

Women's empowerment through sustainability pathways in STEM Higher Education



Developed by:

University of Thessaly

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PURPOSE: Aim and impact targeted

The WESTEM Self-assessment tool was created by the University of Thessaly as part of the first deliverable of the project. The key objective of the project is to empower women in science, technology, and engineering (STEM) fields and reduce the gender gap in STEM fields at all levels of education.

The questionnaire is a self-assessment tool for the readiness of Higher Education Institutions (HEIs) faculties to promote women's participation in the STEM fields of study. The purpose of the questionnaire is to help HEIs faculties to identify their own and their organization's (e.g., University, College) strengths and weaknesses in terms of gender equality in the fields of STEM. The results will inform a learning analytics database to map institutional readiness about approaches and strategies toward women in STEM in HEIs.

THE AUDIENCE: Our target group

The target group of the deliverable consists of administrative and academic staff in HEIs. UTH developed a self-assessment tool for assessing HEIs faculty readiness in promoting participation of women in STEM fields of study. More particularly, the tool is designed for self-awareness purposes, to identify institutional readiness to address gender equality and inclusive provision for women's participation and completion of STEM degrees.

STRATEGIES: The plan of action, content, and features.

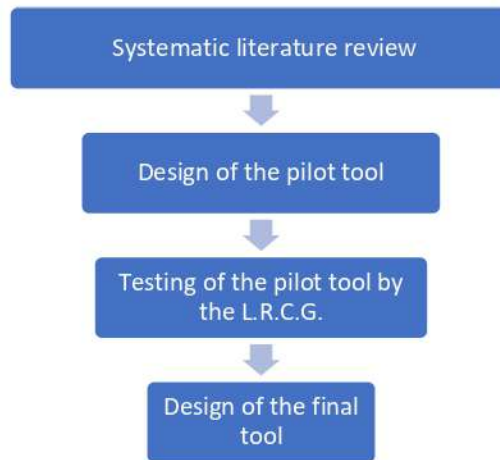
To begin with, the pilot tool was designed based on the key findings of the literature review on existing evaluation methods and tools that are available to assess teachers' competences. In addition, a research into curricula requirements across Europe and the situation of digital cultural heritage education was conducted to develop the self-assessment tool. After its development, the tool was evaluated by the local research control groups (L.R.C.G.). Those groups were consisted of faculty members and administrative staff in partner countries committed to participate in testing tools during the project lifecycle. To continue with, based on the feedback from the L.R.C.G. necessary modifications were made to create the final tool. At the end, the final tool was upload on the official website of the WESTEM project, below are the relevant links:

PC: <https://www.westem.eu/survey-saw>

Mobile:

https://formfacade.com/public/108982281423993214383/all/form/1FAIpQLSfXIGtDvZMZSDmdPEyawn3Z4Vrj_Pryj7ENKB4-LWOG7Y40eQ

WESTEM Self-assessment tool



Literature review

A systematic literature review on the following topics was conducted by all partners:

- On the gender gap in STEM fields, challenges, and barriers.
- On existing evaluation systems/tools that are available to assess educators' competencies.

The gender gap in STEM occupations is evident from the literature review. Graph 1 shows the percentages of female researchers in Europe by country.



Graph 1: Participation rates of female researchers in Europe

Source: UNESCO Institute for Statistics, June 2020

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The next image shows the participation rates of women in the fields of science on a global scale.

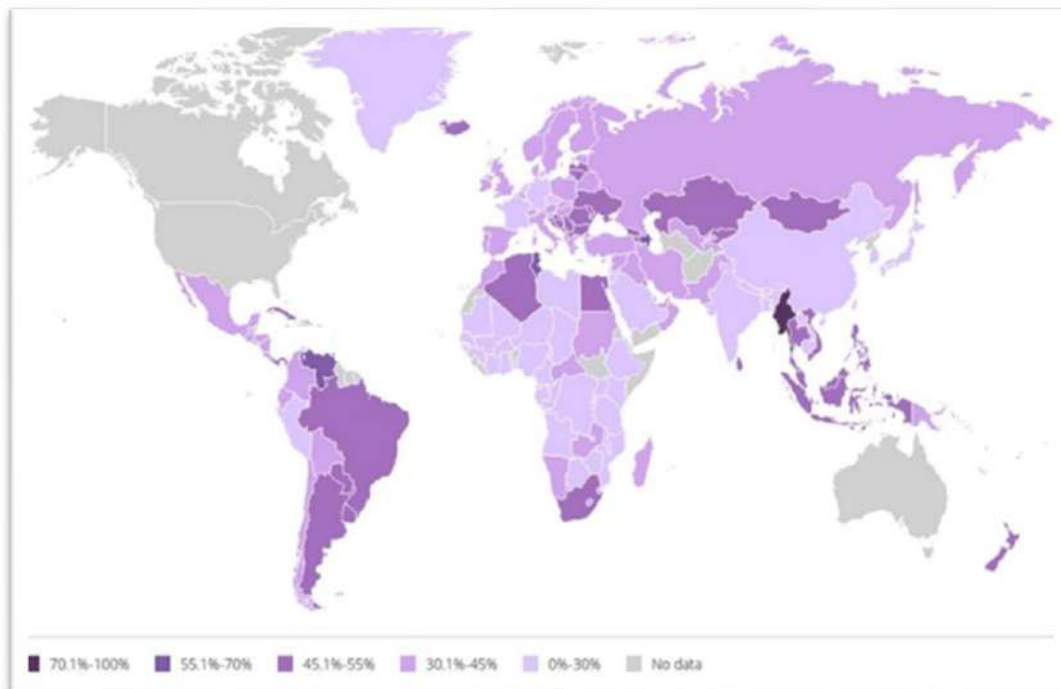
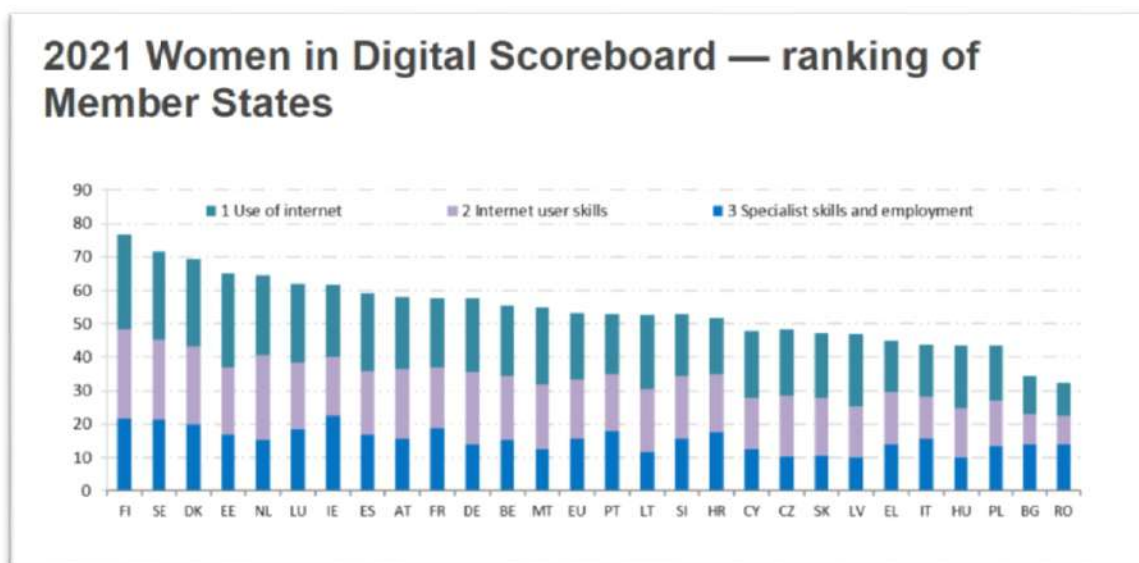


Figure 1: Participation rates of women in the fields of sciences

Source: UNESCO Institute for Statistics, June 2020

Finally, the next graph refers to the percentage of women who use the internet, who have skills to use the internet, and who have specialist skills.



Graph 2: Digital Skills of women

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<https://digital-strategy.ec.europa.eu/en/news/women-digital-scoreboard-2021>

Internationally, gender inequality is recorded concerning STEM professions and country-by-country differences are evident concerning the role of women in STEM fields.

Higher education and the processes followed in it have a decisive influence on the selection and further development (professional and academic) of women in STEM fields. Internationally, it appears that several actions are conducted to promote gender equality in the STEM fields at all levels of education, while Article 8 of the Treaty on the Functioning of the European Union states: "In all its activities, the Union shall aim to eliminate inequalities, and to promote equality, between men and women". (<https://eurlex.europa.eu/legalcontent/en/TXT/HTML/?uri=CELEX%3A12012E%2FTX> T).

On the other hand, according to the literature, stereotypes regarding the role of women in STEM professions still exist.

Finally, the literature review shows that there has not been a self-assessment tool in Higher Education, especially focusing on a transnational scale to consider the inclusion or exclusion of women in STEM courses.

In the context of the project, to record the existing situation, the practices applied, the awareness of those involved, the promotion of good practices, and to examine the readiness of higher education teachers to promote women in studies in the fields of STEM, it was decided to design and create the self-assessment tool for the readiness of Higher Education Institutions (HEIs) faculties to promote women's participation in the STEM fields of study.

How the thematic axes of the pilot tool were created is analyzed below:

1. General information

Globally, women's participation remains low in the science, technology, engineering, and mathematics (STEM) fields at all levels of education and the labor market, although there are differences from country to country. Therefore, the thematic of general information contains one question regarding the country in which the questionee teaches. Moreover, questions in relation to their gender and the level of education they teach are included.

2. Information about the students

The questions in this thematic are related to their students. This section was created to capture the current situation in relation to the existence of the gender gap in the STEM fields of study. The higher education teachers are asked to fill in the percentage of female students who have registered, attended, and completed their course.

3. About teaching

The formation of the learning / pedagogical climate is decisive for the educational process and the development of opportunities that will allow equal participation. The application of different teaching models, as well as the use of different assessment methods (e.g., formative,



self-assessment), promote inclusion in education. Additionally, the use of gender-neutral language in both oral and written communication is another significant factor. The questions in this thematic are related to the material educators have created and generally use in their courses, their teaching, and assessing their students. Through the questions, the higher education teachers can determine to what extent they promote gender equality in their course.

4. Sexual harassment

According to UNESCO, a factor that shapes strategies for equality issues is the records of sexual harassment incidents (<https://zenodo.org/record/3594822#.Y4mnnvXbP02x>). In this thematic, higher education teachers are asked to record the total number of sexual harassment incidents, they are aware of, in the organization and to describe their action process when they were informed of the incident/incidents.

5. Opinions & Attitudes

According to the literature review, there are stereotypes that we think have been overcome (Bian, Leslie, Cimpian, 2017; Aggeli, 2018; Alawi, & Al Mubarak, 2019; Antoniou,, & Akrivos, 2020). Study results demonstrate that “women are perceived to lack the qualities needed to be successful scientists, which may contribute to discrimination and prejudice against female scientists” (Carli, et al., 2016). In the questions in this thematic, the higher education teachers are asked to choose whether they agree with stereotypical statements regarding the competence and reliability of female scientists.

6. About the Organisation (e.g., University, College)

The last thematic contains questions related to whether the institution promotes gender equality for both teaching staff and students.

Testing by the L.R.C.G. and Creation of the final tool

The pilot tool was shared through partners with the L.R.C.G. to be evaluated. The Local Research Control Groups consist of faculty members and administrative staff in partner countries committed to participating in testing tools during the project's lifecycle. The members of the L.R.C.G. and partner research groups suggested modifications, and adaptations according to their experiences and the relevant national policies applied in their countries.

After a review of the comments, two main categories were created. The first category involved comments about the framework of the tool. Taking into account the comments, appropriate adjustments were made to the tool.

The second category concerned comments about the content of the tool. Because the tool is both for higher education teachers' self-assessment to evaluate their readiness to promote women's participation in the STEM fields of study and for recording the practices and dimensions of institutions regarding the promotion of equal opportunities between the sexes, the questions must be clear to which of the two cases they correspond. There was also some concern regarding stereotype-related questions, as some of the statements referring to stereotypes in the tool, were seen as outdated. Another suggestion was that the tool has to be more inclusive and the questions to be not only centered around male and female.

Based on the project specifications and the literature review, appropriate adjustments were made to the questions to create the final tool.

Reference

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