GENDER SENSITIVE TOOLBOX

A resource for Higher Education educators, policymakers, media and anyone else with an interest in introducing gender-sensitive aspects in teaching

Female Empowerment in Science, Technology, Engineering and Mathematics in Higher Education (FeSTEM) Project has been funded by the European Union’s Erasmus Plus programme, grant agreement: 2019-1-CY01-KA203-058407 (Project: FeSTEM). This publication reflects the views only of the authors, and the European Commission cannot be held responsible for any use which may be made of the information contained there.

FeSTEM Consortium | June 2021
Updated: April 2022
Gender-Sensitive Toolbox

An output of the Female Empowerment in Science, Technology, Engineering and Mathematics in Higher Education (FeSTEM) Project

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Summary

This toolbox includes a collection of traditional and digital materials for constructing gender-sensitive exhibits as well as reporting on the materials and tools (digital and traditional) that can be used for developing gender-sensitive exhibits.

This toolbox provides gender sensitive tools and material to those who are interested in raising gender-sensitive awareness, as well as to instructors who are willing to enrich their course following a gender-sensitive approach. The materials and tools included in the guide are derived from research and stakeholder consultations within the FeSTEM consortium. It is developed primarily for instructors in the area of STEM who wish to incorporate a gender sensitive approach in their teaching practice.

This toolbox is composed of 5 parts. Part A consists of an introduction to the toolbox, Part B presents the types of material collected for the toolbox, Part C demonstrates the pedagogical framework that is followed in the toolbox, Part D explains how to use this toolbox, while Part E summarizes the tools of the toolbox.

This toolbox can be used as a handbook, as it provides concise information regarding the use of tools for supporting gender-sensitive content, whilst there are multiple external resources for additional learning. The selection of the technologies was guided by students’ and instructors' needs as these were documented in multiple cycles of consultations with our STEM-MAKER teams and in-class applications throughout the lifecycle of the project. The practice of using each tool is presented with an indicative example under each FeSTEM challenge, i.e. situations in which women are discriminated against because of their gender and are not treated equally to men (e.g., they are paid less than men, they have lower job positions than men etc.).

The tools and materials available in this toolbox were collected in the frame of the FeSTEM project: Female Empowerment in Science, Technology, Engineering and Mathematics in Higher Education (FeSTEM). This project has been funded by the European Union’s Erasmus Plus programme, grant agreement: 2019-1-CY01-KA203-058407 (Project: FeSTEM). This publication reflects the views only of the authors, and the European Commission cannot be held responsible for any use which may be made of the information contained there.
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Part A: Introduction

Why the need for a Gender-Sensitive Toolbox?

Science, technology, engineering and math (STEM) workforce is crucial to Europe’s innovative capacity and global competitiveness. Yet women are vastly underrepresented in STEM jobs and among STEM degree holders despite making up almost half of the EU workforce and half of the college-educated workforce. That leaves an untapped opportunity to expand STEM employment in Europe.

Among STEM jobs, women’s representation has varied over time. In the computer and math workforce (the largest of the four STEM components) women representation has dropped 3 percentage points since 2000. Engineers are the second largest STEM occupational group, but only about one out of every seven engineers is female. Men are much more likely than women to have a STEM job regardless of educational attainment¹ (Cheryan, Ziegler & Montoya, 2016; Beisser, 2005; Seraj, Katterfeldt, Autexier, Drechsler, 2020).

The toolbox is developed as a part of the Female Empowerment in Science, Technology, Engineering and Mathematics in Higher Education (FeSTEM) project, that is co-funded by the Erasmus + programme of the European Union. FeSTEM aims to promote an innovative method and pedagogy that will allow HE students to use traditional and computationally-rich media to create meaningful, shareable exhibits that will act as mentoring models for encouraging girls and women to remain active in STEM. This toolbox aims to report on the materials and tools (digital and traditional) that can be used for developing gender-sensitive exhibits.


There are a lot of problems in women employment in STEM fields and some of these workplace related concerns are troubling young female students in STEM courses from the beginning of their education choices.

These problems can be tackled through engaging with students in gender-related issues as part of their studies. This toolbox provides one of many approaches to achieve this.
What is the Gender Sensitive Toolbox?

This toolbox includes the framework and tools that can be used for the development of gender sensitive exhibits, objects made intentionally, in order to sensitise and raise awareness on issues related to gender-equality and women's empowerment. The toolbox consists of guidelines for Higher Education (HE) educators that are looking to use the toolbox in their courses and useful information for students looking to create the gender-sensitive exhibits as part of the tasks assigned by the educators.

Who is this Toolbox for?

The toolbox refers to Higher Education educators. The toolbox is for you if you are looking to include gender-sensitive materials, tools and activities for your course. It includes a framework and a range of activities that can be executed by a range of STEM students with a variance of difficulty and time commitment based on your teaching needs. The toolbox develops 21st century skills while looking through a gender dimension and focuses on the students at the centre of the learning process.
Glossary

In this glossary you will find useful definitions and/or explanations of concepts that are frequently used within the toolbox.

**FeSTEM**
FeSTEM stands for Female Empowerment in Science, Technology, Engineering and Mathematics in Higher Education (FeSTEM).

**FeSTEM Challenges**
FeSTEM challenges are situations in which women are discriminated against because of their gender and are not treated equally to men (e.g., they are paid less than men, they have lower job positions than men etc.).

**Gender-sensitive exhibits**
Gender-sensitive exhibits are objects made intentionally, in order to sensitise and raise awareness on issues related to gender-equality and women’s empowerment. A gender-sensitive exhibit can be either a public entity (e.g., an infographic or a poster demonstrating the successes of women in STEM-related professions) or a virtual product (e.g., a virtual tour).

**Gender pay gap**
Gender pay gap refers to the fact that women are paid less than men even if they have the same job position.

**HMW**
HMW are questions starting with “How Might We...?” (HMW), that is a good way for brainstorming and ideation.

**Community of Practice (CoP)**
Community of Practice is a group of people who share a concern or a passion for something they do, and learn how to do it better as they interact regularly (definition from [Wenger-Trayner, 2021](#)).

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**Part B: Types of Material**

The FeSTEM toolbox includes gender-sensitive materials and tools that were collected through literature review, desk research and national stakeholder consultations in the partner countries.
Traditional and digital material and tools were collected through this process. Detailed information on the collection of material can be found in Christou et al., 2021; Christou and Parmaxi, 2022\(^2\). Figure 1 presents a summary of the collected data from the systematic literature review and the national stakeholder consultations.

![Figure 1 - Summary of the collected data from the systematic literature review and the national stakeholder consultations](image)

**Important Facts**

Through the systematic literature review we uncovered the various types of tools and materials available - digital and traditional - for tackling gender equality in the fields of Science, Technology, Engineering and Mathematics (STEM). Considering the various facets of gender-equality, the review provided a comprehensive view of different tools and materials used in the wider academic and industrial community for supporting or empowering women to enroll


or remain active in STEM fields. Figure 2 presents the material collected from the literature review and how the gender-sensitive tools and material were categorized based on their type.

Through the systematic literature review we identified traditional or non-interactive gender-sensitive materials and tools which include surveys, statistics and figures, student or academic data, programs or courses and cultural probes. A summary of their benefits is presented in Figure 3 and indicative examples appear in Appendix I. Moreover, we identified digital materials and tools which include interactive technologies, digital prototypes and digital advisory tools. Figure 3 summarizes both the traditional and digital gender-sensitive materials and tools whilst indicative examples appear in Appendix I.
The benefits of gender sensitive materials and tools include their ability to introduce ways to overcome barriers for women enrollment in STEM fields, propose ways in which empowerment of women is achieved, present STEM fields that females are attracted more or have higher scores than males, present role models of successful women in STEM, expose women to majors that have greatest potential for high future income and assist under-represented students in STEM in their choice of a suitable job and in applying for jobs with digital tools after their studies. The drawbacks from the gender-sensitive materials include the discouraging percentage of women in STEM as well as the gender-bias might contribute to women’s decisions not to choose STEM majors. Figure 4 summarizes the benefits and drawbacks from the gender-sensitive materials and tools collected.

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Surveys</th>
<th>Statistics and figures</th>
<th>Student or academic data</th>
<th>Programs or courses</th>
<th>Cultural probes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Help identify and control barriers for women participation in STEM fields</td>
<td>Present STEM fields that females are attracted more or have higher scores than males</td>
<td>Indicate that there is enrollment of women in STEM</td>
<td>Present role models of successful women in STEM</td>
<td>Increase the percentage of women participating in STEM fields.</td>
<td>Cultural probes are well accessible, visible and dominant</td>
</tr>
<tr>
<td>Introduce ways to overcome barriers for women in STEM fields</td>
<td>Present STEM fields that females are attracted more or have higher scores than males</td>
<td>Present STEM fields that females are attracted more or have higher scores than males</td>
<td>Present STEM fields that females are attracted more or have higher scores than males</td>
<td>Promote positive student attitudes of both genders towards STEM courses.</td>
<td></td>
</tr>
<tr>
<td>Propose ways in which empowerment of women is achieved</td>
<td>Expose women to majors that have greatest potential for high future income</td>
<td>Indicate the participation of women in STEM</td>
<td>Expose women to majors that have greatest potential for high future income</td>
<td>Increase women career options and improve their Internet skills, self-esteem, and social skills</td>
<td></td>
</tr>
</tbody>
</table>

Figure 3 - Summary of the benefits of the non-interactive gender-sensitive materials and tools
Figure 4 - Benefits and drawbacks from the gender-sensitive materials and tools collected

Classification of the gender-sensitive material and tools based on their aim

When it comes to the aim of the gender-sensitive materials and tools, the materials aim at empowering through training for girls and women, raise awareness on gender equality issues, mentoring, empower through active learning, expose to women role-models and provide educational material for inspiring student to engage in STEM (see Figure 5).
Exposure to women role-models involves the use of statistics and figures that aim at informing on the successes of women in the various fields of STEM. These resources include lists of prominent women and their stories of successes (and failures) in the area of STEM. Mentoring involves materials or tools that support mentoring to young girls and women. Mentoring can be provided either face-to-face or online and can be supported either by peers or by prominent professionals from the industry. Empowerment through training for girls and women involves the development and implementation of training programs for supporting, and advocating for women to remain active in STEM. These programs may include technical training for girls and women, soft skills training or training on raising awareness on gender equality issues. Raising awareness on gender equality issues includes materials that aim at raising awareness on gender equality issues, by highlighting the difficulties that women encounter in STEM, strategies that both men and women need to adhere to in order to adopt a gender-sensitive approach and girls’ wide range of materials that aim at informing on the successes of women in the various fields of STEM. Women empowerment through active learning involves the empowerment of women through active learning. This category encompasses activities that engage women in a co-design adventure that allows them to gain STEM knowledge and to be empowered to be active in the field. Finally, provision of educational material for inspiring students to engage in STEM involves resources that provide educational material (e.g. curriculum activities) for supporting and inspiring girls and women to remain active in STEM.
Key remarks from the systematic literature review

**Potential benefits from the gender-sensitive materials and tools collected.**

- Support the identification of barriers for women participation in STEM fields
  - Enables educators and policy makers to draw their decisions more efficiently
- Introduce ways to overcome barriers for women enrollment in STEM fields
  - Provision of role models of successful women in STEM
  - Promotion of STEM fields that females are attracted more or have higher scores than males or have greatest potential for high future income
  - Inclusion of cultural, accessible and visible probes
  - Use of smartphones as an everyday objects into computer science courses for motivating students of both sexes to remain active in STEM
- Encourage women to participate in STEM
  - Identify the participation and enrollment of women in various STEM fields
  - Present role models of successful women in STEM
- Support under-represented groups in STEM such as women before, during and after their studies
  - Support before, during and after their studies by professionals, families, friends and teachers, through mentorship programs or by increasing women’s career options

**Potential drawbacks from the gender-sensitive materials and tools collected.**

- Discouraging enrollment rates in the field of STEM
  - In some cases they demonstrate that males have higher scores or enrollment in STEM fields than women
- Indication of gender-related challenges (pay gap)
  - Studies indicate that women have fewer options for high salary
The use of gender neutral language, provision of examples accessible to both sexes and hands-on activities were identified as crucial for gender-sensitivity through the literature (Parker & Rosenthal, 2011).

The specific gender bias, family norms or societal stigma that might affect users’ perceptions or decisions should be understood (cf. Thakkar et al., 2018). Cultural factors are often the main barriers and personal support as the main help for women in STEM leadership (McCullough, 2020).

Balance of education activities: The proportion of male and female students in a classroom affects the comfort level in participation for all students, in spite of gender. Both male and female students distinguish the aggressive and oppressive behavior of some students as a problem in the classroom. However, it didn’t show up to affect male student's comfort levels, while it did affect female student's comfort levels (Meeden et al., 2003).
Desk Research / National Stakeholder Consultations

Through national stakeholder consultations, we collected 448 gender-sensitive materials and tools through national consultations in Greece, Cyprus, Italy, Spain and Slovenia. The tools and materials collected can be used for sensitizing and raising awareness on issues related to gender-equality and women’s empowerment and also uncover the various levels of gender equality material available - digital and traditional - taking into account the various facets of gender-equality and provide a comprehensive view to the wider academic and industrial community. The materials and tools can be categorized in terms of their type into digital and physical and based on their aim as factual, enlightening, practical/training and mentoring-provision (see Figure 6).

Figure 6 - Materials and tools categorized in terms of their type and their aim
Classification of the gender-sensitive material and tools based on their type

Digital materials and tools

Digital materials and tools included different multimedia (e.g., online photo galleries, videos, podcasts, talks or movies), websites with rich source of gender-sensitive content (e.g. inspirational quotes for girls and women or advice on how to overcome challenges in the area of STEM) and emerging technologies. Emerging technologies included different types of technologies such as virtual tours and augmented reality tours with gender-sensitive content with an eye to inform, empower and/or raise awareness on gender sensitive issues. This category also includes different communities, associations, organizations, foundations, initiatives, movements, campaigns or even platforms that have been developed with an eye to support and advocate for women in STEM. Finally, this category includes mobile applications with gender sensitive content.

Figure 7: Examples of Multimedia (Videos) produced by Google India (Left) and european Commision (Right) aiming at raising awareness on gender equality issues.
Physical materials and tools

This category includes materials and tools aiming to appear in the physical world. Such materials included posters, factsheets, books or plays. This material was observed to be more colorful, whilst its development did not encompass high cost of software or application. In the same category, we also identified trainings, camps or workshops that took place face to face. Physical materials also included tangible materials with gender sensitive content.
Classification of the gender-sensitive material and tools based on their aim

The materials and tools can be categorized in terms of their aim as factual, enlightening, practical/training and mentoring-provision (see Figure 11). Indicative examples under each category appear in Appendix II.

- **Factual/Informational/Enlightening**
  - Exposure to women role-models
  - Raise awareness on gender equality issues

- **Practical**
  - Empower through training and active learning for girls and women
  - Skill-building programs
  - Provide educational material for inspiring students to engage in STEM

- **Mentoring provision**
  - Need for ongoing social and educational support from counselors and mentors

Figure 11 - Materials and tools categorization in terms of their aim
Components that should have a fundamental role when designing gender-sensitive approaches

The following important components emerged from the materials and tools we identified through national stakeholder consultation.

<table>
<thead>
<tr>
<th>Important components when designing gender-sensitive approaches</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Provide support for the teachers in the understanding and application of the principles of a gender-sensitive teaching methodology.</td>
</tr>
<tr>
<td>● Help teachers become familiar with the technological and pedagogical resources.</td>
</tr>
<tr>
<td>● Provide the teachers the means to assist students in making shareable exhibits and promoting gender-equality issues.</td>
</tr>
<tr>
<td>● Provide support for the students in the understanding of the gender-equality issues.</td>
</tr>
<tr>
<td>● Motivate female students to remain active in STEM.</td>
</tr>
<tr>
<td>● Engage students in the learning procedure as this will enable the better understanding of the material and help them to be able to remember most of it.</td>
</tr>
<tr>
<td>● Mentoring is considered as an important motivation for women to remain active in STEM.</td>
</tr>
<tr>
<td>● Identifying and promoting female role models is a strategy that can attain gender balance in STEM.</td>
</tr>
</tbody>
</table>
Part C: Pedagogical Framework

Generative and design thinking methods as well as problem-based learning pedagogies that are the backbone of this toolbox are unique to academia, particularly in STEM and occasionally might feel more like a madness than a method. The process is designed so that students learn by doing, more specifically by addressing a specific FeSTEM challenge by creating an artifact. The instructor will be there to support them in this learning process as a guide rather than a formal instructor. The instructor will encourage them to question things and think creatively, shift gears, change perspectives, go back to their preconceptions and original ideas if required and build back from scratch. The pedagogical principles that guide the FeSTEM approach appear in Figure 12.

Figure 12. Pedagogical principles driving the FeSTEM approach. The principles are summarised below:
RAISE AWARENESS ON GENDER EQUALITY ISSUES
Women tend to enroll mainly in the Humanities and are more reluctant in choosing a STEM-degree (Cozza, Poggio, 2006). There is a persistent need for effective measures that should be taken in order to make STEM welcoming for both genders equally. Engaging students in the learning process, instead of alienating them from it, is connected with positive outcomes (Marks, 2000). As specified by Marks (2000), engagement is related to the attention, interest, investment, and effort students expend in the work of learning, implying both affective and behavioral participation in the learning experience.

EMPOWERMENT THROUGH ACTIVE LEARNING
Emerging research surrounding informal education provides evidence that after-school and summer programs can be utilized as an effective strategy for increasing female interest in the STEM-related areas (Weber, 2011). One approach that many institutions have taken towards increasing interest of women towards STEM is to offer STEM camps for women (Burge et al. 2013) which have proved to be an extremely efficient method for developing and increasing STEM knowledge and interest among young women.

CONSTRUCTIONISM FOR ALLEVIATING GENDER INEQUALITY
The construction of shareable artifacts is an essential element of this toolbox as it offers the appropriate pedagogical framework for this endeavour. The term constructionism originates from Papert (1980; 1987; 1993; 1996; Papert & Harel, 1991) and captures the concept of construction of knowledge by engaging in the making of concrete and public artifacts. Papert’s theory can be summarized in his vision of a new educational environment in which learners build meaningful knowledge artifacts by taking advantage of the ubiquity of new technologies around them. Constructionism stresses the centrality of an artifact, a public entity with which the learner is engaged with. This artifact should be shared and visible to the world, either “a sandcastle on the beach or a theory of the universe” (Papert & Harel, 1991, p. 1). Constructionism is a pedagogical framework that has been around for quite some time, and it can be manifested in a classroom setting through different methods. It may take the form of project-based learning or problem-based learning projects (see for example, Dragon et al., 2013; Jacobs, Resnick & Buechley, 2014; Papavlasopoulou, Giannakos, & Jaccheri, 2019; Papadakis, 2020). Building on the constructionist principles, and more specifically on the idea that learners need to engage in meaningful artifact construction, we aim at actively engaging learners to engage computationally-rich and traditional media for building a shareable exhibit. We expect that the construction of artifacts/exhibits to be a demanding yet rewarding venture, since it will allow students to collaborate and struggle for collaborative creativity in the construction of the artifact.

Part D: How to use this toolbox

The toolbox encompasses activities and tools listed under three steps for enabling students to construct exhibits that address a concrete gender-related challenge: understand the challenge,
construct an exhibit and share the exhibit. The core of the FeSTEM project builds on the premise that through the interplay between problem solving and construction of gender-sensitive exhibits, students will familiarise and gain awareness on various gender-sensitive challenges. In the pages of the toolbox, you can find a variety of activities and tools under each step. The educator will select or encourage their students to select at least one activity from each step (see Figure 13). Activities should be conducted sequentially. Figure 14 demonstrates the pathway of the FeSTEM toolbox for Higher Education Educators, students, communities, and professionals.

The time allocated for each step is entirely up to the educator, but we recommend as a minimum 2-4h for Step 1- understand (in 1 or 2 sessions), 2-20h for Step 2- construct (in 2-4 sessions) and 2h for Step 3- share (in 1 session). The learning activities can be synchronous, asynchronous, face-to-face or distance-learning.

**STEP 1 - UNDERSTAND**
In this step the educator will choose one or more activities to introduce the challenge.

**STEP 2 - CONSTRUCT**
In this step students will randomly choose or be assigned an exhibit-construction activity and pair this with a FeSTEM Challenge.

**STEP 3 - SHARE**
In this step the educator will choose a sharing activity for the students to share their exhibits to each other and the world.

Figure 13. The steps under the FeSTEM approach.

**Step 1- Understand**
First, in the understand step, the educator typically chooses a suitable activity to introduce issues of gender to the study subject, this for example is a visit, an invited speaker or even watching a series of videos or reading articles to which the students need to critically reflect.

**Step 2 - Construct**
Second, the construct step, the students will choose an activity alongside a FeSTEM challenge, you will find these in the pages further on. You can mix these up any way you like, even create a fun mystery box activity out of it as all FeSTEM challenges can be applied to all construct step activities. The students will have to combine their FeSTEM challenge with their construct activity following the instructions.
**Step 3 - Share**

Finally, the share step encompasses various activities for sharing their constructions with the world, this ranges from a simple article published online to an exhibition, depending on the class, circumstances, time constraints, budget etc. All students should upload their constructions to the FeSTEM Community of Practice interface with their contact information that allows future students to reach out to them. The Community of Practice is also available at all stages for them to consult and reach out to other students that have gone through the toolbox in the past.

By the end the students should have an initial grasp of the gender element in their field and be able to consider the various effects gender can have both within the higher education environment and in professional practice.

**Use the tools**

While no two projects will be the same, we use the same kind of tools to learn from each other. For example the understand step tools all aim to provide expert information and link students to professionals and critically reflect on the information they receive. Therefore, some utilise design thinking activities such as taking notes in the format of ‘How Might We?’ (HMW) while others encourage group discussion and question crafting. Construct tools can take different forms, i.e. they can be computationally-rich (visual, technological in nature) and vary from webpages, to application prototypes, videos and VR activities as well as traditional ones (e.g., posters or paper and pencil). Our aim is to provide tools for every level of experience. Electrical Engineering students might not be experienced with VR so they will use a more basic and accessible tool to construct their artifact while Computer Science students might be more ready to use advanced design tools. We account for all these scenarios in this toolbox so you can make the best choices according to what you teach and which is your audience. Share activities include tools that are about consolidating what students have learned through presenting them to others, either via a blog article or post, crafting an exhibition and everything in between.
Figure 14. Pathway of the FeSTEM toolbox for Higher Education Educators, students, communities, and professionals.
### Before you start

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>⏰</td>
<td>This icon is used to indicate the approximate time that should be allocated for each activity</td>
</tr>
<tr>
<td>⚪️</td>
<td>This icon is used to indicate where an activity is conducted individually or in team</td>
</tr>
<tr>
<td>★★★★★</td>
<td>Stars indicate the level of difficulty for each activity (one coloured star means very easy, full coloured stars means very difficult)</td>
</tr>
<tr>
<td>THIS GETS YOU</td>
<td>THIS GETS YOU highlights the importance of the activity</td>
</tr>
<tr>
<td>KEEP IN MIND</td>
<td>KEEP IN MIND refers to any limitations, conditions or aspects that should be taken into account for the specific activity</td>
</tr>
<tr>
<td>EXTRA BONUS</td>
<td>EXTRA BONUS refers to modifications of the activities</td>
</tr>
<tr>
<td>🧠</td>
<td>This icon means that the activity is suitable for distance learning</td>
</tr>
<tr>
<td>🔴</td>
<td>This icon means that the activity suggests or requires the use of google expeditions.</td>
</tr>
</tbody>
</table>
Step 1 - Understand

Instructions

WHAT’S IN THIS SECTION

What do I do in “Understand” Step?
FeSTEM challenges
Aim of Tools
Brief Examples of “Understand” activities
Time Recommended

What do I do in “Understand” Step?
In “Understand” step, the educator typically chooses a suitable activity to introduce issues of gender to the study subject, this for example is a visit, an invited speaker or even watching a series of videos or reading articles to which the students need to critically reflect.

In “Understand” step, the educator will choose one or more activities to introduce one or more challenges.

All students will randomly choose a FeSTEM challenge from the Mystery Box. This is a required activity for this step, as it will introduce the students to the challenge they will work on in the following steps as well.

**FeSTEM Challenges**

FeSTEM challenges are situations in which women are discriminated against because of their gender and are not treated equally to men (e.g., they are paid less than men, they have lower job positions than men etc.). FeSTEM challenges are randomly picked in the “Understand” step. The challenges emerged from the literature as well as surveys and focus groups conducted in IO1 and reflect prominent challenges encountered in the workplace for women in STEM (Rosser, 2004; Dasgupta & Stout, 2014; Parmaxi, Vasiliou, Ioannou, & Kouta; Kouta, Parmaxi, & Smoleski, 2017; Casad, et al., 2020).

You will use the FeSTEM challenges in the ‘construct’ step of the toolbox (see Table 1. Examples of FeSTEM challenges). You will pair these challenges - or for increased fun you may put the challenges in a box and have students randomly choose one - with a pre-selected or again a randomly chosen ‘construct’ activity. The students will have to execute their ‘construct’ activity by following the instructions leading to the construction of a gender-sensitive exhibit but also addressing the FeSTEM challenge at hand. While the FeSTEM challenges have a gender-specific focus, the ‘construct’ activities don’t, thus ensuring always an interesting and challenging mix.

**Table 1. Examples of FeSTEM challenges.**

<table>
<thead>
<tr>
<th></th>
<th>FeSTEM Challenge</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>“I don’t have any decision-making power at work”</td>
</tr>
<tr>
<td>2</td>
<td>“I do not get paid the same as men”</td>
</tr>
<tr>
<td>3</td>
<td>“Women get less leadership positions”</td>
</tr>
<tr>
<td>4</td>
<td>“I am the only female student in my course”</td>
</tr>
<tr>
<td>5</td>
<td>“My family thinks I should be a secretary”</td>
</tr>
<tr>
<td>6</td>
<td>“My friends tell me I won’t be able to get promoted”</td>
</tr>
<tr>
<td>7</td>
<td>“I fear I will get laid off if I reveal I am pregnant”</td>
</tr>
<tr>
<td>8</td>
<td>“I won’t be able to succeed professionally and have a family”</td>
</tr>
<tr>
<td>9</td>
<td>“In meetings other people think I am the secretary”</td>
</tr>
<tr>
<td>10</td>
<td>“I am the only woman in my workplace”</td>
</tr>
<tr>
<td>11</td>
<td>“I don’t know many successful women in my field”</td>
</tr>
</tbody>
</table>

**Aim of Tools**
Technologies, tools, resources, and practices for introducing gender-sensitive content in Higher Education for STEM are presented below. Each of these practices is accompanied with examples of tools and their instructional use. The tools are presented under each step of the FeSTEM approach (Understand-Construct-Share). The tools in the “Understand” step aim to provide expert information and link students to professionals and critically reflect on the information they receive. Therefore, some utilise design thinking activities such as taking notes in the format of ‘How Might We?’ (HMW) while others encourage group discussion and question crafting.

### How Might We (HMW)?

**FeSTEM Challenge Questions:**

HMW - ADDRESS THE GENDER PAY GAP?

HMW - ADDRESS THE LACK OF MENTORSHIP FOR WOMEN

HMW - REDUCE STEREOTYPING WOMEN

HMW - REDUCE THE QUESTIONING OF WOMENS’ COMPETENCE IN LEADERSHIP POSITIONS BY THEIR MALE COUNTERPARTS

HMW - REDUCE IMPLICIT STEREOTYPES IN THE WORKPLACE

This toolbox can be used as a handbook, as it provides concise information regarding the use of tools for supporting gender-sensitive content for addressing a specific gender-related challenge, whilst there are multiple resources for additional learning. The selection of the technologies was guided by systematic review, national stakeholder consultations, creative workshop activities with our STEM-MAKER teams and in-class applications throughout the lifecycle of the project. The tools provided in this toolbox are structured under the FeSTEM approach (see Figure 13). This aims to simplify the use of the document and make it clear what materials can be found under which step (Understand-Construct-Share).

**Brief Examples of “Understand” activities**
<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
<th>Materials/Tools</th>
<th>Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mystery Box</td>
<td>Students randomly choose their challenge using the spinning wheel.</td>
<td><a href="https://www.classtools.net/random-name-picker/92_m7dXC7">https://www.classtools.net/random-name-picker/92_m7dXC7</a></td>
<td>Students spin the wheel. When the wheel stops, the indicated challenge will be the one the students will work on.</td>
</tr>
</tbody>
</table>
| HMW or Questions activity     | The educator can choose between the HMW or questions activity for brainstorming and reflection. | Examples of FeSTEM Challenge Questions:  
- HMW - Address the gender pay gap?  
- HMW - Address the lack of mentorship for women  
- HMW - Reduce stereotyping women  
- HMW - Reduce the questioning of womens’ competence in leadership positions by their male counterparts  
- HMW - Reduce implicit stereotypes in the workplace  | HMW (How Might We?): Students will take notes, brainstorming, reflect and express their opinions with regards to the HMW questions.  
Questions: Students should think of 10 important questions with regards to gender equality and then categorize them to the following categories: Trivial, Hard, Impossible, Nonsense |
| Watch a video                 | Students will watch a video regarding gender-equality in industry           | Video Examples:  
- Gender Equality (European Commission) by JUL & MAT  
- Fifth Gender Equality Report: The European Commission  
- The ‘gender-equality paradox’ in STEM fields – BBC Newsnight  | Students will watch and critically reflect on a video that introduces issues of gender in STEM. |
| Visit                         | A visit can take place in a STEM field related workplace                    | N/A                                                                            | Students can observe the real STEM environment, the |
workers and make their comments (e.g. regarding how many women and men were employed etc.)

<p>| | | |</p>
<table>
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<tbody>
<tr>
<td><strong>Invited Speaker</strong></td>
<td>An invited speaker will speak about challenges or issues of gender and STEM. This can be a role model of a successful woman in a STEM field, or any other person who can share relevant experiences or views.</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Read article</strong></td>
<td>Students can choose between a variety of STEM and gender related articles</td>
<td>Article examples: Engineering: not for girls? - The Guardian U.S. tech industry needs women, must interest them at school - Reuters Women in mathematics: The history behind the gender gap - Open Learn</td>
</tr>
</tbody>
</table>

**Time recommended**
The recommended time allocated for the “understand” step is a minimum 2-4h (in 1 or 2 sessions).
Step 1 - Understand

Activities and Tools

WHAT’S IN THIS SECTION

Play a game
Expert Elicitation
Article Avalanche
Attend a Virtual Conference with inspiring talks
Field trip Fun
Introduce Role Models
Watch Inspiring Videos
Play a game

Playing engaging quiz-based games allows students to interact and bring the magic of learning for students. Games can trigger discussion on issues related to gender-equality.

Choose or create a game

Choose a game (see suggestions in the References and Inspirations) to introduce gender-specific challenges in a particular profession or career path. You can use Kahoot! Or Quizizz to introduce students to the topic and trigger a discussion on a specific gender-related challenge or issue.

Set-Up

The instructor can set up the quiz and ask students to join the game hosted live - in class or virtually - and submit answers from their devices. Students may also complete self-paced challenges or challenge their friends with kahoots they can create. Distance Learning variation can utilise zoom, teams, hangouts, meet or similar to facilitate the game.

On the day: set the game

Set the game on your computer and invite students to join. Head to getkahoot.com and sign up for a free account. Select "Sign Up," then pick "Teacher" followed by your institution be it "school," "higher education," or "school administration." You are then able to register using your email and a password or with a Google or Microsoft account – ideal if your school already uses Google Classroom or Microsoft Teams. Once you're signed up, you can get started making your own quiz or using one of the many options already created (see suggestions in the References and Inspirations). Or go for a bit of both, building a new quiz but using the half a million question options already available. Instructors’ guide is available here.

On the day: Students

A game PIN is generated randomly and students are asked to go to the site: kahoot.it. Once students enter the game PIN they join the quiz. Students can discuss and raise discussion on their answers.

References and Inspirations

Kahoot games for Women in STEM

1. Women in STEM: Challenges and facts in Europe (FeSTEM Kahoot)
2. Women in STEM: Challenges and facts (FeSTEM Kahoot)
3. Women in STEM: Challenges and facts
4. International Women's Day
5. International Day of Girls and Women in Science (UNric quiz)
6. International Day of Girls and Women in Science (Behring Quiz)
7. Women's history month quiz
**Expert Elicitation**

Experts on issues related to gender-equality (or people in STEM who have experience in decision making) can provide in-depth information about a topic (e.g., pay-gap, gender equality policies) and can be especially helpful when you need to introduce a new topic in a short amount of time.

**Choose the expert**

Choose an expert based on your objective: to introduce gender-specific challenges in a particular profession or career path. Make sure the expert is not only knowledgeable in the field and experienced to talk about the issues but a proficient public speaker. Clarify to the experts the duration and subject of their talk as well as their target audience.

**On the day: Expert**

Welcome the expert and open the floor to the expert. The expert should take about 30mins maximum to talk about their work and gender-related challenges.

**On the day: Students**

During the expert’s presentation encourage the students on an individual level to note down post-it notes with observations they make from the talk. Each group should take 15 minutes to cluster their post-it notes in thematic categories. Distance learning variation can utilise miro or mural for students to work together in taking notes or for a more simple approach a shared google doc and a breakout room or separate voice chat channel.

**On the day: Interaction**

Groups will go in rounds and present their observations. The expert should be able to comment on their observations and offer additional information.
**Article Avalanche**

*Reading through a variety of sources can help gain multiple perspectives on a topic.*

**Choose articles**
Choose 3 articles from the small database of articles on gender-specific challenges per discipline found below. Feel free to include in part or in full your own sources. Print or share these with the students at the beginning of class or prior to class for individual study.

**Share and present**
Each student will share their response within their group or the entire class (depending on available time). Allow time for comments and discussion in class.

**Individual reading**
Either during class time or as an at home assignment, allow students to read the 3 articles and write a 500 word response bringing together observations, comments and opinions on all 3.

See [examples](#) of gender sensitive artifacts

**References and Inspirations**

**Article samples for Science & Engineering**
1. [The Problem of Visibility for Women in Engineering, and How They Manage It](#) - Harvard Business Review
2. [The case for change: why engineering needs more women](#) - Guardian Careers
3. [Engineering: not for girls?](#) - The Guardian

**Article samples for Technology & Computer Science**
6. [Careers for Women in Technology Companies Are a Global Challenge](#) - The New York Times
7. [The vile experiences of women in tech](#) - The Economist
8. [U.S. tech industry needs women, must interest them at school](#) - Reuters
9. [Furor on Claim Women's Choices Create Gender Gap in Comp Sci](#) - Inside Higher Ed
10. [Why aren’t more women in computer science](#) - CIO

**Article samples for Mathematics**
1. [New Study Challenges The Assumption That Math Is Harder For Girls](#) - NPR
2. [Why Are There So Few Women Mathematicians](#) - The Atlantic
3. [Women in mathematics: The history behind the gender gap](#) - Open Learn
4. [Maryam Mirzakhani’s success showed us the challenges women in maths still face](#) - The Conversation
Attend a Virtual Conference with inspiring talks

Sometimes it is more engaging watching a compelling talk than reading an article. Visual learning is sometimes more powerful and impactful.

Choose talks
Choose 3 of the listed inspirational subject talks and 2 of the listed FeSTEM gender talks to either watch during a lecture or assign to students to watch at home. Feel free to include your own sources.

Individual or group reflection
Each student or groups of students should write a 500 word response bringing together observations, comments and opinions on all the videos.

Share and present
Each student will share their response within their group or the entire class (depending on available time). Allow time for comments and discussion in class.

Teaching in a language other than English? All TED Talks have subtitles in many languages

References and Inspirations

Inspirational STEM Talks from Women
1. How we’re teaching computers to understand pictures by Fei-Fei Li - TED 2015
2. The mathematics of love by Hannah Fry - TEDxBinghamtonUniversity
3. How bacteria "talk" by Bonnie Bassler - TED 2009
4. How giant websites design for you (and a billion others, too) by Margaret Gould Stewart - TED 2014
5. Your social media "likes" expose more than you think by Jennifer Golbeck - TEDxMidAtlantic 2013
6. Building blocks that blink, beep and teach by Ayah Bdeir - TED 2012

Women talking about Gender issues in STEM
1. Teach girls bravery, not perfection by Reshma Saujani - TED 2016
2. Why do ambitious women have flat heads? by Dame Stephanie Shirley - TED 2015
3. How do we bridge the "anxiety gap" at work? By Erica Joy Baker - TED@BCG Milan
4. To raise brave girls, encourage adventure by Caroline Paul - TEDWomen 2016
5. Can we all "have it all"? by Anne-Marie Slaughter - TEDGlobal 2013
**Field trip Fun**

Taking students outside of the classroom and experiencing real-life situations can be a memorable and meaningful experience. A field trip in a STEM industry can provide real-life experiences of how gender representation is taking place. In this case, the instructor will need to set the ground of equality in the classroom and provide opportunities to the students to pose questions during their visit and be alert on issues related to gender that might take place in real-life workplaces.

**Decide the context**

As the instructor, there are two things to consider: a) the location/setting and b) the people/experts. Factors that affect the location might be availability of space to host your class, proximity and ease of access considering transport resources you might have available as well as the wow-factor they get from being there. Factors that affect the experts they will meet are whether they can convey their experiences in meaningful ways and their experiences being related to gender issues so they can share the challenges and how they have overcome them. It is most likely, females would be the most appropriate STEM industry speakers.

**The visit**

Make sure on the receiving end, the organisation you are visiting understands that there is a gender component to your visit and while the students might be toured around and speak to various individuals, emphasis must be given to gender. This can be achieved by encouraging the CEO to speak about equality in the workplace, or an employee to talk about challenges they might have faced or feared they would have faced and how they tackled them.

**After the visit**

Each student or groups of students, depending on your cohort and your pedagogical style, should write a 500 word response bringing together observations, comments and opinions on the field trip. Some questions they should answer is what they have found surprising and unexpected, what they have learned that is new, what they wish they could have learned more about.

**Logistics**

Arrange for transportation, leave of absence for the students from other classes if the field trip coincides with other classes, any paperwork that your institution might need for such a trip such as a letter from the organisation you are visiting, permits, insurance etc. Take special care if the place you are visiting has heavy equipment and health and safety concerns, you might need to consider completing a risk assessment and informing your institution accordingly. Decide if you need to ask students to bring meals or if you will be making arrangements.
Introduce Role Models

Reading about successful women in STEM can empower and promote women enrollment in STEM.

Choose website
Choose a website or more from the small database of websites found below, that introduce successful women in STEM. Read the stories of 5 women. Feel free to include in part or in full your own sources. Share these with the students at the beginning of class or prior to class for individual study.

Share and present
Each student will share their response within their group or the entire class (depending on available time). Allow time for comments and discussion in class.

Individual navigation
Either during class time or as an at home assignment, allow students to navigate through the websites, read the stories of 5 women and write a 500 word response bringing together observations, comments and opinions on all 5.

References and Inspirations
List of websites with successful women in STEM fields

<table>
<thead>
<tr>
<th>Title</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 List of science and technology awards for women</td>
<td><a href="https://en.wikipedia.org/wiki/List_of_science_and_technology_awards_for_women">https://en.wikipedia.org/wiki/List_of_science_and_technology_awards_for_women</a></td>
</tr>
<tr>
<td>10 Women computer scientists by nationality</td>
<td><a href="https://en.wikipedia.org/wiki/Category:Women_computer_scientists_by_nationality">https://en.wikipedia.org/wiki/Category:Women_computer_scientists_by_nationality</a></td>
</tr>
</tbody>
</table>
17. Find a Role Model https://www.fabfems.org/nrmd/find
21. Women in Math Project https://pages.uoregon.edu/wmnmath/biographies.html
**Watch successful women in STEM sharing their work or stories can empower and promote women enrollment in STEM.**

**Choose videos**
Choose and watch at least 3 videos from the database of videos found below, that introduce successful women in STEM. Feel free to include in part or in full your own sources. Share these with the students at the beginning of class or prior to class for individual study.

**Individual navigation**
Either during class time or as an at home assignment, allow students to go through and choose at least 3 videos, watch the stories of women in STEM and write a 500 word response bringing together observations, comments and opinions on all 3.

**Share and present**
Each student will share their response within their group or the entire class (depending on available time). Allow time for comments and discussion in class.

---

**References and Inspirations**
List of videos related to successful women in STEM fields

**Challenge: “I don’t know many successful women in my field”**

<table>
<thead>
<tr>
<th>Title</th>
<th>Video</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women in STEM (10 Videos)</td>
<td><a href="https://www.youtube.com/playlist?list=PL-kIBfSqQg3upn0g68pKuLBApO59IRqz5">https://www.youtube.com/playlist?list=PL-kIBfSqQg3upn0g68pKuLBApO59IRqz5</a></td>
<td>Get inspired by the incredible journey and the commendable work of these eminent Indian women from the fields of Science, Technology, Engineering and Math.</td>
</tr>
<tr>
<td>Meet the winners of the Shanti Swarup Bhatnagar award</td>
<td>Women in STEM</td>
<td><a href="https://www.youtube.com/watch?v=Mb6g0ZVeMBk&amp;list=PL-kIBfSqQg3upn0g68pKuLBApO59IRqz5&amp;index=11&amp;t=0s">https://www.youtube.com/watch?v=Mb6g0ZVeMBk&amp;list=PL-kIBfSqQg3upn0g68pKuLBApO59IRqz5&amp;index=11&amp;t=0s</a></td>
</tr>
<tr>
<td>Sujatha Roy and her tale of numbers</td>
<td>Women in STEM</td>
<td><a href="https://www.youtube.com/watch?v=-LI0ZRsgg">https://www.youtube.com/watch?v=-LI0ZRsgg</a> &amp;list=PL-kIBfSqQg3upn0g68pKuLBApO59IRqz5 &amp;index=2&amp;t=0s</td>
</tr>
<tr>
<td>Vidita Vaidya and her take on equal opportunities</td>
<td>Women in STEM</td>
<td><a href="https://www.youtube.com/watch?v=Fd2DHIAmik&amp;list=PL-kIBfSqQg3upn0g68pKuLBApO59IRqz5&amp;index=3&amp;t=0s">https://www.youtube.com/watch?v=Fd2DHIAmik&amp;list=PL-kIBfSqQg3upn0g68pKuLBApO59IRqz5&amp;index=3&amp;t=0s</a></td>
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<tr>
<td>Rama Govindarajan</td>
<td>and her ambitious journey in research</td>
<td><a href="https://www.youtube.com/watch?v=tyiXEiWPYjw&amp;list=PL-kIBfSgQq3upn0q68pKulBApO59lRqz5&amp;index=4&amp;t=0s">https://www.youtube.com/watch?v=tyiXEiWPYjw&amp;list=PL-kIBfSgQq3upn0q68pKulBApO59lRqz5&amp;index=4&amp;t=0s</a></td>
</tr>
<tr>
<td>Sanghamitra Bandyopadhyay</td>
<td>and her world of machine learning</td>
<td><a href="https://www.youtube.com/watch?v=IGvCQnA7ot0&amp;list=PL-kIBfSgQq3upn0q68pKulBApO59lRqz5&amp;index=5&amp;t=0s">https://www.youtube.com/watch?v=IGvCQnA7ot0&amp;list=PL-kIBfSgQq3upn0q68pKulBApO59lRqz5&amp;index=5&amp;t=0s</a></td>
</tr>
<tr>
<td>Mitali Mukerji</td>
<td>and genomics</td>
<td><a href="https://www.youtube.com/watch?v=AuZHPjir-uyp&amp;list=PL-kIBfSgQq3upn0q68pKulBApO59lRqz5&amp;index=6&amp;t=0s">https://www.youtube.com/watch?v=AuZHPjir-uyp&amp;list=PL-kIBfSgQq3upn0q68pKulBApO59lRqz5&amp;index=6&amp;t=0s</a></td>
</tr>
<tr>
<td>Gaiti Hasan</td>
<td>and her views on equality</td>
<td><a href="https://www.youtube.com/watch?v=L3FuhSwJJ8&amp;list=PL-kIBfSgQq3upn0q68pKulBApO59lRqz5&amp;index=7&amp;t=0s">https://www.youtube.com/watch?v=L3FuhSwJJ8&amp;list=PL-kIBfSgQq3upn0q68pKulBApO59lRqz5&amp;index=7&amp;t=0s</a></td>
</tr>
<tr>
<td>Shubha Tole</td>
<td>and her story of self-worth</td>
<td><a href="https://www.youtube.com/watch?v=WqR2Il5V7w8&amp;list=PL-kIBfSgQq3upn0q68pKulBApO59lRqz5&amp;index=8&amp;t=0s">https://www.youtube.com/watch?v=WqR2Il5V7w8&amp;list=PL-kIBfSgQq3upn0q68pKulBApO59lRqz5&amp;index=8&amp;t=0s</a></td>
</tr>
<tr>
<td>Ritu Karidhal</td>
<td>- The Rocket Woman of India</td>
<td><a href="https://www.youtube.com/watch?v=QpMWedtG_S_Q&amp;list=PL-kIBfSgQq3upn0q68pKulBApO59lRqz5&amp;index=9&amp;t=0s">https://www.youtube.com/watch?v=QpMWedtG_S_Q&amp;list=PL-kIBfSgQq3upn0q68pKulBApO59lRqz5&amp;index=9&amp;t=0s</a></td>
</tr>
<tr>
<td>Anuradha TK</td>
<td>and her journey at ISRO</td>
<td><a href="https://www.youtube.com/watch?v=XrqxYldZMok&amp;list=PL-kIBfSgQq3upn0q68pKulBApO59lRqz5&amp;index=10&amp;t=0s">https://www.youtube.com/watch?v=XrqxYldZMok&amp;list=PL-kIBfSgQq3upn0q68pKulBApO59lRqz5&amp;index=10&amp;t=0s</a></td>
</tr>
<tr>
<td>Women In Science</td>
<td></td>
<td><a href="https://www.youtube.com/watch?v=wqyflAzl-J">https://www.youtube.com/watch?v=wqyflAzl-J</a></td>
</tr>
<tr>
<td>F-LANE &quot;Women in Tech&quot;</td>
<td>(2017), Part 4, Pitches</td>
<td><a href="https://www.youtube.com/watch?v=tlt00zIMmNQ">https://www.youtube.com/watch?v=tlt00zIMmNQ</a></td>
</tr>
<tr>
<td>Women of Silicon Roundabout Event, London 2018 - Vox pops</td>
<td></td>
<td><a href="https://www.youtube.com/watch?v=zw_6S0PTyPA">https://www.youtube.com/watch?v=zw_6S0PTyPA</a></td>
</tr>
<tr>
<td>Wonder Women Tech London 2017 Conference Highlights!</td>
<td></td>
<td><a href="https://www.youtube.com/watch?v=LFBUK7TRFj8">https://www.youtube.com/watch?v=LFBUK7TRFj8</a></td>
</tr>
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<td>URL</td>
<td>Description</td>
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<td>----------------------------------------------------------------------</td>
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<tr>
<td>Journeys of Women in Mathematics Full Length Version</td>
<td><a href="https://www.youtube.com/watch?v=uNJ7riipHOY">https://www.youtube.com/watch?v=uNJ7riipHOY</a></td>
<td>A video on the journeys of women in mathematics.</td>
</tr>
<tr>
<td>Fields Medal: Maryam Mirzakhani</td>
<td><a href="https://www.youtube.com/watch?v=LxuVSw4VZ78">https://www.youtube.com/watch?v=LxuVSw4VZ78</a></td>
<td>A video regarding Maryam Mirzakhani, Field Medal on mathematics recipient.</td>
</tr>
<tr>
<td>Interview Francesca Da Lio</td>
<td><a href="https://www.youtube.com/watch?v=EKeh48pdXKM">https://www.youtube.com/watch?v=EKeh48pdXKM</a></td>
<td>A video regarding mathematician Prof. Francesca Da Lio at ETH Zurich. What she loves about her work as a mathematician is the challenge and excitement to solve new problems.</td>
</tr>
<tr>
<td>5 Indian Women Scientists You Should Know Of</td>
<td><a href="https://www.youtube.com/watch?v=0yFr5eu9Q">https://www.youtube.com/watch?v=0yFr5eu9Q</a></td>
<td>A video to present five Indian women scientists.</td>
</tr>
<tr>
<td>The genius of Marie Curie - Shohini Ghose</td>
<td><a href="https://www.youtube.com/watch?v=w6JFRi0QmsS">https://www.youtube.com/watch?v=w6JFRi0QmsS</a></td>
<td>A video regarding Nobel Prize awarded Marie Skłodowska Curie's revolutionary research on radiology and much more.</td>
</tr>
<tr>
<td>Women in Science: A History Of Women In Space</td>
<td><a href="https://www.youtube.com/watch?v=HIEach7rmDg">https://www.youtube.com/watch?v=HIEach7rmDg</a></td>
<td>A video presenting a sort history of women scientists who helped the space exploration.</td>
</tr>
<tr>
<td>Women in science who changed the world</td>
<td><a href="https://www.youtube.com/watch?v=W53Ks824G7A">https://www.youtube.com/watch?v=W53Ks824G7A</a></td>
<td>A video that present important female scientists who have made world-changing discoveries.</td>
</tr>
<tr>
<td>How we're teaching computers to understand pictures</td>
<td><a href="https://www.ted.com/talks/fei_fei_li_how_we_re_teaching_computers_to_understand_pictures">https://www.ted.com/talks/fei_fei_li_how_we_re_teaching_computers_to_understand_pictures</a></td>
<td>A video describing Prof. Fei-Fei Li research on using machine learning algorithms to recognize scenes in still photographs and accurately describing them in natural language.</td>
</tr>
<tr>
<td>How I fell in love with quasars, blazars and our incredible universe</td>
<td><a href="https://www.ted.com/talks/jedidah_isler_how_i_fell_in_love_with_quasars_blazars_and_our_incredible_universe">https://www.ted.com/talks/jedidah_isler_how_i_fell_in_love_with_quasars_blazars_and_our_incredible_universe</a></td>
<td>A video by Jedidah Isler who talks about blazars, or blazing quasars and the highest-energy jet emission.</td>
</tr>
<tr>
<td>How to nurture brilliant women in STEM</td>
<td><a href="https://www.ted.com/playlists/723/how_to_nurture_brilliant_women_in_stem">https://www.ted.com/playlists/723/how_to_nurture_brilliant_women_in_stem</a></td>
<td>A playlist of TED talks by women scientists. Inspiring talks from women who have pushed the boundaries in their field and are paving the way for the next generation of girls to earn their place in traditionally male-dominated professions.</td>
</tr>
<tr>
<td>How fungi recognize (and infect) plants</td>
<td><a href="https://www.ted.com/talks/mennat_el_ghalid_how_fungi_recognize_and_infect_plants">https://www.ted.com/talks/mennat_el_ghalid_how_fungi_recognize_and_infect_plants</a></td>
<td>A video by Mennat El Ghalid explains how a breakthrough in our understanding of the molecular signals fungi use to attack plants could disrupt this interaction -- and save our crops. She identified the compounds secreted from the plant roots attracting Fusarium oxysporum, a soilborne plant pathogenic fungus and characterized the underlying mechanisms of attraction. Such compounds were tracked since the 19th century.</td>
</tr>
<tr>
<td>Topic</td>
<td>Link</td>
<td>Description</td>
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</tr>
<tr>
<td>A rare galaxy that's challenging our understanding of the universe</td>
<td><a href="https://www.ted.com/talks/burcin_mutlu_pakdil_a_rare_galaxy-that-s_challenging-our-understanding-of-the-universe">https://www.ted.com/talks/burcin_mutlu_pakdil_a_rare_galaxy-that-s_challenging-our-understanding-of-the-universe</a></td>
<td>A video TED talk by Burçin Mutlu-Pakdil on what's it like to discover a galaxy. Astrophysicist and TED Fellow Burçin Mutlu-Pakdil lets us know in this quick talk about her team's surprising discovery of a mysterious new galaxy type. Studies the structure and dynamics of galaxies to help us understand how they form and evolve.</td>
</tr>
<tr>
<td>What time is it on Mars?</td>
<td><a href="https://www.ted.com/talks/nagin_cox_what_time_is_it_on_mars">https://www.ted.com/talks/nagin_cox_what_time_is_it_on_mars</a></td>
<td>A video by Nagin Cox who explores Mars as part of the team that operates NASA's rovers. The Space Program helps the world &quot;look up&quot; and remember that we are one world.</td>
</tr>
<tr>
<td>How menopause affects the brain</td>
<td><a href="https://www.ted.com/talks/lisa_mosconi_how_menopause_affects_the_brain">https://www.ted.com/talks/lisa_mosconi_how_menopause_affects_the_brain</a></td>
<td>A video by neuroscientist Lisa Mosconi who studies the brains of living patients with cutting-edge brain-imaging technology — and uses the data to understand how brain health plays out differently in women than in men.</td>
</tr>
<tr>
<td>What sharks taught me about being a scientist</td>
<td><a href="https://www.ted.com/talks/melissa_marquez_what_sharks_taught_me_a_bout_being_a_scientist">https://www.ted.com/talks/melissa_marquez_what_sharks_taught_me_a_bout_being_a_scientist</a></td>
<td>In this video Melissa Cristina Marquez speaks about the similarities between female sharks and women in STEM — and why the two should get more time in the spotlight.</td>
</tr>
<tr>
<td>A voice for diversity in science</td>
<td>Dr Jessica Wade</td>
<td>TEDxLondonWomen</td>
</tr>
<tr>
<td>The next software revolution: programming biological cells</td>
<td><a href="https://www.ted.com/talks/sara_jane_dunn_the_next_software_revolution_programming_biological_cells">https://www.ted.com/talks/sara_jane_dunn_the_next_software_revolution_programming_biological_cells</a></td>
<td>A video TED talk by computational biologist Sara-Jane Dunn who is working at the interface between biology and computation, using mathematics and computational analysis to make sense of how living systems process information.</td>
</tr>
<tr>
<td>The most detailed map of galaxies, black holes and stars ever made</td>
<td><a href="https://www.ted.com/talks/juna_kollmeier_the_most_detailed_map_of_galaxies_black_holes_and_stars-ever_made">https://www.ted.com/talks/juna_kollmeier_the_most_detailed_map_of_galaxies_black_holes_and_stars-ever_made</a></td>
<td>A video TED talk by astrophysicist Juna Kollmeier who believes &quot;all humans have an inalienable right to know about their world. For the past two decades, she has been studying the cosmos -- from planets to galaxies to black holes. She is currently making a new map of the sky -- the fifth generation of the Sloan Digital Sky Survey.&quot;</td>
</tr>
<tr>
<td>SpaceX's plan to fly you across the globe in 30 minutes</td>
<td><a href="https://www.ted.com/talks/gwynne_shotwell_space_x_s_plan_to_fly_you_across_the_globe_in_30_minutes">https://www.ted.com/talks/gwynne_shotwell_space_x_s_plan_to_fly_you_across_the_globe_in_30_minutes</a></td>
<td>In conversation with TED curator Chris Anderson, Gwynne Shotwell discusses SpaceX's race to put people into orbit and the organization's next big project, the BFR (ask her what it stands for). The new giant rocket is designed to take humanity to Mars -- but it has another potential use: space travel for earthlings.</td>
</tr>
<tr>
<td>Deepika Kurup TedWomen 2016</td>
<td><a href="https://www.ted.com/talks/deepika_kurup_a_young_scientist_s_quest_for_clean_water">https://www.ted.com/talks/deepika_kurup_a_young_scientist_s_quest_for_clean_water</a></td>
<td>Deepika Kurup has been determined to solve the global water crisis since she was 14 years old, after she saw kids outside her grandparents' house in India drinking water that looked too dirty even to touch. Her research began in her family kitchen -- and eventually led to a major science prize. In this video TED talk, she explains how she developed a cost-effective, eco-friendly way to purify water.</td>
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<tr>
<td>A teen scientist's invention to help wounds heal</td>
<td><a href="https://www.ted.com/talks/anushka_naiknaware_a_teen_scientist_s_invention_to_help_wounds_heal">https://www.ted.com/talks/anushka_naiknaware_a_teen_scientist_s_invention_to_help_wounds_heal</a></td>
<td>In 2016, at age 13, Anushka Naiknaware was the youngest winner of the Google Science Fair, with her invention of a clever new bandage that tells caregivers when it needs to be changed.</td>
</tr>
<tr>
<td>Women in STEM -Carol Iddins</td>
<td><a href="https://vimeo.com/260950384">https://vimeo.com/260950384</a></td>
<td>In this video, director of REAC/TS Carol Iddins tells her story about some of her influences, passions and opportunities she has had, being a woman is STEM!</td>
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<tr>
<td>Women in STEM -Ashley Golden</td>
<td><a href="https://vimeo.com/260951318">https://vimeo.com/260951318</a></td>
<td>In this video, biostatistician Ashley Golden tells her story as she talks about some of her influences, passions and opportunities she has had, being a woman is STEM!</td>
</tr>
<tr>
<td>Emmaly Manchanthasouk Profile</td>
<td><a href="https://vimeo.com/user10550772/review/160643709/4be673d925">https://vimeo.com/user10550772/review/160643709/4be673d925</a></td>
<td>Emmaly Manchanthasouk, Web Developer / Project Manager, speaks out her enthusiasm for using technology to express herself and empower others.</td>
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<tr>
<td>Brennetta Harris Profile</td>
<td><a href="https://vimeo.com/user10550772/review/160643708/dd745f659d">https://vimeo.com/user10550772/review/160643708/dd745f659d</a></td>
<td>A video about Architectural Estimator Brennetta Harris. Brennetta has dreamed of becoming an architect since childhood and has designed her own blueprint for working towards her career goals.</td>
</tr>
<tr>
<td>10 Famous Female Scientists in History</td>
<td><a href="https://www.youtube.com/watch?v=m-XdEHVU4eQ">https://www.youtube.com/watch?v=m-XdEHVU4eQ</a></td>
<td>Ten female scientists who all earned their place in history by making a global impact in their fields. Women have had an uphill battle to be seen as equals in the workplace. They are inventors, pioneers, trailblazers and innovators.</td>
</tr>
<tr>
<td>Caroline Karanja Profile</td>
<td><a href="https://vimeo.com/user10550772/review/153415070/1a5b13e5c5">https://vimeo.com/user10550772/review/153415070/1a5b13e5c5</a></td>
<td>A video about software engineer Caroline Karanja, Caroline channels her creativity and all the facets of her personality into engineering tech applications that give people meaningful experiences.</td>
</tr>
<tr>
<td>She Can STEM: Lucianne Walkowicz, Astronomer at the Adler Planetarium</td>
<td><a href="https://www.youtube.com/watch?v=5&amp;v=UDKvO-QBfG8">https://www.youtube.com/watch?v=5&amp;v=UDKvO-QBfG8</a></td>
<td>Lucianne Walkowicz, Astronomer at the Adler Planetarium, guides girls through stars. She searches for life in the universe.</td>
</tr>
<tr>
<td>Jayla Meets Mitu, a Game Developer</td>
<td><a href="https://www.youtube.com/watch?v=ueTnvXyxqC8">https://www.youtube.com/watch?v=ueTnvXyxqC8</a></td>
<td>Jayla interviews Mitu Khandaker, the CEO and co-founder of Glow Up Games, a company that makes video games geared toward girls and people of color.</td>
</tr>
<tr>
<td>Maya Meets Roselin, a Cosmetic Chemist</td>
<td><a href="https://www.youtube.com/watch?v=bQTTkPFyVzU">https://www.youtube.com/watch?v=bQTTkPFyVzU</a></td>
<td>Maya interviews Roselin Rosario, a Cosmetic Chemist, regarding her chemist career.</td>
</tr>
<tr>
<td>Rylie Meets Ritu, a Biomedical Engineer</td>
<td><a href="https://www.youtube.com/watch?v=Y_NjZVZCG74">https://www.youtube.com/watch?v=Y_NjZVZCG74</a></td>
<td>Rylie interviews Ritu Raman, a Mechanical &amp; Biomedical Engineer who builds machines and robots using biological materials.</td>
</tr>
<tr>
<td>Lilly Meets Victoria, a Climate Scientist</td>
<td><a href="https://www.youtube.com/watch?v=T7-3T-MJl3Q">https://www.youtube.com/watch?v=T7-3T-MJl3Q</a></td>
<td>Lilly interviews Victoria Herrmann, a Climate Scientist who works in the Arctic. Victoria emphasizes the ice melting problem and protecting the shorelines and endangered species.</td>
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<tr>
<td>Mari Meets Rae, a Large Carnivore Ecologist</td>
<td><a href="https://www.youtube.com/watch?v=YXT8UstQPh6">https://www.youtube.com/watch?v=YXT8UstQPh6</a></td>
<td>Mari interviews Dr. Rae Wynn-Grant, a Large Carnivore Ecologist who explains her job on examining big animals like lions, whales, sharks on the field. She advises Mari to believe in her passion more than in her performance.</td>
</tr>
<tr>
<td>A History of Women’s Achievements in STEM</td>
<td><a href="https://www.youtube.com/watch?v=rXv2tz689ybA">https://www.youtube.com/watch?v=rXv2tz689ybA</a></td>
<td>A short history of major female contributions to computing.</td>
</tr>
</tbody>
</table>

**Challenge: “I am the only woman in my workplace”**
<table>
<thead>
<tr>
<th>Women in science who changed the world</th>
<th><a href="https://www.youtube.com/watch?v=W53Ks824GTA&amp;t=151s">https://www.youtube.com/watch?v=W53Ks824GTA&amp;t=151s</a></th>
<th>This video argues that there is discrimination against women in science.</th>
</tr>
</thead>
<tbody>
<tr>
<td>How These Women Changed Science Forever!</td>
<td><a href="https://www.youtube.com/watch?v=gg_cDmCOBm8">https://www.youtube.com/watch?v=gg_cDmCOBm8</a></td>
<td>This video describes the amazing STEM discoveries of women who have not received the appropriate recognition.</td>
</tr>
<tr>
<td>Denise Bailey Profile</td>
<td><a href="https://vimeo.com/user10550772/review/153415069/2f5093468">https://vimeo.com/user10550772/review/153415069/2f5093468</a></td>
<td>Denise Bailey, Welder / Instructor. Meet Denise, or “Seven” as her friends call her, a welder, artist and instructor who forged her own path as a woman in the trades.</td>
</tr>
<tr>
<td>Rachel Gitajn Profile</td>
<td><a href="https://vimeo.com/user10550772/review/153417671/55d962f08f">https://vimeo.com/user10550772/review/153417671/55d962f08f</a></td>
<td>This video describes Rachel Gitajn studies in mechanical engineer &amp; product design, and her current job as a Bicycle Engineer. Rachel turned her passion for art, engineering and the outdoors into a dream job designing bikes that she loves to ride.</td>
</tr>
<tr>
<td>Women who changed the world</td>
<td><a href="https://www.youtube.com/watch?v=vsENdmD07Uo">https://www.youtube.com/watch?v=vsENdmD07Uo</a></td>
<td>51 women who changed the world since 1900's.</td>
</tr>
<tr>
<td>10 Inventions by WOMEN that Changed HISTORY</td>
<td><a href="https://www.youtube.com/watch?v=rPf9H-8bR6c">https://www.youtube.com/watch?v=rPf9H-8bR6c</a></td>
<td>Present ten inventions made by women</td>
</tr>
<tr>
<td>Γυναίκες στην Επιστήμη ΙΧΕΝ Αθηνών (in Greek)</td>
<td><a href="https://www.youtube.com/watch?v=sxaweWYS5To">https://www.youtube.com/watch?v=sxaweWYS5To</a></td>
<td>A short video to inspire Greek women to follow a STEM career.</td>
</tr>
</tbody>
</table>

**Challenge: “Women get less leadership positions”**

<table>
<thead>
<tr>
<th>Talks by brilliant women in STEM</th>
<th><a href="https://www.ted.com/playlists/253/11_ted_talks_by_brilliant_women">https://www.ted.com/playlists/253/11_ted_talks_by_brilliant_women</a></th>
<th>A TED talks playlist. These women are trailblazers inspiring a new generation of girls to follow their lead and change the ratio in STEM (science, math, engineering and tech).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pallavi Sharma Profile</td>
<td><a href="https://vimeo.com/user10550772/review/160643714/adab50a94a">https://vimeo.com/user10550772/review/160643714/adab50a94a</a></td>
<td>A video about Pallavi Sharma, IT Project Manager, Computer Science, IT, Web Application Programming. Pallavi has fought through challenges to write her own code for successful work-life balance.</td>
</tr>
<tr>
<td>Women In Science Have The Power To Change The World</td>
<td><a href="https://www.youtube.com/watch?v=EXdkEC8y14">https://www.youtube.com/watch?v=EXdkEC8y14</a></td>
<td>A short video to present the views of female scientists regarding the obstacles and opportunities in their careers.</td>
</tr>
<tr>
<td>Women In Science - Episode 5 - Prof. Zhenan Bao, Laureate 2017 L’Oréal-UNESCO</td>
<td><a href="https://www.youtube.com/watch?v=KFJQbWYNNF8">https://www.youtube.com/watch?v=KFJQbWYNNF8</a></td>
<td>A video to present Prof. Zhenan Bao's journey who invented skin-inspired electronic materials. Her research on flexible, stretchable and conductive materials could improve the quality of life of patients with prostheses. She received the Laureate 2017 of the L’Oréal-UNESCO For Women In Science award.</td>
</tr>
<tr>
<td>Women In Science - Episode 4 - Prof. Niveen M. Khashab, Laureate 2017 L’Oréal-UNESCO</td>
<td><a href="https://www.youtube.com/watch?v=NZt5G6hZsjE">https://www.youtube.com/watch?v=NZt5G6hZsjE</a></td>
<td>A video to describe Chemistry Professor Niveen M. Khashab work, Laureate 2017 of the L’Oréal-UNESCO For Women In Science award. Her work in analytical chemistry could lead to more targeted and personalized medical treatment.</td>
</tr>
<tr>
<td>Women In Science - Episode 2 - Prof. Michelle Simmons, Laureate 2017 L’Oréal-UNESCO</td>
<td><a href="https://www.youtube.com/watch?v=3YAazi6FCAs">https://www.youtube.com/watch?v=3YAazi6FCAs</a></td>
<td>A video to describe the journey's Professor Michelle Simmons, Laureate 2017 of the L’Oréal-UNESCO For Women In Science award, from UK to Australia. She aims at developing ultra-fast quantum computers.</td>
</tr>
<tr>
<td>Women in Tech Awards Dublin</td>
<td><a href="https://www.youtube.com/watch?v=PzIrRoJGb0A">https://www.youtube.com/watch?v=PzIrRoJGb0A</a></td>
<td>A video presenting the views of a group of women working in various sectors of the STEM (science, technology, engineering &amp; mathematics) industry.</td>
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<tr>
<td>Fondation L’Oréal</td>
<td><a href="https://www.youtube.com/channel/UCzvu1mAocfeZvPnfAFgxmow">https://www.youtube.com/channel/UCzvu1mAocfeZvPnfAFgxmow</a></td>
<td>Many video and playlists on issues regarding Scientists Women awarded by S the L’Oréal Foundation since 2007. Supporting women at the frontiers of science, highlighting their work and giving them the platform they deserve, helping vulnerable members of the community to rebuild their lives, offering those without training a way back to work—every one of the Foundation’s programmes addresses a basic, vital need.</td>
</tr>
<tr>
<td>Jana Vecstaudza, 2019 L’Oréal Baltic For Women in Science Laureate in Latvia</td>
<td><a href="https://www.youtube.com/watch?v=UGz5iMakgB0">https://www.youtube.com/watch?v=UGz5iMakgB0</a></td>
<td>A video that describes Jana Vecstaudza, 2019 L’Oréal Baltic For Women in Science Laureate in Latvia, research on material science.</td>
</tr>
<tr>
<td>Prof. Dame Caroline DEAN - 2018 L’Oréal-UNESCO 2018 Laureate for Europe</td>
<td><a href="https://www.youtube.com/watch?v=M6tleyKjNLe8">https://www.youtube.com/watch?v=M6tleyKjNLe8</a></td>
<td>A video describes Prof. Dame Caroline DEAN, 2018 L’Oréal-UNESCO 2018 Laureate for Europe, plant and microbial research. She investigated the FLC gene of flowers.</td>
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<tr>
<td>Name</td>
<td>Prize</td>
<td>YouTube Link</td>
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<tr>
<td>Kirsten Marie Ørnsbjerg JENSEN</td>
<td>2019 L'Oréal-UNESCO International Rising Talent</td>
<td><a href="https://www.youtube.com/watch?v=qInRUJhEKUw">https://www.youtube.com/watch?v=qInRUJhEKUw</a></td>
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<tr>
<td>Challenge: “I am the only female student in my course”</td>
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<tr>
<td>Title</td>
<td>URL</td>
<td>Description</td>
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<tr>
<td>Entering the Tech Industry Girls in Tech Part 1</td>
<td>Coding Blonde</td>
<td><img src="https://www.youtube.com/watch?v=wPNWyPFE1PA" alt="Image" /></td>
</tr>
<tr>
<td>0:10 / 12:39 Teach girls bravery, not perfection</td>
<td>Reshma Saujani</td>
<td><img src="https://www.youtube.com/watch?v=fC9da6eqaqg" alt="Image" /></td>
</tr>
<tr>
<td>Women of Color Navigating HSI STEMTransfer Pathways</td>
<td><img src="https://videohall.com/p/1388" alt="Image" /></td>
<td>This video highlights the stories of 21 women of color who attended Hispanic-Serving Institutions (HSIs) and successfully transferred from community college to four-year institutions in STEM.</td>
</tr>
<tr>
<td>Challenge: “I do not get paid the same as men”</td>
<td><img src="https://www.youtube.com/watch?v=vl57RF9iu2U" alt="Image" /></td>
<td>Give visibility to her journey, the sexism she experimented, and to other females in STEM.</td>
</tr>
<tr>
<td>Close the Gender Pay Gap</td>
<td><img src="https://www.youtube.com/watch?v=sVnLHVVR568" alt="Image" /></td>
<td><img src="http://ec.europa.eu/justice/gender-equ..." alt="Image" /></td>
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<tr>
<td>Challenge: “My family thinks I should be a secretary”</td>
<td><img src="https://videohall.com/p/884" alt="Image" /></td>
<td><img src="https://videohall.com/p/1564" alt="Image" /></td>
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<tr>
<td>Challenge: “My friends tell me I won’t be able to get promoted”</td>
<td><img src="https://vimeo.com/261010316" alt="Image" /></td>
<td><img src="https://vimeo.com/261147562" alt="Image" /></td>
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<tr>
<td>In this video safety and security manager Dr Davyda Hammond tells her story about some of her influences, passions and opportunities she has had, being a woman is STEM!</td>
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<tr>
<td>In this video, Erin Burr talks about some of her influences, passions and opportunities she has had, being a woman is STEM!</td>
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<td>Victoria Velez speaks on her experiences as a biomedical &amp; process engineer. Victoria followed her heart to a career that focuses her love of hands-on problem solving into engineering medical technologies that save lives.</td>
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<tr>
<td>A video about Pallavi Sharma, IT Project Manager, Computer Science, IT, Web Application Programming. Pallavi has fought through challenges to write her own code for successful work-life balance.</td>
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<tr>
<td>Bridgette Shannon Profile</td>
<td><a href="https://vimeo.com/user10550772/review/153415068/aabe572954">https://vimeo.com/user10550772/review/153415068/aabe572954</a></td>
<td>A video about Dr. Bridgette Shannon – Chemist at 3M. Bridgette's formula for success is using her love of chemistry to develop groundbreaking products at work and create natural remedies for her family at home.</td>
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<td><strong>Challenge: “I won’t be able to succeed professionally and have a family”</strong></td>
<td><strong>Opening Doors in Glass Walls for Women in STEM</strong></td>
<td><a href="https://www.youtube.com/watch?v=dc4M8DoYgC4">https://www.youtube.com/watch?v=dc4M8DoYgC4</a></td>
</tr>
<tr>
<td><strong>Women In STEM -Maria Escalona</strong></td>
<td><a href="https://vimeo.com/259846267">https://vimeo.com/259846267</a></td>
<td>Maria's story as she talks about some of her influences, passions and opportunities she has had, being a woman is STEM</td>
</tr>
<tr>
<td>Bridgette Shannon Profile</td>
<td><a href="https://vimeo.com/user10550772/review/153415068/aabe572954">https://vimeo.com/user10550772/review/153415068/aabe572954</a></td>
<td>A video about Dr. Bridgette Shannon – Chemist at 3M. Bridgette’s formula for success is using her love of chemistry to develop groundbreaking products at work and create natural remedies for her family at home.</td>
</tr>
<tr>
<td><strong>Challenge: “In meetings other people think I am the secretary”</strong></td>
<td><strong>Women Advancing Through Technology</strong></td>
<td><a href="https://videohall.com/p/1061">https://videohall.com/p/1061</a></td>
</tr>
<tr>
<td><strong>Women In Science Encourage Young Girls: ”You Belong In The STEM Fields”</strong></td>
<td><a href="https://www.youtube.com/watch?v=ga4Gh36dnfU">https://www.youtube.com/watch?v=ga4Gh36dnfU</a></td>
<td>In this video, a NASA scientist, a Google director, and a young scholar have an important message for girls seeking a career in STEM</td>
</tr>
<tr>
<td><strong>Challenge: “I don’t have any decision-making power at work”</strong></td>
<td><strong>JoNette Kuhnau Profile</strong></td>
<td><a href="https://vimeo.com/user10550772/review/153417669/0c3ba26f9e">https://vimeo.com/user10550772/review/153417669/0c3ba26f9e</a></td>
</tr>
<tr>
<td><strong>Olivia Meets Chelsea Ohh, Software Engineer Team Lead at Bloomberg</strong></td>
<td><a href="https://www.youtube.com/watch?v=tmatgY7wGBE">https://www.youtube.com/watch?v=tmatgY7wGBE</a></td>
<td>Olivia interviews Software Engineer Chelsea Ohh, who describes her job at Bloomberg. She groups users giving them different access to the trading system. She emphasizes the collaborative and problem solving features of her job.</td>
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</tbody>
</table>
Step 2 - Construct

Instructions

WHAT’S IN THIS SECTION

What do I do in “Construct” Step?
What are Gender-Sensitive Exhibits?
What do Gender-Sensitive exhibits look like in action?
Aim of Tools
Brief Examples of “Construct” activities
Time Recommended
What do I do in “Construct” Step?

In the construct step, students will randomly choose or be assigned an exhibit-construction activity and pair this with a FeSTEM Challenge. The FeSTEM challenges can be presented in various ways including quizzes, infographics, articles, virtual exhibitions, interactive posters (see Appendix III for a list of OERs for presenting the FeSTEM challenges). You can mix these up any way you like, even create a fun mystery box activity (an example is available here) out of it as all FeSTEM challenges can be applied to all construct step activities. The students will have to combine their FeSTEM challenge with their construct activity following the instructions. The students will have to execute their ‘construct’ activity by following the instructions leading to the construction of a gender-sensitive exhibit but also addressing the FeSTEM challenge at hand.

What are Gender-Sensitive Exhibits?

Gender-sensitive exhibits are objects made intentionally, in order to sensitise and raise awareness on issues related to gender-equality and women’s empowerment. A gender-sensitive exhibit can be either a public entity (e.g., an infographic or a poster demonstrating the successes of women in STEM-related professions) or a virtual product.

These exhibits must satisfy four conditions:

★ They must be intentionally produced, thus ruling out unintended by-products of intentional actions.
★ They must involve modification of materials, thus ruling out naturally occurring objects.
★ They must be produced for a purpose.
★ Raise awareness on gender equality issues.

What do Gender-Sensitive exhibits look like in action?

Here are some Gender-Sensitive exhibits:

**Example 1- VR**
FeSTEM Challenge: "I don't have enough decision making at work."
Student/Learner Comment: Through this VR tour I placed myself in an office, standing in the middle and having each colleague around me comment on my inability to tackle high-level decision-making. Trying to showcase how it feels for someone to be ‘invisible’ in the workplace.
Example 2 - Poster

FeSTEM Challenge: “There is no equal pay between male and female workers”

Student/Learner Comment: I feel I can show the imbalance between the two genders and their struggle to get the reward through a comparison with an unfair pacman game and a really easy one with no obstacles.

Gender-Sensitive Exhibit: A poster

Poster showing the gender inequality in workplace
**Aim of Tools**

Construct tools are technological in nature and vary from web pages, to application prototypes, posters, videos, and VR activities. We provide tools for every level of experience. Electrical Engineering students might not be experienced with VR so they will use a more basic and accessible tool to construct their artifact while Computer Science students might be more ready to use advanced design tools. We account for all these scenarios in this toolbox so you can make the best choices according to what you teach and which is your audience.

**Brief Examples of “Construct” activities**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
<th>Materials/Tools</th>
<th>Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create an advertisement</td>
<td>Students will create a story using video animation based on the set challenge and theme.</td>
<td>PowToon (<a href="https://www.powtoon.com/">https://www.powtoon.com/</a>) free online video making tool, one computer per team.</td>
<td>Storyboard, create or download assets, write text</td>
</tr>
<tr>
<td>Create a game to be played at a primary school courtyard</td>
<td>Students will create a game to be played by students in a primary school courtyard.</td>
<td>paper, pens, other materials (open)</td>
<td>Storyboard, write text</td>
</tr>
<tr>
<td>Create a company</td>
<td>Students will create a VR experience for a new company.</td>
<td>360 Camera and Google Expeditions.</td>
<td>Assign roles, storyboard, record video, upload to google expeditions</td>
</tr>
<tr>
<td>Organise a concert</td>
<td>Students will create a mobile application for a concert.</td>
<td>Google Slides or PowerPoint.</td>
<td>Assign roles, storyboard, record video, upload to google expeditions</td>
</tr>
<tr>
<td>Enterprise Aspiration</td>
<td>Students will create a prototype for a website for an enterprise with a gender-element based on their chosen FeSTEM challenge</td>
<td>WIX (<a href="https://www.wix.com/">https://www.wix.com/</a>) website builder.</td>
<td>Create or download assets, write text</td>
</tr>
<tr>
<td>Pitch to the President</td>
<td>Students will create an infographic to convince the president of the country to give you 1M Euros to address your FeSTEM challenge.</td>
<td>Photopea (<a href="https://www.photopea.com/">https://www.photopea.com/</a>) or Powerpoint or Google Slides or manual collage poster</td>
<td>Research, create assets, design, collage</td>
</tr>
<tr>
<td>Direct and record a TV News Report</td>
<td>Students will create a video of a TV News Report about life as a farm worker or life as a factory worker or life as a garage engineer.</td>
<td>camera/phone with video taking capacity, editing software (online free…)</td>
<td>Find real life example, investigate, interview, roleplay, record, edit</td>
</tr>
</tbody>
</table>

**Time Recommended**

The recommended time allocated for the “construct” step is 2-20h for (in 2-4 sessions).
Step 2 - Construct

Activities and Tools

WHAT'S IN THIS SECTION

Company Creation
Enterprise Aspiration
Advertisement
FeSTEM Celebration
Presidential Pitch
Noteworthy Newscast
Company Creation

An immersive roleplay experience to showcase how a particular FeSTEM challenge plays out in a workplace setting

Create a Script
Your team members are actors, screenwriters and the film crew for creating a Virtual Reality (VR) video based on your selected FeSTEM challenge with the twist that it plays out in a newly created company. You will need to choose the nature of this company, select the setting for the filming and create the dialogue.

Create a Storyboard
Visualise the experience you would like to showcase through a series of images, sketches, cartoons or even text blocks. Stick-figures are great, you don’t need to be an artist. Use Post-it notes or individual sheets of paper to create the storyboard so you can rearrange the order.

Learn the Equipment
You will use a 360 camera for filming with a tripod, a monopod or ceiling mounting gear based on your needs. You will also edit the video in Adobe Premiere Pro or Final Cut Pro for advanced users, or VeeR Editor / V360 (Android & iOS) for beginner users.

Assets and Props
Don’t forget that you are also creating a company setting. You will need assets and props that might be visible or that people might interact during your filming. Such elements are indicated in your storyboard and might include logos, branding, etc.

Film your Masterpiece
It’s time to bring everything together. Your assets, props, actors, setting will all play out in real space while you record these with the provided 360 camera. You might include a variety of shots but always keep in mind in contrast to traditional films, in 360 films all the space will be visible in frame.

Edit and Export
Your material is now ready for editing. Decide on the software to use and cut the scenes together to complete the experience. You may even add some background music. When ready, export and load on a phone and 3D glasses.

Software Involved:
Beginner:
Inshot (iOS & Android)
VeeR Editor (iOS & Android)
V360 (iOS & Android)

Advanced:
Adobe Premiere Pro
Final Cut Pro
Enterprise Aspiration

**Create a prototype for a website for an enterprise with a gender-element based on your chosen FeSTEM challenge**

**Ideate**

You will need to decide what your enterprise site will be about. Use your FeSTEM challenge as a guideline to decide this and brainstorm within your team how your challenge can relate to an enterprise site.

**Draw Inspiration**

Check out other enterprise websites for inspiration. Note down on post-its what you think has worked well or not in each website. Pay attention to visual style, navigation, interactive elements, and presentation style.

**Storyboard**

Visualise the website pages you would like to create through a series of images, sketches, cartoons or even text blocks. Stick-figures are great, you don’t need to be an artist. Use Post-it notes or individual sheets of paper to create the storyboard so you can rearrange the order.

See examples of gender sensitive artifacts

**Create Assets**

Source or create the visual material needed for the website ranging from product images, logos, icons and accompanying text.

**Stitch Together**

Bring together your storyboard and assets using one of the recommended tools below. Try and keep it as professionally looking as possible.

**Tools Involved:**

Beginner:
- **WiX**
- **CARGO**

Intermediate:
- **WordPress**

Advanced:
- **InVision**
- **Adobe XD**
- **Axure**
Advertisement

Create an advertisement (static or animation) to advertise a product or service of your choice related to addressing your FeSTEM challenge

Ideate
You will need to decide what your advertisement will be about. This can be a product or a service. Use your FeSTEM challenge as a guideline to decide this and brainstorm within your team how your challenge can relate to an advertisement. Your end goal should be to sensitise or to raise awareness on the role of gender in the workplace.

Voice-Over Script (optional)
Write down a voice-over script you will use to compliment your storyboard. Time it so it matches appropriate segments of the animation.

Create assets
Source or create the visual material needed for the animation ranging from product images, logos, icons and accompanying text.

Learn some advert basics
Use internet sources to find some basic instructions on what a good advertisement has to include. Think about what the audience is, the clear message you are trying to convey and how to create a script for your animation.

Create animation
Use appropriate software and tools as listed below to begin working on your animation. You may draw inspiration from other advertisement animations, use appropriate animation techniques, movements, a combination of text and sound or even voice-over to convey your message.

Storyboard
Visualise the animation sequences you would like to create through a series of images, sketches, cartoons or even text blocks. Use Post-it notes or individual sheets of paper to create the storyboard so you can rearrange the order. You don’t need to storyboard every aspect of the application, just the main experience of the user.

Software & Tools:
Beginner: PowToon
Advanced: Adobe Premiere Pro Final Cut Pro

Still created for an animation advertising the MSc in Interaction Design of the Cyprus University of Technology - Watch here
**FeSTEM Celebration**

Create a prototype for a mobile application to be used for promoting a huge music festival or celebration related to FeSTEM. An example of a celebration of women in STEM appears [here](#).

**Ideate**

You will need to decide how this imaginary music festival links to your FeSTEM challenge. You may use the challenge as a guideline to decide and brainstorm within your team the location, theme, headliners and other parameters that a concert organisation and promotion requires.

**Draw Inspiration**

Check out other promotional material, websites and applications for major music festivals (think coachella, woodstock, tomorrowland) for inspiration. Note down on post-its what you think has worked well or not in each example. Pay attention to visual style, navigation, interactive elements and presentation style.

**Storyboard**

Visualise the application pages you would like to create through a series of images, sketches, cartoons or even text blocks. Use Post-it notes or individual sheets of paper to create the storyboard so you can rearrange the order. You don’t need to storyboard every aspect of the application, just the main experience of the user.

**Create Assets**

Source or create the visual material needed for the website ranging from product images, logos, icons and accompanying text.

**Stitch Together**

Bring together your storyboard and assets using one of the recommended tools below. Try and keep it as professionally looking as possible.

**Software & Tools:**

Beginner:
- Google slides
- Powerpoint

Advanced:
- InVision
- Adobe XD
- Axure
**Presidential Pitch**

How often do you get to sell an idea for $1M? Create an infographic for the president selling your big FeSTEM challenge-solving idea that is worth 1M.

**Find Information**
Look to find information related to your chosen FeSTEM challenge. Discuss with the group what questions need answering with data and which data is numerical and which is textual. You might need to split up to look for statistics and get quotes or relevant text you will use.

**Draw Inspiration**
Check out other infographics for inspiration. Note down on post-its what you think has worked well or not in each example. Pay attention to visual style, and presentation style.

**Create Assets**
Create the visual material needed for the infographic ranging from charts, images, logos, icons and accompanying text. These can be digital or physical and scanned.

**Paper Prototype**
Visualise the infographic you would like to create through sketching each part or text segment. Use Post-it notes or individual sheets of paper for each element so you can rearrange the positioning and move around to determine the best possible layout.

**Stitch Together**
Bring together your storyboard and assets using one of the recommended tools below. Try and keep it as professionally looking as possible.

**Software & Tools:**
Beginner:
- Google slides
- Powerpoint

Intermediate:
- Photopea

Advanced:
- Adobe Photoshop
- Adobe Illustrator
- Adobe InDesign
Noteworthy Newscast

Create a news report on the achievements of a female figure in relation to your FeSTEM challenge to be presented on a TV news report.

Find Information
Look to find information related to your chosen FeSTEM challenge and select a female figure. Discuss with the group what would be the newsworthy element to report on.

Create a Script
Your team members are presenters, screenwriters and the film crew for creating your newscast. Split roles and begin working on the backdrop and set for the filming, the script and additional information you might wish to show such as photos or videos (think like you are producing a segment for the Daily Show or Last Week Tonight).

Film your Masterpiece
It's time to bring everything together. Your assets, props, presenter, and setting will all play out in real space while you record these with a camera. You may use professional equipment such as a dSLR camera or mobile phones set on tripods to get multiple angles.

Edit and Export
Your material is now ready for editing. Decide on the software to use and cut the scenes together to complete the experience. You may even add some low-key background music or introduction music before the presenter begins to speak. When ready, export and upload on YouTube.

Assets and Props
Don't forget that you are also creating a newscast studio setting. You will need assets and props that might be visible or that people might interact during your filming such as a backdrop, a desk, a coffee mug, etc. You might also consider producing a logo and branding for your show.

Software Involved:
Beginner:
Quik (Android)
InShot (iOS)
Intermediate:
iMovie
Windows Movie Maker
Advanced:
Adobe Premiere Pro
Final Cut Pro
Step 3 - Share

Instructions

WHAT’S IN THIS SECTION

What do I do in the “Share” Step?
Aim of Tools
Brief Examples of “Share” activities
Time Recommended
What do I do in the “Share” Step?

The share step encompassed various activities for students sharing their constructions with the world; this ranges from a simple article published online to an exhibition, depending on the class, circumstances, time constraints, budget etc. In this step the educator will choose a sharing activity for the students to share their exhibits to each other and the world.

All students should upload their constructions to the FeSTEM Community of Practice interface with their contact information that allows future students to reach out to them.

FeSTEM comes with its own Community of Learners (https://festem.network/circles/festem-community-of-learners/), that is a group of people who share a concern or a passion for something they do, and learn how to do it better as they interact regularly. This is a community of students and participants that have gone through the toolbox and have created gender-sensitive exhibits as part of it. They have shared their exhibits in the Community of Practice interface and entered their contact details so students going through this for the very first time (or second) can view other exhibits, contact other students and learn not only through the classroom and their interactions with their teachers or other students but also through a larger FeSTEM community that has grown and graduated in hope they will also discuss other gender issues that might trouble them. The Community of Practice is also available at all stages for them to consult and reach out to other students that have gone through the toolbox in the past.

Aim of Tools

Share activities include tools that are about consolidating what students have learned through presenting them to others, either via a blog article or post, crafting an exhibition and everything in between.

Brief Examples of “Share” activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
<th>Materials/Tools</th>
<th>Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share to the Community of Practice</td>
<td>Students will publish their story and artifacts to the FeSTEM community of Practice</td>
<td><a href="https://www.facebook.com/groups/festemlearners">https://www.facebook.com/groups/festemlearners</a></td>
<td>Students will upload their outcomes and creations to the FeSTEM community of practice</td>
</tr>
<tr>
<td>Article Publication</td>
<td>Students publish an article online to an exhibition</td>
<td>Medium account Social Media</td>
<td>Students write an 800-1000 word account of their experience of the previous activities. They can then create an account at medium.com, upload their story and share in social media.</td>
</tr>
</tbody>
</table>
**Public Exhibition**

| Students will organise a public exhibition | Students will organise a public exhibition to multiply impact and create awareness beyond the classroom environment. They can send email invitations or invite speakers etc. |

**Slide Deck**

| Students present their experiences in a slide deck | Google Slides, Power Point, Prezi | Students are asked to build slides of their experience and outcomes of the previous steps' activities. |

**Time Recommended**

The recommended time allocated for the "share" step is 2h (in 1 session).
Step 3 - Share

Activities and Tools

WHAT’S IN THIS SECTION

Publication Provocation
Exhibition Excitement
Public Presentation
Community Contribution (obligatory)
Publication Provocation

Stories are the most powerful way to communicate the experience of creating gender-sensitive exhibits. Craft a story that can be shared broadly.

Collect data
With your team, spend time recollecting the experience of creating your gender-sensitive exhibit. Note down on post-its what you have taken from the process and what you would like to communicate to others about your constructing experience.

Build a narrative
Create an outline of your experience. Use the prompts below to structure your thoughts:

- What made an impression from your ‘understanding’ step activity?
- What FeSTEM challenge did you select?
- Who was part of your team?
- What ‘construct’ activity did you select?
- How did you combine the FeSTEM challenge and construct activity?

- What was the most surprising thing you learned while constructing your gender-sensitive exhibit?
- What part of the process was the most difficult?
- Which moment of your experience was the most rewarding?

Write your story
Write a 600-800 word account of your experience based on your narrative. Include quotes from the team members or other people you have interacted with to construct your exhibit. Include photographs, diagrams and photos.

Spread your story
Create an account at medium.com and upload your story. Share in social media and make sure to send us a link at festem@cyprusinteractionlab.com

See examples of gender sensitive artifacts
**Exhibition Excitement**

Organising a public exhibition of the exhibits is a great way to multiply impact and create awareness beyond the classroom environment.

**Student-Led Exhibition**
It is important for students to feel ownership of their exhibition. The best way to achieve this is through a student-led exhibition. You will need a media and press team (see documentation and media), a sourcing team (see auxiliary fun), and a production team to handle the setting up as well as a project management team to coordinate.

**Find Appropriate Space**
Suitable exhibition space can really put the exhibits at front and centre of attention. Think about the space proximity to transport hubs, parking spaces and amenities as well as its relationship to the university. Then think about the space itself, how it needs to be set up to showcase all types of exhibits, what technical facilities are needed and what modifications must be made.

**Send Invitations**
Think about the audience, who needs to be invited through a personal email/invitation and whether you create an online event through social media, where this is shared or if you circulate a press release announcing the opening of the exhibition. All or some may happen through good coordination between the students and guidance from you.

**Programme**
A good exhibition launches with an opening event. Think about the timing of the exhibition opening to allow for other students, professionals, and the academic community to join in. Think about whether you bring in a keynote speaker or whether one or more teams will present their exhibits. Are you giving some awards?

**Auxiliary Fun**
As much as speeches and presentations are important and interesting, it is also important to allow time for networking, mingling and interacting with the exhibits. During this time, a good atmosphere may be created with music in the background and wine and nibbles in the vicinity. Think about if this is something you could or like to include.

**Documentation & media**
A great event exhibition lives beyond its opening. Make sure to either assign a student as photographer or videographer or get outside help. Some universities have a department that will handle this for you. The edited material may live in an online database or archive and fuel future students’ passion in creating their own gender-sensitive exhibits. Think also whether you live stream your opening and how you disseminate the exhibition after it is completed through press releases at the university webpages or other media outlets.

**DIFFICULTY**
★★★★☆

**THIS GETS YOU**
Maximum exposure and a celebration of student work

**KEEP IN MIND**
You may choose to combine this event with already existing events at your department or faculty therefore reducing the workload and ensuring good attendance.
**Public Presentation**

A well structured presentation is the best way to convey a learning experience and reflect while doing so

**Read sources on presenting**
Read up on some helpful tips for public presentations such as:
- Tips for speaking like a TED pro
- How to give a killer presentation
- Top tips for effective presentations

**Collect data**
With your team, spend time in recollecting the experience of creating your gender-sensitive exhibit. Note down on post-its what you have taken from the process and what you would like to communicate to others about your constructing experience.

**Build a narrative**
Create an outline of your experience. Use the prompts below to structure your thoughts:

- What made an impression from your ‘understanding’ step activity?
- What FeSTEM challenge did you select?
- Who was part of your team?
- What ‘construct’ activity did you select?
- How did you combine the FeSTEM challenge and construct activity?
- What was the most surprising thing you learned while constructing your gender-sensitive exhibit?
- What part of the process was the most difficult?
- Which moment of your experience was the most rewarding?

**Build a slide deck**
Build slides of your experience based on your narrative. Think about the duration of your presentation. You should leave enough room for pauses for emphasis and speaking at a regular to slow pace. Include quotes from the team members or other people you have interacted with to construct your exhibit. Include photographs, diagrams and photos. You may use Google Slides, PowerPoint or Prezi. Decide on how you split your presentation between your group and which part each member will present.

**Present**
Avoid reading through text, engage with your audience, if you feel like it, move around while you present to keep attention on you. Most importantly, enjoy your moment.
Community Contribution (obligatory)

Join our community of practice consisting of students that have created gender-sensitive exhibits using this toolbox by sharing your creations.

Join our portal
Join our community of practice here. Through the portal you will be able to view other students’ work, contact them as well as participate in the community of practice by entering your own creation and contact details. This way future students might contact you.

Register
Create an account through our online platform here. You can also join the FeSTEM Community of learners Facebook group here.

Upload your exhibit
Upload the outcomes of each toolbox step to the relevant sections. By doing so you will have access to download your completion certificate.

Check out other exhibits
You can check out other student work along with the contact details of the students that have created each exhibit. Feel free to contact them and share your experience, learn from each other and network.

Receive your certificate
By completing this process you can download your FeSTEM Toolbox Challenge completion certificate.
Part E: Summary of tools

Step 1 - Understand

Articles
Science & Engineering:
- Engineering: not for girls? - The Guardian
- The case for change: why engineering needs more women - Guardian Careers

Technology & Computer Science:
- Why aren't more women in computer science - CIO
- U.S. tech industry needs women, must interest them at school - Reuters

Mathematics:
- Women in mathematics: The history behind the gender gap - Open Learn
- New Study Challenges The Assumption That Math Is Harder
- For Girls - NPR

TED Talks
Inspirational STEM Talks from Women:
- How we’re teaching computers to understand pictures by Fei-Fei Li - TED 2015
- The mathematics of love by Hannah Fry - TEDxBinghamtonUniversity
- Your social media “likes” expose more than you think by Jennifer Golbeck - TEDxMidAtlantic 2013

Women talking about Gender issues in STEM:
- Why do ambitious women have flat heads? by Dame Stephanie Shirley - TED 2015
- How do we bridge the “anxiety gap” at work? By Erica Joy Baker - TED@BCG Milan
- To raise brave girls, encourage adventure by Caroline Paul - TEDWomen 2016

Videos
Challenge: “I don’t know many successful women in my field”
- Women in STEM (10 Videos)
- Meet the winners of the Shanti Swarup Bhatnagar award | Women in STEM
- Sujatha Roy and her tale of numbers | Women in STEM

Challenge: “I am the only woman in my workplace”
- Women in science who changed the world
- How These Women Changed Science Forever!
- Denise Bailey Profile

Challenge: “Women get less leadership positions”
- Talks by brilliant women in STEM
- Pallavi Sharma Profile
- Women In Science Have The Power To Change The World

Challenge: “I am the only female student in my course”
- Entering the Tech Industry 🌟 Girls in Tech Part 1
- Teach girls bravery, not perfection | Reshma Saujani
- Women of Color Navigating HSI STEMTransfer Pathways

Challenge: “I do not get paid the same as men”
- Breaking the glass of prejudices
- Close the Gender Pay Gap

Challenge: “My family thinks I should be a secretary”
- Using Industry Representatives to Increase Female Enrollment

Challenge: “My friends tell me I won’t be able to get promoted”
- Women in STEM -Sarah Roberts
- Women in STEM -Davyda Hammond
- Women In STEM -Erin Burr

Challenge: “I fear I will get laid off if I reveal I am pregnant”
- Bridgette Shannon Profile

Challenge: “I won’t be able to succeed professionally and have a family”
- Opening Doors in Glass Walls for Women in STEM
- Women In STEM -Maria Escalona
- Bridgette Shannon Profile

Challenge: “In meetings other people think I am the secretary”
- Women In Science Encourage Young Girls: “You Belong In The STEM Fields”

Challenge: “I don’t have any decision-making power at work”
- JoNette Kuhnau Profile
- Olivia Meets Chelsea Ohh, Software Engineer Team Lead at Bloomberg

Step 2 - Construct

Video editing tools
Beginner:
- VeeR Editor (iOS & Android)
- InShot (iOS)
Intermediate:
- iMovie
- Windows Movie Maker
Advanced:
- Adobe Premiere Pro
- Final Cut Pro

Website Prototyping tools
Beginner:
- Wix
- CARGO
Intermediate:
- WordPress
Advanced:
- InVision
- Adobe XD
- Axure

Video animation Tools
Beginner:
- PowToon
Advanced:
- Adobe Premiere Pro
- Final Cut Pro

Mobile Application Prototype tools
Beginner:
- Google slides
- Powerpoint
Advanced:
- InVision
- Adobe XD
- Axure

Graphic design / Infographic tools
Beginner:
- Google slides
- Powerpoint
Intermediate:
- Photopea
Advanced:
- Adobe Photoshop
- Adobe Illustrator
- Adobe InDesign

Step 3 - Share
FeSTEM Community of Practice
- https://festem.network/
- https://www.facebook.com/groups/festemlearners

Digital Publishing Tools
- Medium.com

Presentation Tools
- Google Slides
- Power Point
- Prezi

APPENDICES
Appendix I
Examples of tools and material from the systematic literature review.
Surveys

Description: Surveys include studies that used survey methods and instruments such as interviews, questionnaires and focus groups for building gender-sensitive material or for extracting gender sensitive information.

Benefits:
- Help identify and control barriers for women participation in STEM fields
- Introduce ways to overcome barriers for women in STEM fields
- Propose ways in which empowerment of women is achieved

Example:

1. Age (Age ranges).
2. Country.
3. The country where you were born.
4. The country where your parent or guardian was born.
5. The country where your mother or guardian was born.
6. Gender (male, female, not mentioned above, no answer).

   Later, a set of questions to find out what the student uses his mobile phone for:

   7. Do you have a smartphone? (Yes/No)
   8. Select how many apps on your mobile have been downloaded (those that did not come in the mobile when you bought it)
   9. Have you ever paid for a mobile app? (Yes/No)
   10. If yes, what type of mobile app? (Games, social networks, photography, education, music, sport, etc.)

   The last part of the contextualization section has a set of questions to analyse the need for information related to support their decisions after finishing high school:

   11. Are you looking for information on the Internet about what you would like to study after high school? (Yes/No)

A part of a questionnaire that was developed to collect qualitative data about the perception and opinions of the students about their careers, occupation and future plans. (García-Holgado et al., 2020 p.472).
Statistics and figures

Description: This category included manuscripts that presented statistics and figures showcasing or sensitizing on gender-sensitive data.

Benefits:
- Present STEM fields that females are attracted more or have higher scores than males
- Indicate that there is enrollment of women in STEM
- Present role models of successful women in STEM

Example:

A figure with statistics from Tobar Subía & Gamez Aparicio (2020) that depicts that 50.6% of women and 49.4% of men would like to receive more information about STEM careers. In contrast, 16.5% are not interested. In the same way, 62.5% were women and 37.5% were men.
Student or Academic data

Description: This category included studies that used student administrative data, scores, demographic information etc. in order to explore gender-sensitive material and/or tools.

Benefits:
- Indicate the participation of women in STEM
- Present STEM fields that females are attracted more or have higher scores than males
- Expose women to majors that have greatest potential for high future income

Example:

Figure from Marín-Raventós et al. (2020) p.10, that uses student profiles and shows what values more for graduates and undergraduate students in their work/studies.
## Programs or Courses

### Description:
This category includes manuscripts that described courses, such as out of school time programs, summer courses along with year round activities and bridging courses for supporting women’s participation in STEM.

### Benefits:
- Increase the percentage of women participating in STEM fields.
- Promote positive student attitudes of both genders towards STEM courses.
- Increase women career options and improve their Internet skills, self-esteem, and social skills.

### Example:

The above pictures are from García-Peña et al. (2019) and show the people that participated in the World Café conversation to discuss the potential actions, policies and strategies might be developed in the universities to reduce the above mentioned gender gap in STEM studies. The World Café conversation is an intentional and structured way of creating a living network of conversation around key issues. It is a creative process methodology that leads to a collaborative dialogue, where knowledge is shared, and possibilities for collective action are created. The workshop was organized in four conversation tables. Each table had questions to guide discussions. The facilitator was able to determine whether to expand some or add new dimensions. All the participants must contribute to all the tables. In the end, all must have passed through all the groups.
### Cultural Probes

**Description:** This category describes the application of cultural probes with regard to their gender-sensitivity.

**Benefits:**
- Cultural probes are well accessible, visible and dominant

**Example:**
The application of cultural probes [e.g. data-capture devices - like disposable cameras and voice recorders-, maps, diaries or collage materials] with regard to their gendersensitivity in a project called 'Women’s Phone'. The project aimed at gathering inspirational material for a mobile device from an explicitly female perspective (Bredies et al., 2008).
**Digital materials and tools**

*Digital* materials and tools extracted from the manuscripts include interactive technologies, digital prototypes and digital advisory tools. Figure 3 summarizes both the traditional and digital gender-sensitive materials and tools that are explained in more detail in the following sections.

### Interactive technologies

**Description:** This category includes manuscripts that employed interactive digital technologies for putting forward a gender-sensitive content

**Benefits:**
- Using smartphones can have a highly motivational effect on students of both sexes

**Example:**

The photo presents the W-STEM mobile application prototype that aims to facilitate access to the role models of women in areas related to science, technology, engineering and mathematics (García-Holgado et al., 2019, 2020).
## Digital prototypes and digital advisory tools.

**Description:** This category includes manuscripts that developed digital prototypes and digital advisory tools for the support of underrepresented groups in STEM before, during and after their studies.

**Benefits:**
- Support under-represented groups in STEM such as women before, during and after their studies.
- Prevent under-represented students in STEM from breaking-off their studies.
- Identify students who are at risk of failing and propose supporting measures to them at an early stage.
- Assist under-represented students in STEM in their choice of a suitable job and in applying for jobs with digital tools after their studies.

**Example:**

The above figure shows a template for a process analysis based on Customer Journey Maps (the touchpoints of student processes have to be recorded and evaluated as part of an analysis process) that generate internal processes that have to be operated by the organization (Schuhbauer & Brockmann, 2019).
Examples of tools and material from the national stakeholder consultations.

**Factual/Informational/Enlightening**

This category includes materials and tools that aim to inform or persuade through the use of facts or information. Additionally, they aim to enlighten or elicit awareness regarding women in STEM. Specific subcategories follow.

<table>
<thead>
<tr>
<th><strong>Exposure to women role-models</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong> This category includes a wide range of materials that aim at informing on the successes of women in the various fields of STEM. These resources include lists of prominent women and their stories, videos or movies of prominent women or even virtual reality tours of the successes (and often failures) of prominent women in the area of STEM.</td>
</tr>
<tr>
<td><strong>Benefits:</strong></td>
</tr>
<tr>
<td>● Students benefit from the role model exposure, since it is increasing the academic sense of belonging, self-efficacy, expectations, and educational degree intention, compared to students who were not exposed to role models (Shin et al., 2016).</td>
</tr>
<tr>
<td><strong>Example:</strong> A short video where Ritu Karidhal speaks about her journey in aeronautics and her work at ISRO.</td>
</tr>
</tbody>
</table>
Raise awareness on gender equality issues

Description: This category includes materials and tools that aim at raising awareness on gender equality issues, by highlighting the difficulties that women encounter in STEM, strategies that all genders need to adhere to in order to adopt a gender-sensitive approach. These resources include lists of prominent women and their stories, videos or movies of prominent women or even virtual reality tours of the successes (and failures) of prominent women in the area of STEM.

Benefits:
- Video interventions with expert interviews and narratives illustrating gender bias have proven to increase awareness about the gender factor in male-dominated environments as they enrich knowledge about gender inequity, and shape more positive attitudes towards women in STEM (Moss-Racusin et al., 2018; Pietri et al., 2017).

List of Nobel Prize awarded to women since 1901. The website lists three Nobel Prizes to women in Physics and five Nobel Prizes to women in Chemistry. It contains biographies, interviews, videos etc. (Link: https://www.nobelprize.org/prizes/lists/nobel-prize-awarded-women/)
Practical materials and tools

This category involves materials, training and tools that allow for hands on activities and/or training.

Empowerment through training and active learning for girls and women

Description: This category involves the development and implementation of training programs for supporting, and advocating for women to remain active in STEM. This category also encompasses activities that engage women in a co-design adventure that allows them to gain STEM knowledge and to be empowered to be active in the field.

Benefits:

- After-school and summer programs can be utilized as an effective strategy for increasing female interest in the STEM-related areas (Weber, 2012).
- Camps which also have proved to be an extremely efficient practice for developing and increasing STEM knowledge and interest among young women (Burge et al., 2013). The focus of the existing paradigms is on single-gender camps, where female participants interact only with other females. Such camps, mentioned in studies by (Banister & Ross, 2017; Hughes, 2015; Stapleton et al., 2019), contributed to girls coming closer to STEM disciplines and values, by making science and technology enjoyable.
- Camps’ activities strengthened their confidence and helped them see what women are capable of doing in these challenging sectors.

Skill-building programs
Skill-building programs include activities usually guided by a teacher with support and scaffolding for helping students learn. Skills developed in skill-building programs include self-efficacy, self-awareness, self-promotion, emotional intelligence, bias recognition, coaching and teaching capability, problem-solving skills, communication skill and resilience.

**Benefits:**
- Engagement in educational procedures contributes to the development of the specific skills but also to the development of STEM identity.

### Provision of educational material for inspiring students to engage in STEM

Description: This category involves resources that provide educational material (e.g. curriculum activities) for supporting and inspiring girls and women to remain active in STEM.

**Benefits:**
- Support and inspire girls and women to remain active in STEM.

**Example:**
[Girl Scouts website](https://www.girlscouts.org) introduces Girl Scouts of every age to STEM to help them see how they can actually improve the world—whether they're discovering how a car's engine runs, learning to manage finances, or caring for animals. It suggests
## Mentoring Provision

### Mentoring provision

**Description:** This category involves the provision of mentoring to young girls and women. Mentoring can be provided either face-to-face or online and can be supported either by peers or by prominent professionals from the industry.

**Benefits:**

- Social support during women’s studentship, particularly from mentors, is proven to be helpful and advantageous, by enabling students to cope with negative experiences and envision their future within the STEM sector without any limiting factors and hesitation (Amon, 2017).
- Mentorship works as an important motivation for them during the demanding years of university. It encouraged them to keep trying to achieve their goals (Amon, 2017; M. Thomas, 2017).
- Psychosocial mentoring appears to be the most beneficial form of mentoring to women since it can build self-esteem, enable women to both promote themselves academically and within the research arena and make their voices and choices heard (Obers, 2014).

**Example:**

[Million Women Mentors](https://www.millionwomenmentors.org) is an online initiative by STEMconnector organization for empowering of women and girls for STEM careers through mentoring help.
Appendix III

FeSTEM challenges: List of tools and practice

In order to present the FeSTEM challenges we provide
- A brief title of the challenge
- A brief and simple definition of the tool being used
- A brief instructional use of the technology and an indicative example.
- Open Educational Content: we provide examples of OERs that utilize the specific tool. The specific material can be used directly by instructors for teaching

1. Challenge #1_ Leaky pipeline

See an explanatory video of the challenge here.

<table>
<thead>
<tr>
<th>Practice</th>
<th>Poster</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tool: Canva</td>
<td>Canva is a graphic design platform, used to create social media graphics, presentations, posters, documents and other visual content. The app includes templates for users to use. The platform is free to use and offers paid subscriptions such as Canva Pro and Canva for Enterprise for additional functionality.</td>
</tr>
<tr>
<td>Instructional use</td>
<td>The instructor shows the poster below that depicts the way in which women become underrepresented minorities in the STEM fields and their increasing percentage in STEM fields starting from school, to the university, their job and career. A discussion is being raised with regards to the reason that this may happen and what are possible solutions.</td>
</tr>
</tbody>
</table>

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## Practice

<table>
<thead>
<tr>
<th><strong>Interactive Poster</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tool: ThingLink</strong></td>
</tr>
<tr>
<td>ThingLink is an award-winning education technology platform that makes it easy to augment images, videos, and virtual tours with additional information and links. Over 4 million teachers and students use ThingLink for creating accessible, visual learning experiences in the cloud. Presentations can be structured as a micro website and, then, is really user-friendly when people get back to it.</td>
</tr>
</tbody>
</table>

### Instructional use

The instructor uses a ThingLink presentation and gathers important facts related to the leaky pipeline in Europe. See an example [here](#). The students are required to navigate through the poster and find interesting definitions, facts and statistics with regards to the leaky pipeline in STEM.

### Challenge #2: Gender gap

<table>
<thead>
<tr>
<th><strong>Practice</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quiz</strong></td>
</tr>
<tr>
<td>Tool: Wordwall</td>
</tr>
<tr>
<td>Wordwall provides an easy way to create teaching resources. Make custom activities for your classroom.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Instructional use</th>
</tr>
</thead>
<tbody>
<tr>
<td>The instructor creates a gameshow quiz (see an example <a href="#">here</a>). The students are required to navigate through the video and answer questions such as “What is gender gap?” “What is the percentage of gender gap?”</td>
</tr>
</tbody>
</table>
Practice | Quiz
--- | ---
Tool: Kahoot! | Kahoot! is a game-based learning platform that brings engagement and fun to 1+ billion players every year at school, at work, and at home.
Instructional use | The teacher prepares a gamified quiz (see examples [Quiz 1](#), [Quiz 2](#)) and provides the link to the students who play and compete with each other.
3. Challenge #3_Work-life balance

See an explanatory video of the challenge here.

<table>
<thead>
<tr>
<th>Practice</th>
<th>Poster</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tool: Canva</td>
<td>Canva is a graphic design platform, used to create social media graphics, presentations, posters, documents and other visual content. The app includes templates for users to use. The platform is free to use and offers paid subscriptions such as Canva Pro and Canva for Enterprise for additional functionality.</td>
</tr>
<tr>
<td>Instructional use</td>
<td>The instructor shows the poster below that depicts the imbalance between work and life of a woman in STEM fields. A discussion is being raised with regards to the reason that this may happen and what are possible solutions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Practice</th>
<th>Quiz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tool: Kahoot!</td>
<td>Kahoot! is a game-based learning platform that brings engagement and fun to 1+ billion players every year at school, at work, and at home.</td>
</tr>
</tbody>
</table>
Instructional use
The teacher prepares a gamified quiz (see example here) and provides the link to the students who play and compete with each other.

A barrier for professionals in STEM, specifically for women is the lack of support of work and personal life balance.

4. Challenge #4_Glass ceiling

See an explanatory video of the challenge here.

<table>
<thead>
<tr>
<th>Practice</th>
<th>Interactive Video</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tool: EdPuzzle</td>
<td>EDpuzzle is a teaching tool used to place interactive content into pre-existing videos from a variety of sources, such as TED or YouTube, or into videos you have made. To create an EDpuzzle account, navigate to EDpuzzle.com.</td>
</tr>
<tr>
<td>Instructional use</td>
<td>The instructor uses an Edpuzzle video-quiz gathers important facts related to the glass-ceiling. See an example here. The students are required to navigate through the video and answer questions such as “What is the glass ceiling?” “What do you think are possible solutions?” etc.</td>
</tr>
</tbody>
</table>
### Practice

**Poster**

**Tool: Canva**  
Canva is a graphic design platform, used to create social media graphics, presentations, posters, documents and other visual content. The app includes templates for users to use. The platform is free to use and offers paid subscriptions such as Canva Pro and Canva for Enterprise for additional functionality.

**Instructional use**  
The instructor shows the poster below that depicts that not only men can work or be successful in STEM. A discussion is being raised with regards to the invisible barriers preventing women rising beyond a certain level in a hierarchy (glass ceiling).
5. Challenge #5_Impostor syndrome

See an explanatory video of the challenge [here](#).

<table>
<thead>
<tr>
<th>Practice</th>
<th>Interactive Video</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tool: EdPuzzle</td>
<td>EDpuzzle is a teaching tool used to place interactive content into pre-existing videos from a variety of sources, such as TED or YouTube, or into videos you have made. To create an EDpuzzle account, navigate to EDpuzzle.com.</td>
</tr>
<tr>
<td>Instructional use</td>
<td>Women in STEM sometimes tend to feel inadequate and inappropriate and tend to have lower confidence than men. The instructor uses an Edpuzzle video-quiz gathers important facts related to the impostor syndrome. See an example <a href="#">here</a>. The students are required to navigate through the video and answer questions such as “What is the impostor syndrome?” “What do you think are possible solutions?” etc.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Practice</th>
<th>Poster</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tool: Canva</td>
<td>Canva is a graphic design platform, used to create social media graphics, presentations, posters, documents and other visual content. The app includes templates for users to use. The platform is free to use and offers paid subscriptions such as Canva Pro and Canva for Enterprise for additional functionality.</td>
</tr>
<tr>
<td>Instructional use</td>
<td>The instructor uses a poster to raise a discussion around impostor syndrome. See an example below.</td>
</tr>
</tbody>
</table>
6. Challenge #6_Mother's penalty

See an explanatory video of the challenge here.

<table>
<thead>
<tr>
<th>Practice</th>
<th>Quiz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tool: Kahoot!</td>
<td>Kahoot! is a game-based learning platform that brings engagement and fun to 1+ billion players every year at school, at work, and at home.</td>
</tr>
<tr>
<td>Instructional use</td>
<td>The instructor shares a Kahoot Quiz with questions related to the mother's penalty. Students are invited to participate and answer questions related to the mother’s penalty in order to spark their interest for a discussion.</td>
</tr>
<tr>
<td>Practice</td>
<td>Poster</td>
</tr>
<tr>
<td>-------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Tool: Canva</td>
<td>Canva is a graphic design platform, used to create social media graphics, presentations, posters, documents and other visual content. The app includes templates for users to use. The platform is free to use and offers paid subscriptions such as Canva Pro and Canva for Enterprise for additional functionality.</td>
</tr>
<tr>
<td>Instructional use</td>
<td>The instructor uses a poster to raise a discussion around the mother's penalty. See an example below.</td>
</tr>
</tbody>
</table>

I know that being a mother can result in large earnings penalties that won't affect the father at all!
7. Challenge #7_Matilda Effect

See an explanatory video of the challenge [here](#).

<table>
<thead>
<tr>
<th>Practice</th>
<th>Poster</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tool: Canva</td>
<td>Canva is a graphic design platform, used to create social media graphics, presentations, posters, documents and other visual content. The app includes templates for users to use. The platform is free to use and offers paid subscriptions such as Canva Pro and Canva for Enterprise for additional functionality.</td>
</tr>
<tr>
<td>Instructional use</td>
<td>The instructor shows the poster below that represents the Matilda effect and asks the students “Can you imagine what would have happened if Einstein had been born a woman? Well, that most likely we would not know who Einstein is today. Because, probably, all the credit for her discoveries would have been taken by a fellow male researcher or even by her own husband.” This phenomenon, known as the #Matilda #Effect in honour of Matilda Joslyn Gage, who was the first activist to denounce it, highlights the injustice of systematically ignoring the findings of brilliant women scientists throughout history.</td>
</tr>
<tr>
<td>Practice</td>
<td>Interactive Video</td>
</tr>
<tr>
<td>----------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Tool: EdPuzzle</td>
<td>EDpuzzle is a teaching tool used to place interactive content into pre-existing videos from a variety of sources, such as TED or YouTube, or into videos you have made. To create an EDpuzzle account, navigate to EDpuzzle.com.</td>
</tr>
<tr>
<td>Instructional use</td>
<td>The instructor uses an Edpuzzle video/quiz to spark students’ interest with regards to the Matilda effect. The students are required to navigate through the video and answer questions such as “What is the Matilda effect?” “What do you think are possible solutions”</td>
</tr>
</tbody>
</table>
## 8. Challenge #8_Gender Pay Gap

<table>
<thead>
<tr>
<th>Practice</th>
<th>Interactive Video</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tool: EdPuzzle</td>
<td>EDpuzzle is a teaching tool used to place interactive content into pre-existing videos from a variety of sources, such as TED or YouTube, or into videos you have made. To create an EDpuzzle account, navigate to EDpuzzle.com.</td>
</tr>
<tr>
<td>Instructional use</td>
<td>The instructor creates an Edpuzzle presentation and quiz gathers important facts related to the gender pay gap in Europe. See an example <a href="#">here</a>. The students are required to navigate through the video and answer questions such as “What is the gender pay gap?” “What do you think is the percentage of the gender pay gap in EU?”</td>
</tr>
</tbody>
</table>

### Interactive Video

![Gender Pay Gap Video](#)

<table>
<thead>
<tr>
<th>Practice</th>
<th>Interactive Poster</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tool: ThingLink</td>
<td>ThingLink is an award-winning education technology platform that makes it easy to augment images, videos, and virtual tours with additional information and links. Over 4 million teachers and students use ThingLink for creating accessible, visual learning experiences in the cloud. Presentations can be structured as a micro website and, then, is really user-friendly when people get back to it.</td>
</tr>
<tr>
<td>Instructional use</td>
<td>The instructor uses a ThingLink presentation and gathers important facts related to the gender pay gap in Europe. See an example <a href="#">here</a>. The students are required to navigate through the poster and answer questions such as “What is gender pay gap?” “What is the percentage of gender pay gap in Cyprus?”</td>
</tr>
</tbody>
</table>
Gender Pay Gap

Women usually get paid less than men working in the - this is known as Gender Pay Gap.
Appendix IV

Example of the entire “Understand-Construct-Share” process

Design a prototype following the instructions of a toolbox which has been designed to bridge the gap between men and women in STEM fields.

<table>
<thead>
<tr>
<th>Understand step</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Activity Name</strong></td>
</tr>
<tr>
<td><strong>Level of Difficulty</strong></td>
</tr>
</tbody>
</table>
| **Objectives** | *Understand the topic and challenge.*  
  - To identify and bring together observations, opinions and comments regarding gender-specific challenges of the STEM field.  
  - To gain multiple perspectives on a STEM topic. |
| **Duration** | 30-60 minutes |
| **Material and Tools** | Article samples for Science & Engineering  
  1. [The Problem of Visibility for Women in Engineering, and How They Manage It](https://hbr.org) - Harvard Business Review  
  2. [The case for change: why engineering needs more women](https://www.theguardian.com) - Guardian Careers  
  3. [Engineering: not for girls?](https://www.theguardian.com) - The Guardian  
  Article samples for Technology & Computer Science  
  1. [Careers for Women in Technology Companies Are a Global Challenge](https://www.nytimes.com) - The New York Times  
  2. [The vile experiences of women in tech](https://www.economist.com) - The Economist  
  3. [U.S. tech industry needs women, must interest them at school](https://www.reuters.com) - Reuters  
  4. [Furor on Claim Women's Choices Create Gender Gap in Comp Sci](https://www.insidehighered.com) - Inside Higher Ed  
  5. [Why aren't more women in computer science](https://www cio.com) - CIO  
  Article samples for Mathematics  
  1. [New Study Challenges The Assumption That Math Is Harder For Girls](https://www.npr.org) - NPR  
  2. [Why Are There So Few Women Mathematicians?](https://www.theadlantic.com) - The Atlantic  
  3. [Women in mathematics: The history behind the gender gap](https://www.openlearnественностиру) - Open Learn |
4. Maryam Mirzakhani’s success showed us the challenges women in maths still face - The Conversation

<table>
<thead>
<tr>
<th>Description of the Activity</th>
<th>Students will choose 3 articles from the small database of articles on gender-specific challenges in STEM. They can include in part or in full their own sources. Students will read carefully the 3 articles and write a 600 word response bringing together observations, comments and opinions on all 3. Find some examples of answers to activity 1 <a href="#">here</a>.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methodology</td>
<td>Individual reading and reporting</td>
</tr>
</tbody>
</table>

**Construct step**

<table>
<thead>
<tr>
<th>Activity Name</th>
<th>Auction Aspiration - Prototyping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of Difficulty</td>
<td>★★★☆☆</td>
</tr>
</tbody>
</table>
| Objectives                 | *Construct a prototype*  
To create a prototype for a website related to STEM fields with a gender-element based on the readings and on your experience |
| Duration                   | 90-120 minutes                                                                                   |
| Material and Tools         | Beginner:  
*WiX*  
*CARGO*  
Intermediate:  
*WordPress*  
Advanced:  
*Invision*  
*Adobe*  
*Axure* |
| Description of the Activity| 1. Ideate  
Students will need to decide what their auction site will be about: art, antique furniture, memorabilia or something else? Then they will write one paragraph about their decision.  
2. Draw Inspiration  
Students will check out other auction websites for inspiration. They will note down what they think has worked well or not on each website. They should pay attention to visual style, navigation, interactive elements and presentation style and write their comments about at least 2 websites (1 -2 paragraphs).  
3. Storyboard  
Students will visualise the website pages they would like to create through a series of images, sketches, cartoons or even text blocks. |
4. Create Assets
Students will source or create the visual material needed for the website ranging from product images, logos, icons and an intro text.

5. Stitch Together
Students will bring together their storyboard and assets using one of the recommended tools above. They should try and keep it as professional-looking as possible. It is good to see at least a draft of their website. If this is not possible, they can visualize their website in other ways (pictures, videos etc).

Find some examples of answers to activity 2 [here](#).

<table>
<thead>
<tr>
<th>Methodology</th>
<th>Visualization</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Share step</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Activity Name</strong></td>
<td>Publication Provocation</td>
</tr>
<tr>
<td><strong>Level of Difficulty</strong></td>
<td>★★★☆☆</td>
</tr>
</tbody>
</table>
| **Objectives** | *Share the experience with others.*  
- To craft a story that can be shared broadly. |
| **Duration** | 60-90 minutes |
| **Material and Tools** |  
- An account at [medium.com](#)  
- Social media |
| **Description of the Activity** |  
1. Create an outline of your experience. Students will use the prompts below to structure their thoughts:  
- What made an impression from your ‘understanding’ step activity?  
- What is your website about?  
- How will your website bridge the gap between male and females in STEM fields?  
- What was the most surprising thing you learned while constructing your gender-sensitive website?  
- What part of the process was most difficult?  
- Which moment of your experience was most rewarding?

2. Write your story  
Students will write an 800-1000 word account of their experience based on their narrative. They will include the link of their website, photographs, diagrams and photos.

3. Spread your story  
Students will create an account at medium.com and upload their
story. They will share in social media and make sure to include the link in their doc.

Find some examples of answers to activity 3 [here](#).

<table>
<thead>
<tr>
<th>Methodology</th>
<th>Narrative</th>
</tr>
</thead>
</table>

See more examples of what was produced for the above activities [here](#).

## References


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ABOUT THE TOOLBOX:

Gender-Sensitive Toolbox

An output of the Female Empowerment in Science, Technology, Engineering and Mathematics in Higher Education (FeSTEM) Project

2nd Edition © 2022

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