technological objects (such as computers, smartphones, video games, cars, etc.) and recruitment campaigns for schools, training, or jobs in STEM fields.”*

3. MISStoHIT: from misconceptions to learning insights through inquiry with playful physical objects

(2015-2017), Erasmus+. (No: 2015-1-ES01-KA201-016001)

<https://misstohit.deusto.es/>

Goals

MISStoHIT is an European project aiming to address misconceptions in STEM (Science, Technology, Engineering, Mathematics) through more effective teaching and learning methods. Following the framework provided by the Hypatia project, MISStoHIT seeks to develop new activities for 13-16 years old teenagers.

Through a **conceptual framework**, where **inquiry-based learning** and **gender** take prevalence, MISStoHIT provides a series of educational resources and learning activities which teachers and educators can utilize in their learning environments. These activities use physical objects to carry out experiments and act on many different fields, such as physics, electricity, movement and force, chemistry, among many others.

Toolkits/ Resources

Learning activities are designed in a way that a common misconception about the topic is addressed first, followed by the goals of the practice and activities/resources that will be used to achieve those goals. Every educational resource/learning activity seeks to introduce a gender perspective, and teachers/educators are given guidance and directions to avoid perpetuating the gender bias/prejudice that exists in these subjects.

In what regards gender, MISStoHIT seeks to approach gender at an individual and interactional level. At an individual level, this means that these activities “pay special attention to the different learners who will be the target group of these activities”, acknowledging “different starting points of the learners, implementing different trajectories of inquiry, challenging learners to depart from their preferred interests and widen their engagement in science”. The interactional level is the level where “participants interact with each other”, meaning that these activities must have “a balanced approach to the participants’ learning preferences, i.e. includes thinking tasks, motor skill tasks, and value-related tasks together with a variation of different interaction forms”.

Example

Gender perspective present in the Didactic Unit related to Electric Current:

“Gender:

- The scientific topic was determined by the teachers to fit the misconceptions of the students. We worked on gender inclusion on both the individual level and the interactional level.

Individual level:

This unit is divided in four independent activities. At the beginning of each activity, we start with connecting to the relevant prior knowledge of the students using different methods to appeal to all the individual learners: watching related videos, answering questions, looking for related information... In the conceptualization phase students can choose their own research questions for the inquiry's, this way they can all feel ownership over the activity.

During the investigation phase students can choose a roll or task they are comfortable with (i.e. experimenting, managing, writing tasks.)

In this didactic unit the teacher can teach students examples of influential people or who have made important advances in the area, demonstrating references of men and women.

For example, we can use the examples of David Cuartielles (Co-founder of the Arduino platform) and Ayal Bdeir founder and CEO of littleBits.

Interactional level:

In this unit we use different group compositions: individual, small groups and plenary discussions. Furthermore, we used different types of activities: i.e. a quiz, drawing the results of the falling experiment, start with an experiment and then inquiry and brainstorm. It is important to encourage all learners equally during the group discussions, to also give some time to think for students who think before they speak. You can choose to distribute the different roles during different the experiments or to let the students choose for themselves. For instance, within the group, the investigation phase of each activity requires students to take on experimenter, managerial, or secretarial tasks, but it is important that all students should approach these tasks by taking turns.”

4. AR4STEM: Augmented Reality for STEM education

(2021-2023), Erasmus+. (No: 2020-1-LV01-KA226-SCH-094530).

<https://socialinnovation.lv/en/portfolio/ar4stem/>

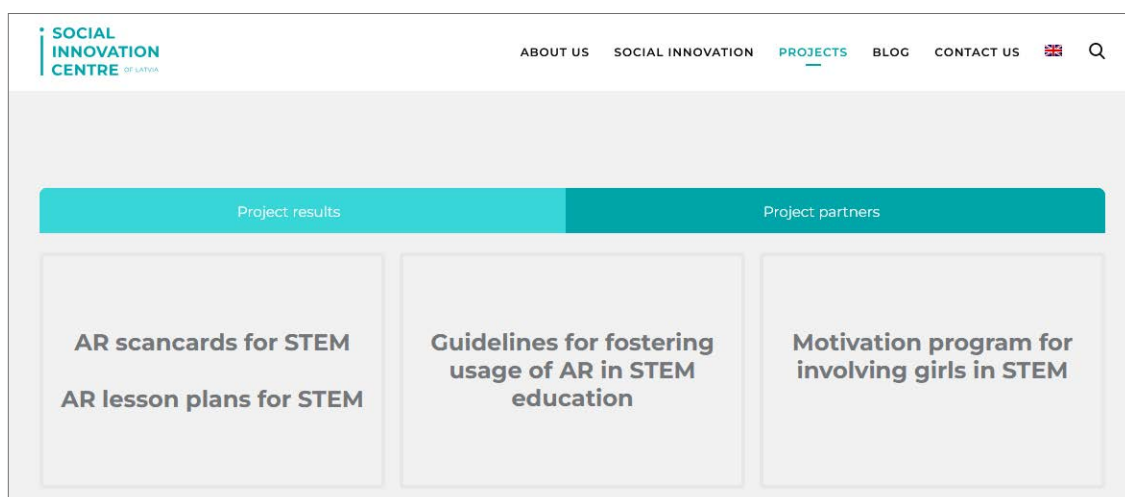
Goals

“Augmented Reality for STEM education” aims to promote STEM teaching and learning, especially in what concerns researching and designing Augmented Reality (AR). To achieve this, partners have come together to promote AR for teachers as an innovative and efficient digital tool to transform the traditional STEM learning process into an interactive experience and promote gender equality in STEM.

Toolkits/ Resources

For that, in the AR4STEM website, we can find some tools, such as lesson plans and a Motivational Programme to Promote Girls’ Engagement in STEM.

Figure 2. Tools and resources available in the [AR4STEM website](#)



In these lesson plans, we can find multiple hands-on experiences, of various subjects, like chemistry, biology, environmental science, ..., which teachers can easily implement and apply in their classrooms. These lesson plans are divided into main objective, resources, content, assessment, and learning outcomes. The primary goal is to engage students with these topics through experiments and demonstrations of real-life applications.

In the Motivational Programme to Promote Girls’ Engagement in STEM we come across a number of examples of stimulation exercises, storytelling, role play, simulations, and initiatives which can be helpful when

promoting girls' participation in STEM-related activities. All these practices contain a brief description of the primary objective alongside some activities that can be done to fulfil those objectives.

Examples

Roleplaying (Activity suggested in the Motivational Programme to Promote Girls' Engagement in STEM):

"How can roleplaying in the STEM fields encourage girls' interest?"

Roleplaying is an effective tool for engaging students in STEM classes. Roleplaying can help spark interest in STEM fields by allowing students to imagine themselves as scientists, engineers, or mathematicians. This can help dispel stereotypes that STEM fields are only for men and make STEM fields appear more accessible and relatable to students.

(...)

How to perform roleplaying effectively:

Before beginning the roleplaying activity, it is critical to define the learning objectives and how they relate to the curriculum. This will help ensure that the activity is relevant and meaningful to the students.

Assign students roles that are clearly related to the learning objectives. Make certain that the roles are diverse and inclusive, and that they are not constrained by stereotypes.

Provide students with the resources they need, such as background information and materials, to help them understand the roleplaying activity's context and setting.

Set clear guidelines and expectations for the roleplaying activity. This can include things like time limits, rules for interaction and communication, and expectations for the end result.

Encourage students to actively participate in the roleplaying activity by asking questions, providing feedback, and facilitating discussions. After the activity, have the students evaluate and reflect on it. This can include a discussion of what was learned, what worked well, and what can be improved for future activities.

(...)

Example - Roleplaying interview with a scientist:

STEM field: optional

Duration: 1 hour

Recommended age: 10-15

Difficulty: easy

Introduction: Students will be given cards with information about their roles. The activity is carried out in pairs, with one student acting as an interviewer and the other as a researcher. The interviewer's role is to create the questions, and the researcher's role is to properly and meaningfully respond to them".

5. Robogirls – Empowering girls in STEAM through robotics and coding

(2020-2022), Erasmus+. No: 2020-1-HR01-KA201-077760.

<https://robogirls.eu/en/>

Goals

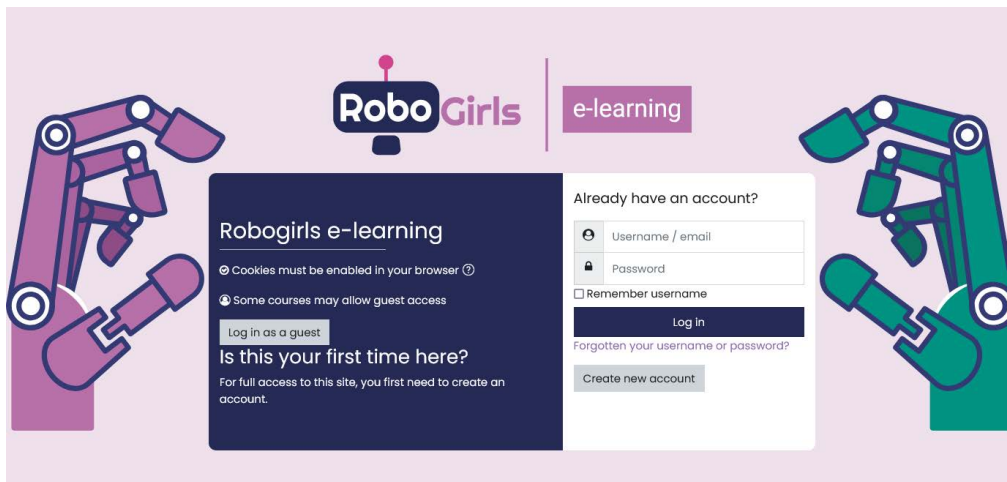
Robogirls aims at reducing disparities of girls' engagement in STEAM through the use of educational robotics, coding, and other attractive innovative online tools and activities by enhancing teachers' personal and professional development.

For that, Robogirls looks forward to developing innovative quality learning material, resources and OERs for teachers to promote girls' empowerment and engagement in digital technologies and to increasing girls' interest in the digital sector through the development of gender-inclusive teaching activities and open educational resources focused on robotics and coding with a real-world context.

Toolkits/ Resources

Among those resources, it's worth highlighting the [E-learning Platform](#), with an e-learning toolkit helpful for teachers' professional and personal development regarding STEAM and gender equality, and the [Career Simulator](#), which is a gamified career choice simulator aspiring to encourage more girls aged 9 - 17 years old to pursue a STEM career in the future, particularly in Computer Engineering, Applied Mathematics, Electronic Engineering, Environmental Engineering and Digital Designing. In the E-learning Platform, accessible to everyone after registering, we can find a myriad of courses, which teachers can easily and rapidly adopt, and a [Comprehensive Guide for Educators](#). The courses vary from [Teacher Professional Development](#), to [Lesson Plans](#), [Workshops](#) and even [Thematic School Days](#). Each of these courses contain several activities and practices regarding women's presence in STEAM and robotics, that teachers can implement in their classroom activities.

Figure 3. Frontpage of the Robogirls E-learning Platform



Examples

Teacher Professional Development Modules available at the E-learning platform:

Module 1

Unit 1 - Gender equality and its role in learning environment.

Unit 2 - The dimensions of gender equality in the classroom.

Unit 3 - Gender-equitable strategies in school.

Unit 4 - Additional learning material.

Activity 1: Gender Equality Plan.

Activity 2: Reducing gender stereotypes.

Module 2

Unit 1 - Introduction to STEAM.

Unit 2 - The STEAM approach as an interdisciplinary approach.

Unit 3 - The STEAM approach in the classroom.

Unit 4 - Additional learning material.

Activity 1: STEAM-related practices.

Activity 2: Preparing a STEAM lesson.

Module 3

Unit 1- Introduction to Robotics in Education.

Unit 2- All types of robots and coding.

Unit 3- Robotics in technology-enhanced learning.

Unit 4- Additional learning material.

Activity 1: Net-generation & Educational robots.

Activity 2: First Lego League challenges.

Module 4

Unit 1- Introduction to Gender-neutral STEAM.

Unit 2- Designing a STEAM lesson.

Unit 3- STEAM lessons and activities.

Unit 4- Additional learning material.

Activity 1: Students' skills & abilities.

Activity 2: Benefits & Difficulties of STEAM lessons.

Activity 3: STEAM teaching scenarios.

Module 5

Unit 1- Introduction to the Evaluation process.

Unit 2- Evaluating by Competences: STE(A)M competence.

Unit 3- Assessment Tools: Portfolios and Rubrics.

Unit 4- Additional learning material.

Activity 1: The importance of feedback.

Activity 2: Assessing students' knowledge & skills.

Activity 3: Assessing students' attitude

6. GEM – Empower girls to embrace their digital and entrepreneurial potential

(2020-2022). Project co-funded by the European Union under grant no. LC-01380173.

<https://icse.eu/international-projects/gem/>

Goals

GEM seeks to increase girls' interest in STEM and ICT subjects, studies, and careers. The project consists of exciting and cost-free summer camps with out-of-school STEM activities for girls aged 12-18, and a wide-reaching network of schools, higher education institutions, companies, and policy makers, to exchange best-practices to support girls in STEM education, studies, and careers.

Toolkits/Resources

The highlight of this programme is the provision of several resources about how to organize a [Summer School](#), including guidelines on how to do it, learning plans and units, and also information on how to promote female STEM role models. Besides that, it also presents a roadmap of meaningful activities to engage in on local, regional, national as well as international levels to support girls in STEM studies and careers entitled [Girl Empowerment Network Agenda](#).

Learning plans:

- Summer School "Colours Uncovered".
- Summer School "Can you escape?".
- Summer School "You can reach the stars".
- Summer School "Prende tu STEM!".
- Summer School "Physics as you don't know it".
- Summer School "Smart City".
- Summer School "STEM".
- Summer School "Laboratory Technology and Products of Everyday Life".
- Summer School "Teknikollo".
- Summer School "Sustainable Development".

Learning Units:

- STEM Riddle Design.
- Basics of 3D printing.
- Advanced 3D printing.
- Entrepreneurship.
- Meeting STEM Role Models.
- Design Cycle.
- Programming.
- Programming a game.
- Optics.
- Magnetic fields.
- Architects.
- Four ancient elements in the lab.

Promoting female STEM role models:

- Information about Ada Lovelace.
- Pictures and Descriptions of 7 more STEM-inspiring females.

Examples

Learning Plans - Description of the [Summer School "STEM"](#):

"The University of Malta is organising a Girls4STEM Week between the 12th and 16th September 2022, aimed at female students who have finished Year 7. The girls will participate in teams in activities linked to real life problems in which they apply their knowledge of different STEM areas (science, technology, engineering, mathematics) and learn new concepts in a hands-on, collaborative environment. The Girls4STEM Week will also include meeting and working with women involved in STEM-related careers. They will explore STEM through a variety of topics and applications. It is envisaged that through the various planned activities, students will become more aware of their own potential and increase their interest in studying, being involved and in pursuing careers in STEM, digital disciplines, and entrepreneurship especially with regard to leadership positions".

Learning Units- Description and aim of the ["Programming"](#) Activity:

"Aim of the activity: Especially ICT knowledge is being imparted. Girls learn how to code and produce digital escape activities for (digital) escape rooms.

(...)

Activity: Designing an escape box necessarily includes a story that is being told as one solves riddles. Solving a riddle gives the player of the escape box (one player or a team) a code to get to the next level. To make the start in programming easier, the girls learn through this learning unit how to prepare a riddle."

Promoting female role models - Brief introduction to the ["Information about Ada Lovelace"](#):

"As with all the other women we have introduced to you so far in our #whoisshe series, our STEM woman in today's edition discovered her enthusiasm for science and mathematics already at quite an early age: Her name was Ada Lovelace - computer pioneer and co-founder of computer science! Did you recognize her in our story?"

7. Girls Go Circular (2020-).

Funded by the European Union.

<https://eit-girlsgocircular.eu/>

Goals

The Girls Go Circular project aims to equip at least 50,000 schoolgirls aged 14-18 with digital and entrepreneurial skills by 2027 through an [online learning programme on the circular economy](#). The project also contributes to closing the gender gap when it comes to the number of women active in the digital and entrepreneurial sectors in Europe by dismantling gender stereotypes and raising awareness of the opportunities that STEM disciplines offer.

In this sense, Girls Go Circular supports schoolgirls, and more broadly, any student, to develop their digital and leadership skills while learning about the circular economy and finding solutions for a sustainable future.

Toolkits/Resources

As previously stated, at the core of the Girls Go Circular Project is an online learning programme. Named [Circular Learning Space \(CLS\)](#), this open-source online learning management system is designed for teachers and includes [18 learning modules](#) they can use in their classroom and that impart digital skills while exploring the circular economy from different angles. While the activities proposed challenge students to use digital tools to complete assignments, the focus on the circular economy provides knowledge about the big challenges of our time, empowering students to become agents of change in the socio-ecological transition. In addition, the CLS supports teachers in conducting interactive and motivating classes, allowing them to easily follow students' progress on developing entrepreneurial and digital competencies.

At this moment, The Girls Go Circular Project provides a Teacher Guidebook designed to support teachers' work with students in the classroom. This Guidebook is available in 16 different languages: [Bulgarian](#), [Dutch](#), [Estonian](#), [English](#), [French](#), [German](#), [Greek](#), [Hungarian](#), [Italian](#), [Lithuanian](#), [Polish](#), [Portuguese](#), [Romanian](#), [Serbian](#), [Slovenian](#), and [Ukrainian](#). The online platform (CLS), in turn, is currently available in 9 languages: English, Bulgarian, Greek, Hungarian, Italian, Polish, Portuguese, Romanian and Serbian.

Figure 4. Front cover of the English version of the Teacher's Guidebook



Some of the available Learning Modules:

- Rethinking Plastics.
- Fashion and the Circular Economy.
- E-Waste and the Circular Economy.
- Robotics and the Circular Economy.
- Artificial Intelligence and the Circular Economy.
- Semiconductors: Powering Digital and Green Transformation.
- Deep Tech Innovation from Farm to Fork.
- A Circular Economy for Smartphones and Electronic Devices.
- Tackling Climate Change Through Circular Consumption

Examples

Learning Modules- Designated Lessons of the Robotics and the Circular Economy

“Lesson 9: Inspiring Women in Robotics:

- This lesson introduces three empowering women and their impact on the Robotics field. Teachers are invited to use this opportunity to start a discussion about entrepreneurship, interest in technological careers and gender stereotypes in this field.

- There are some ideas for the discussion:
 - Did you know these women?
 - What surprises you most about them?
 - How do you think their work will impact the world? And the future?
 - How can the role of women benefit the Robotics industry?"

Learning Modules- Challenges of the [Robotics and the Circular Economy](#)

“Challenge B: Design Thinking Your Robot:

This challenge reveals how robots can help the Manufacturing field by sorting out recyclable material and improving the circular economy. Before starting, the class could briefly discuss how students at home sort recyclable materials. If they do not do that – invite students to share their thoughts on why not. In this challenge, students have to design a robot that does precisely that – sort items to be recycled at home. They will plan their ideas using Miro and develop the robot prototype in Vectr.

As a teacher, you should encourage students to think about the recycling dynamics – what goes into which container, how items can be sorted according to the materials or colour, etc.

Students should design the robot using the Design Thinking Methodology: a thought process created to solve a specific problem (sorting items for recycling) by brainstorming possible products (different robot designs).

Although the steps of this thought process are defined in the module, it would be beneficial if you, as a mentor, would go through it together with the students.”

8. KINDER Project (2021-2023).

Funded by the European Union's Rights, Equality and Citizenship Programme (GA 101005800).

<https://kinder.ces.uc.pt/>

Goals

Although not a STEM-related project, the KINDER Project is a Gender-Responsive Pedagogy in Children Education (GRP-CE), targeting educational professionals working with children between the ages of 3 to 12 years old. It builds on the assumption that learning processes play a determinant role in the socialization of boys and girls and has a major impact on children's future life options, including career choices.

This project will provide teachers, educators, and other staff with gender-responsive and transformative tools, allowing them to respond to the specific needs of girls and boys in the teaching and learning processes from a gender equality perspective.

Toolkits/Resources

Among many resources available in the KINDER website, the highlight is the KINDER Manual entitled "[Deconstructing stereotypes from an early age](#)". This manual is structured into 9 modules, which address key topics for an inclusive curriculum that transforms stereotypical gender norms, such as equality and equity, non-violent education, and the relationship between families and the school. This manual also offers sessions and dynamics to be carried out with children and educational resources that, taken together, will contribute to systemic change with an impact not only on children, but also on professionals, families, and educational institutions that influence and shape their lives.

Aside from the manual, the KINDER Project also adapted a [set of cards](#) initially created by the [Global Boyhood Initiative](#) for different age groups. The "Let's talk?" cards aim to start conversations that help children share emotions in a healthy way, accept and connect with other people, use their voices against bullying and inequality, and break free from stereotypes.

Modules available in the manual:

1. Gender socialisation in childhood: suggestions of activities.
2. Stereotypes and Masculinities.
3. Identities and Sexualities: welcoming and celebrating diversity at school.
4. Anti-racist and anti-xenophobic education: the importance of recognising and valuing differences.
5. Non-Violent Education.
6. Emotions and Consent.

7. Bullying and Cyberbullying: the facets of online violence and exploitation of children and adolescents.
8. The relation between families and schools.
9. Mobilisation and creation of campaigns.

Let's talk? Conversation unlockers - age groups available:

- [Let's Talk? 4 to 6 years old.](#)
- [Let's Talk? 7 to 9 years old.](#)
- [Let's Talk? 10 to 13 years old.](#)

Examples

Modules - Extract from the "Stereotypes and Masculinities" module:

"Ever since we were children, we have been part of a certain socio-cultural context and have gone through multiple socialisation processes that subtly impose on us how we should act, what we can wear, or how and with what we can play. As if, from an early age, we were placed on two different, parallel railway lines, which take us on different paths and intersect at the intersection of gender inequality practices (...) These roles, these preconceived characteristics, are brought to us and taught to us from birth through the toys we play with, the colours we are dressed in and encouraged to like, and the messages that television, advertising, films, social networks, schools and families transmit to us on a daily basis."

Let's Talk? Cards (10 to 13 years old) - Examples of questions: "Break free from stereotypes:

Do you think that, in a way, people expect your appearance or actions to be a certain way because of your gender? why?

Do you think that in certain ways boys and girls are treated differently by adults? How do you feel about it?

Are there things you would do if you didn't think people were going to judge you or make fun of you? What things would they do and why?

ANNEX I

Recommendations that we must keep in mind

COUNCIL OF EUROPE

Recommendation CM/Rec (2007) 13 of the Committee of Ministers to member states on gender mainstreaming in education

Legal framework

1. Incorporating the principle of equality between women and men into **national laws on education**, for the purpose of giving girls and boys equal rights and opportunities at school, and promoting **de facto equality** between women and men in society as a whole;
2. Assessing the gender impact of future laws on education and, where necessary, reviewing existing laws from a gender perspective;

Education policies and support structures

3. launching **special programmes** to bring the gender mainstreaming strategy into education policies and schools;
4. drawing up **action plans** and allocating **resources** to implement the gender mainstreaming programme, including inbuilt monitoring and evaluation;
5. studying the impact of education policies on girls and boys, women and men, providing qualitative and quantitative instruments for gender impact assessment, and using the gender budgeting strategy to promote equal access to, and enjoyment of, school resources;
6. ensuring that the **statistics** produced by education ministries and authorities are broken down by sex, and published regularly;
7. ensuring that committees or task forces set up by those ministries and/or authorities are gender-balanced;
8. organising **awareness-raising initiatives and/or training** on gender equality and gender mainstreaming for the staff of education ministries;

9. preparing general documentation on incorporating the gender perspective and gender equality dimension, and particularly **examples of good practices**, and disseminating this material, *inter alia*, via the websites of education ministries and/or authorities;

10. preparing and disseminating **guidelines for schools, teachers and curriculum planners** on incorporating the gender perspective and gender equality dimension; making school inspectors more aware of gender mainstreaming as an element in evaluation of schools, and devising indicators for quality assurance and self-evaluation;

11. providing teachers and other education staff with **information on international agreements and guidelines** on equality between women and men, particularly in the education field;

School governance and school organisation

12. encouraging school management bodies to introduce gender mainstreaming in schools;

13. **sensitising parents and guardians** and involving them in schools' work on gender mainstreaming and gender equality;

14. **encouraging the wider education community** to accept schools' objectives and mission in the matter of gender mainstreaming, and play an active part in implementing that strategy;

15. promoting balanced representation of women and men at all levels of the education process, particularly among school managers and principals;

16. promoting a **holistic approach to informal and formal education in schools** – an approach that includes life-skills programmes, covers human rights, human dignity and gender equality, develops self-esteem and self-respect, and encourages informed decision making, thus preparing girls and boys for community and family life;

17. promoting a democratic school culture, which includes adopting educational practices designed to enhance girls' and boys' capacity for participation and action, and for coping with change and gender partnership, as a prerequisite for the full exercise of citizenship;

18. encouraging **balanced participation of boys and girls in collective decision** making and school management, and in all extra-curricular activities, for example, school councils, children's parliaments, youth forums and clubs, students' associations, outings, school exchanges, voluntary work, meetings with local political leaders and information campaigns;

19. encouraging **local authorities and relevant officials** to support any conversion work (sanitary facilities and accommodation, etc.) needed for schools to accommodate both girls and boys and their lifestyles;

Initial and in-service education and training for teachers and trainers

20. promoting **awareness-raising and training on gender equality for all education personnel**, and particularly school principals; producing classroom aids and teacher-training materials on gender mainstreaming in education, and distributing them to teachers;

21. including, in initial and in-service training, content which allows teachers to reflect on their own identity, beliefs, values, prejudices, expectations, attitudes and representations of femininity/masculinity, as well as their teaching practice; **teachers should be encouraged to challenge sex-stereotyped attitudes and beliefs**, which can inhibit boys' and girls' personal development and prevent them from realising their full potential;

22. bringing equality, diversity and the gender perspective into various areas of initial and in-service teacher training, and particularly: the production, reproduction and transmission of knowledge; the dynamics of teaching (teaching materials and methods; interaction and assessment) and institutional culture (organisation of the school day, school layout and interior design, recreational activities, posters and advertisements);

23. improving the teaching profession's public image and, when necessary, increasing teachers' salaries, for the purpose of encouraging both men and women to opt for careers in teaching, particularly at pre-school, primary and secondary level;

Course programmes, school curricula, subjects and examinations

24. paying special attention to the gender dimension **in course programme** content and general **curriculum** development (**particularly for scientific and technological subjects**), and revising curricula as necessary;

25. evaluating the **place of women in school curricula** and the various disciplines, and highlighting **their experience and contributions** in the subjects taught;

26. taking account, in planning curricula, of **girls' and boys' interests** and preferences in respect of learning and teaching styles, for the purpose of fostering academic success and broadening the range of educational and career options;

27. making education for private life part of the school curriculum, when necessary, in order to encourage boys and girls to be self-reliant in this area, make them more responsible in their emotional and sexual relationships and behaviour, **combat sexist role stereotyping**, and prepare young people for a new gender partnership in private and public life;

Teaching materials

28. making authors and publishers of school **textbooks**, and of educational, teaching, assessment

and **career guidance materials**, aware of the need to make gender equality one of the quality criteria for the production of these **materials** and the development of **multi-media products** for use in schools;

29. encouraging teachers to analyse, challenge and so help to eliminate sexist stereotypes and distortions which these **textbooks, materials and products** may convey in their content, **language** and illustrations;

30. encouraging teachers to **analyse and counter sexism in the content, language and illustrations** of comics, children's books and games, video games, websites and films, which shape young people's attitudes, behaviour and identity;

31. devising and disseminating **indicators** for the appraisal of teaching materials – particularly textbooks and multi-media products – from a gender perspective;

Teaching methods and practices

32. including analysis of teaching methods and practices from a gender perspective in guidelines for self-evaluation and quality assurance in schools;

33. making teachers aware of research done on teachers' interaction with pupils of each sex;

34. promoting gender mainstreaming in sports and leisure activities, where gender-based stereotypes and expectations may affect girls' and boys' self-image, identity-building, health, skills acquisition, intellectual development, social integration and gender relations;

35. **encouraging girls and boys to explore new roles, activities and areas**, and ensuring that they have equal access to all parts of the curriculum and to the same learning experiences;

36. ensuring that **non-sexist language** is used, and account taken of the gender dimension in teaching practice and throughout schools;

Education for democratic citizenship and human rights

37. making gender equality a central part of education for democratic citizenship and human rights, and including that and other issues which are vital to democracy – namely, the individual's rights and responsibilities in the private and public spheres – in basic legislation on school systems, as aims to be achieved in curricula, school culture and teacher training;

38. creating school learning contexts which focus on the needs and interests of both girls and boys regarding issues which affect our societies; enabling them to develop and exercise democratic citizenship, *inter alia*, by acknowledging both girls and boys as agents for social change, and devising

projects which encourage initiative, give them action-gearred knowledge and skills, and so forge links between life at school and outside;

Educational and career guidance

39. making gender mainstreaming one of the objectives of educational and career guidance;

40. encouraging and training guidance staff to use gender mainstreaming, so that they can analyse and **counter the effects of sexist socialisation** when necessary;

41. exploring the influence of **female and male role perceptions** on girls' and boys' identities and life plans, and **promoting discussion of educational and career choices in the classroom**;

42. promoting **co-operation between schools and firms, for the purpose of giving girls and boys a better idea of the openings available in various sectors, and particularly in occupations dominated by one sex**;

43. **compiling and disseminating sex-based statistics on various careers**;

Preventing and combating sexist violence

44. teaching young people to consider and interpret relationships with reference to gender equality, human rights, power relations and violence;

45. providing guidelines to help schools to ensure that respect for human beings is the basis of their activity, and prevent/combat any forms of individual or collective violence or discrimination which generate unsafe situations, fear, persecution, psychological or sexual harassment, physical assault or sexual violation of girls and boys in ordinary school life;

46. raising the awareness of education staff and training them to detect, analyse, respond to, and combat all forms of sexist violence;

47. making girls and boys aware of the dangers of exploitation, sexual abuse and trafficking to which they are exposed, ensuring that schools can respond quickly to serious violations of their sexual integrity and safety (incest, rape, paedophilia);

48. requiring schools to devise policies and procedures to deal with gender-based bullying, harassment and violence;

49. making school principals and teachers aware of violence rooted in custom and culture, affecting either women or men, so that they can analyse and act on it, and support the right of girls to self-determination;

New information and communication technologies:

52. adopting cross-sectoral strategic guidelines on the need to apply gender equality criteria in using information and communication technologies (ICT) in education and, in particular, developing and selecting multi-media products for use in schools;

53. promoting equal access to, and use of, ICT for girls and boys from an early age in schools, and other formal and non-formal training and education contexts;

54. analysing how new information and communication technologies are used by girls and boys,

Media

55. encouraging exploration of the role which the media can play in teaching and helping young people (girls and boys) to develop critical attitudes to sexist representations of femininity, masculinity and gender relations in society;

Research on gender and education issues:

56. initiating and supporting research on gender and education, for example:

- research on sexism in the oral and written language used in the classroom and elsewhere in schools, including inter-pupil communication;

- research on **innovative projects on gender stereotyping** and pupil behaviour, representations of masculinity and femininity, new identities for girls, and relations between girls and boys, with special reference to aggressive and abusive behaviour;

Monitoring

57. collecting and processing, on a regular and ongoing basis, statistics on pupils and other participants in the education process, broken down by gender and covering levels of instruction, courses of study, disciplines and career options (particularly in scientific and technical subjects), publishing them regularly, and ensuring that they are widely distributed;

58. implementing this recommendation by monitoring and evaluating gender mainstreaming policies, practices and results;

59. regularly evaluating measures adopted and action taken, publishing the findings and disseminating them widely among the parties concerned

- research on **innovative projects on gender stereotyping** and pupil behaviour, representations of

masculinity and femininity, new identities for girls, and relations between girls and boys, with special reference to aggressive and abusive behaviour;

Source: https://eige.europa.eu/resources/Recommendation_CM_2007_13_Gender_mainstream_En.doc

COUNCIL OF EUROPE

Recommendation CM/Rec(2007)17 of the Committee of Ministers to member states on gender equality standards and mechanisms

2. Education, science and culture

24. Educational choices and achievements influence women's and men's professional career and the well-being of their individual and family life, as well as their life in society. Governments have the obligation to promote access to education as a right for girls as well as boys, women as well as men, on an equal basis, at all levels of education, lifelong learning, science, research and culture.

25. **Equal opportunities with regard to education, science and culture** are essential for better human and economic development and are a driving force for social change. On the other hand, equal access of women to high level qualifications is not only a basic right, but it is also instrumental for a more balanced society and for the achievement of gender equality.

26. Elements indicating states' political will and commitment to gender equality in this regard include the following:

- i. **ratification and full implementation** of relevant **international treaties**, taking particularly into account Article 10 of the **CEDAW**, Articles 13 to 15 of the ICESCR, Article 2 of the Protocol No. 12 to the ECHR, and Articles 10, 17 and 20 of the revised European Social Charter;
- ii. full implementation of relevant international non-binding legal instruments, in particular Articles 26 and 27 of the UDHR, as well as of strategic objectives and actions contained in Chapter IV of the **Beijing Platform for Action**, in particular Section B (education and training of women);
- iii. explicit inclusion of the principle of gender equality in national framework legislation on education and of a gender perspective in all education policies;

iv. inclusion of a gender equality perspective, in the framework of human rights, in teachers' initial training, retraining and in-service training programmes;

v. inclusion of a gender perspective in **policies and plans for developing and implementing new information and communication technologies (ICTs), including measures to increase women's capacity-building with regard to ICTs;**

vi. regular monitoring of **educational curricula, subject contents**, education standards, **teaching and learning resources**, and **classroom** and **school organisation** in order to eliminate gender stereotypes at all levels of the educational system;

vii. implementation of **positive actions/temporary special measures** to ensure that girls and boys have equal access to education and vocational training in those fields where there is traditionally an over-representation of one of the sexes, as well as to ensure equal development of personal skills which stereotyped views of sex roles have tended to associate with one of the sexes, such as self-esteem, teamwork, talking to an audience or peaceful conflict resolution;

viii. integration, in formal and non-formal education, of the principle of equal rights and equal access of girls and boys, women and men to the enjoyment of all human rights, in particular civil, political, economic, social and cultural rights;

ix. existence of gender/women's studies and research in universities and research institutions and their adequate support and financing;

x. regular monitoring and assessment of girls' and boys', women's and men's participation at all levels of the educational system;

xi. regular monitoring of women's and men's access to postgraduate programmes and completion of degrees, including access to grants and scholarships on an equal basis;

xii. regular assessment of women's participation in scientific research programmes and projects and in their management or co-ordination;

xiii. **awareness-raising campaigns addressed to the general public on gender equality/non-discrimination** as a human rights principle, aiming at cultural change with regard to gender stereotypes and traditional roles of women and men.

Source: <https://rm.coe.int/recommendation-cm-rec-2013-1-of-the-committee-of-ministers-to-member-s/1680982c06>

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