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FEMST - Empowering girls with knowledge and confidence in STEM to become future STEM leaders. 2022-1-NL01-KA220-HED-000090191

Operational Guide Manual

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A. Brief description of FEMST

FEMST is an Erasmus+ funded project that aims to provide in-depth information about the gender gap that is relevant to gender equality in the STEM field at its early stages when teachers' gender biases affect the performance of pupils.

FEMST supports teachers in inspiring STEM among female students and addresses the needs of women studying in STEM to reduce the dropout rate long term.

The goal of FEMST is to offer in-depth information and knowledge about the gender gap in the STEM field in Europe, especially in the countries of the consortium (Netherlands, Cyprus, Greece, Spain, and Portugal) for their personal and/or professional development, ultimately for the benefit of the kids they are responsible for.

Intended objectives of the project

• Encourage gender-responsive training approaches for teachers and counselors that focus on tackling gender biases in the classroom

• Train primary school teachers for the implementation of the Curriculum and the application of the tools contain in their teaching, regardless of subject

• Disseminate the Animated Series of Stories and other activities/tools with children in the classroom through the teachers

• Facilitate the dissemination and sustainability of project results involving key stakeholders and policymakers at the national and EU level

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· Enable female students to develop their scientific capacities and inspire them to get involved in STEM-related activities to overcome gender prejudice in the field.

The FEMST project priority target groups

· Career counselors in upper secondary education

· School teachers/educators

· Academic staff

· University recruitment officers

· Primary education female students

· HE female students studying in STEM

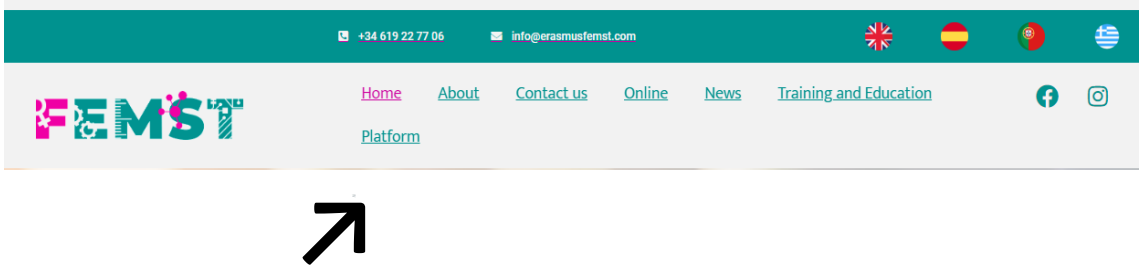
B. FEMST E-learning Platform

Interested parties can visit the project website here: https://erasmusfemst.com/, (see the pictures below). The signup stage can be conveniently accessed by choosing the ***Platform*** option located at the top of the website.

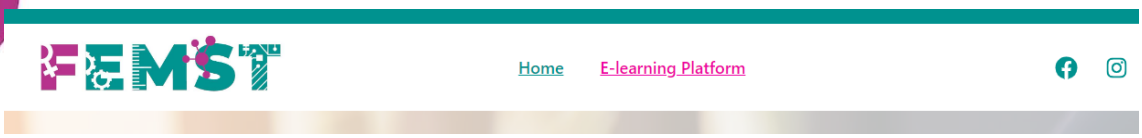
Registration Process

The following steps illustrate how to access and register:

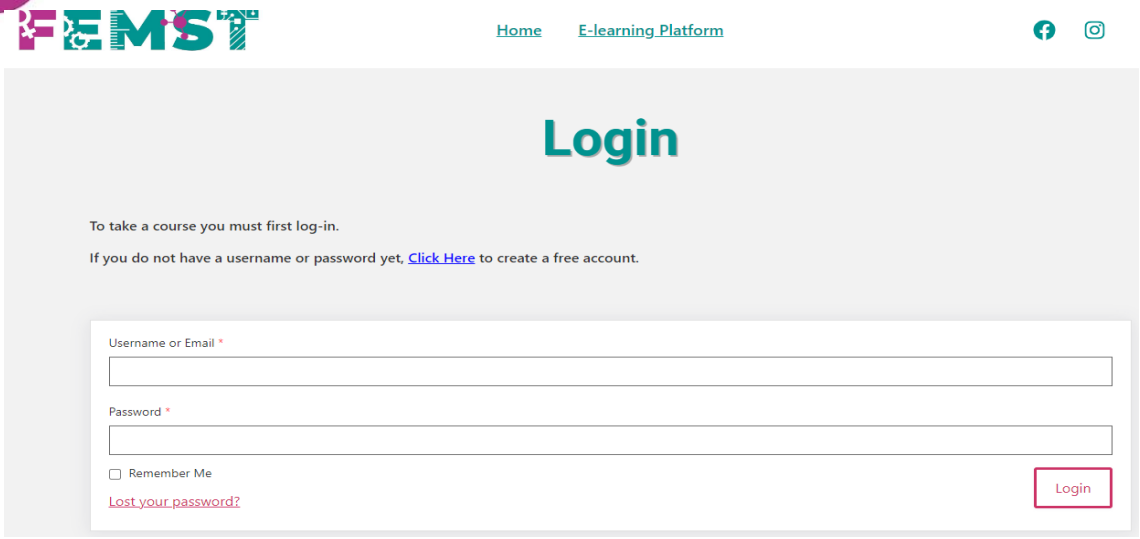
Step 1: Go to https://erasmusfemst.com/ and click on the ***Platform*** option.



Step 2: Click on the ***E-learning Platform*** option.

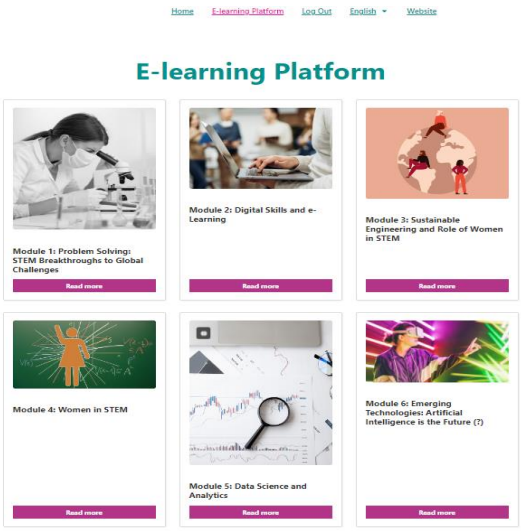


Step 3: Create your account (Important: Save your credentials!!!).



If all data is valid, a message indicating successful registration will be received. An email from **info@erasmusfemst.com** will be sent to the email address you provided – remember to check your Spam/Junk folder. Try to log in.

Step 4: Navigate to the platform and explore the 6 modules of the Training package.



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The E-Learning Platform

The FESMT platform (https://erasmusfemstplatform.com/e-learning-platform/) offers a comprehensive e-learning experience tailored for the STEM sector. The platform is structured into six modules, each of which is designed to provide in-depth coverage of essential STEM topics.

These are:

Module 1: *STEM Breakthroughs to Global Challenges*

Module 2: *Bringing the Gender Division through Digital Knowledge*

Module 3: *Sustainable Engineering and the Role of Women in STEM*

Module 4: *Female Role Models in STEM Sciences and their Impact*

Module 5: *Data Collection and Analysis Techniques*

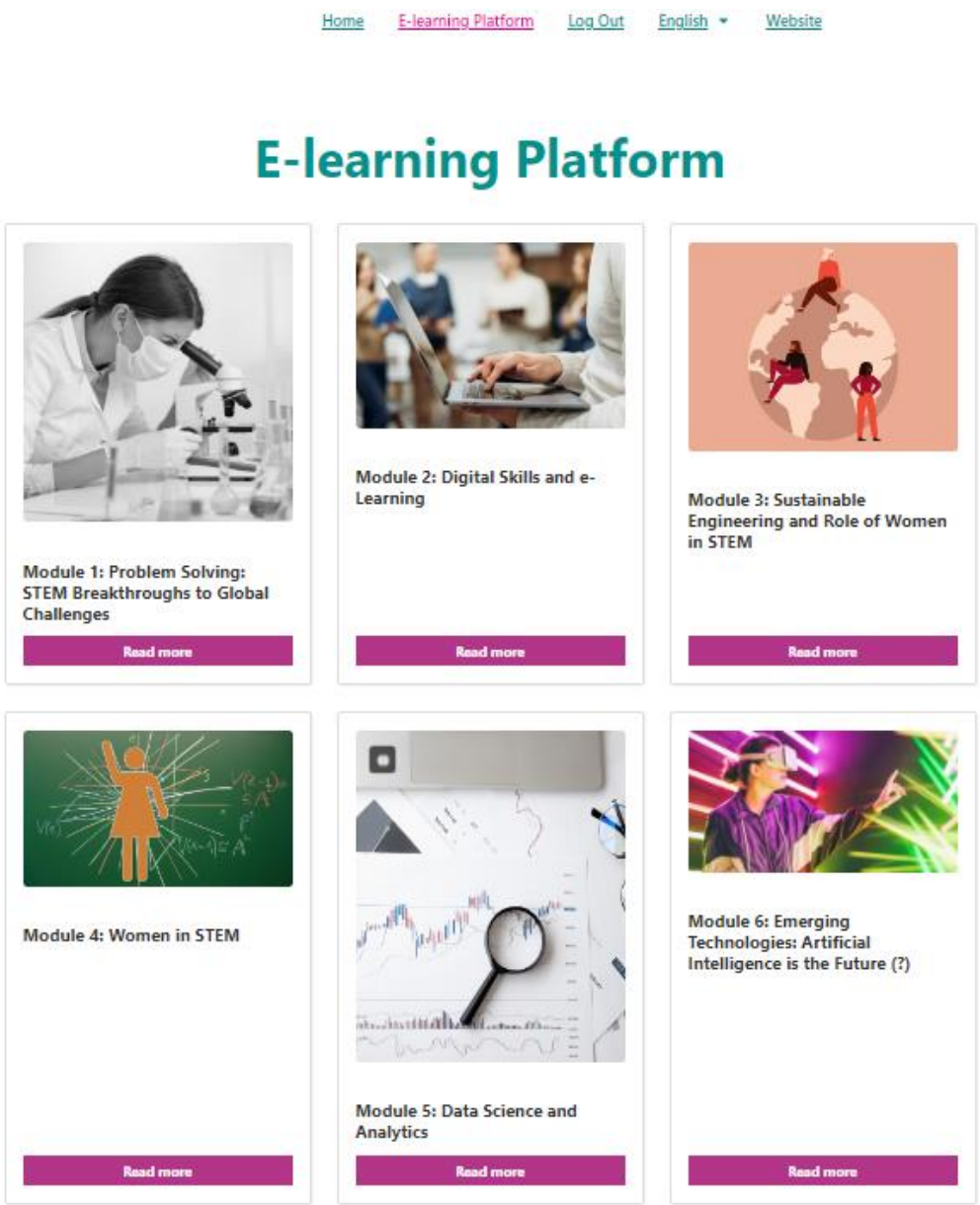
Module 6: *Artificial Intelligence is the Future (?)*

Each module includes structured lessons with multimodal materials such as videos, interactive simulations, and written content to enhance learning engagement. Quizzes are integrated throughout the modules to facilitate self-assessment and reinforce understanding.

In addition to the core content, the platform provides a wealth of useful resources curated specifically for both teachers and students. These resources aim to support educators in delivering effective STEM education and to empower students in their learning journey.

Interested parties can explore the FESMT platform to discover a robust educational tool designed to enrich STEM education through interactive learning experiences and comprehensive resources.

The duration of each module varies between two and three hours. Visitors may start from any module, though it is recommended to begin with Module One and proceed sequentially. To start, click on the **Read More** buttons as shown below:



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Structure of Modules

The **learning objectives** and a **brief description** of the modules are given. The aim is to guide the visitor as to what the learning outcomes will be.

Example: Module 1

Module 1: Problem Solving: STEM Breakthroughs to Global Challenges

https://www.canva.com/

Module Learning Objectives

- Introduce foundational concepts in Science, Technology, Engineering, and Mathematics to provide students with a common understanding of the core principles.
- Encourage interdisciplinary thinking and collaboration among students from various STEM disciplines to cultivate holistic problem-solving approaches.
- Examine and analyze major global challenges, identifying their complexities and understanding the urgency of finding sustainable solutions.
- Explore and identify connections between different STEM disciplines and how their integration can lead to innovative solutions for global challenges.
- Showcase case studies and success stories of STEM breakthroughs, illustrating their impact on global challenges and inspiring students to think creatively.
- Develop the ability to critically evaluate the ethical, social, and environmental implications of STEM breakthroughs in the context of global challenges.

Course Module Description

This module serves as an introduction to the dynamic and evolving landscape of STEM, with a specific focus on the pivotal role STEM disciplines play in addressing global challenges. Students will delve into the fundamental principles of problem-solving in STEM, explore interdisciplinary approaches to tackle complex societal issues, and analyze recent breakthroughs that have had a profound impact on addressing global challenges. By the end of this module, students will have gained a comprehensive understanding of the role of STEM in addressing global challenges, honed their problem-solving skills, and acquired the ability to critically assess and communicate the impact of STEM breakthroughs on society. This foundational knowledge will lay the groundwork for subsequent modules that delve deeper into specific STEM disciplines and their applications.

Keywords: Global challenges, problem solving, interdisciplinary approach, breakthroughs, STEM.

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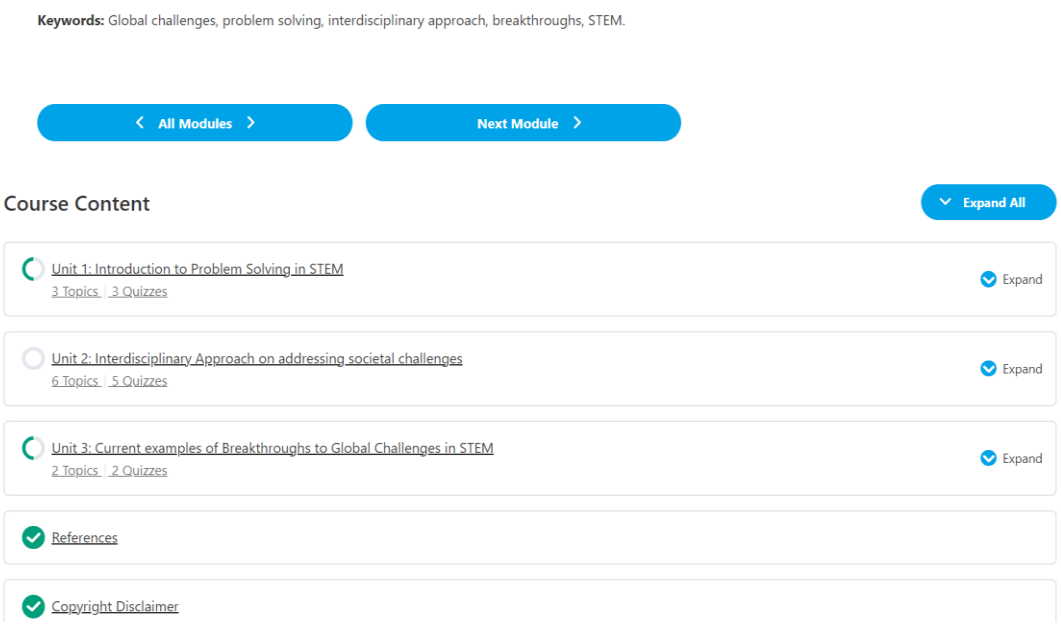
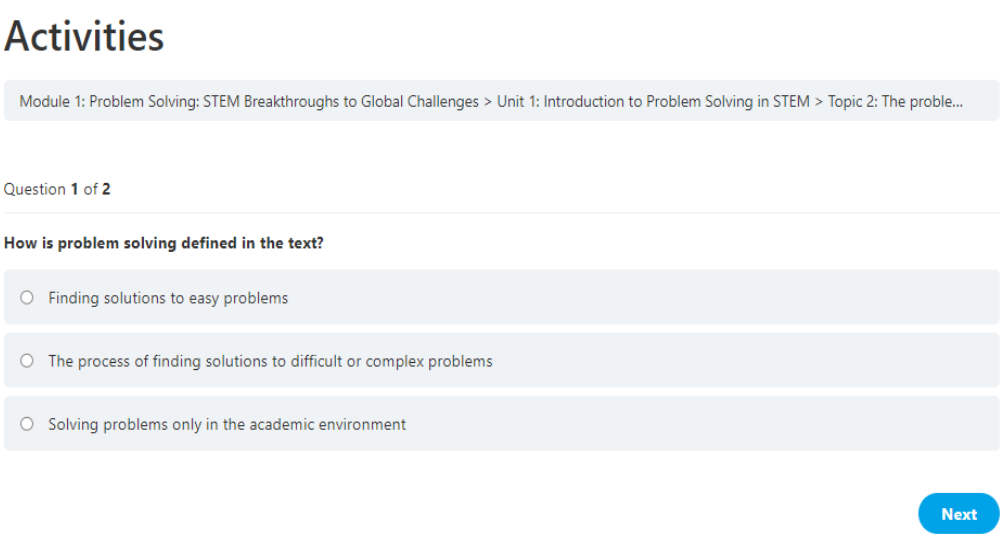
All modules are divided into **Units**, which help organize the content systematically and facilitate structured learning progression throughout the course.



Each unit includes short **quizzes** for self-evaluation:



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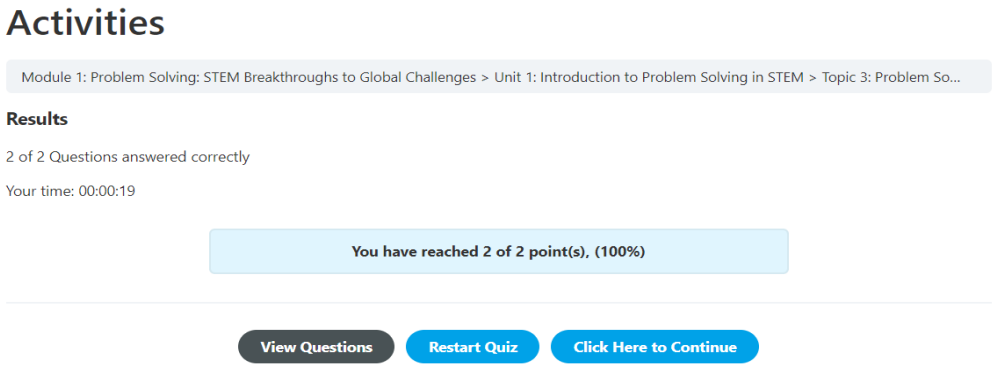
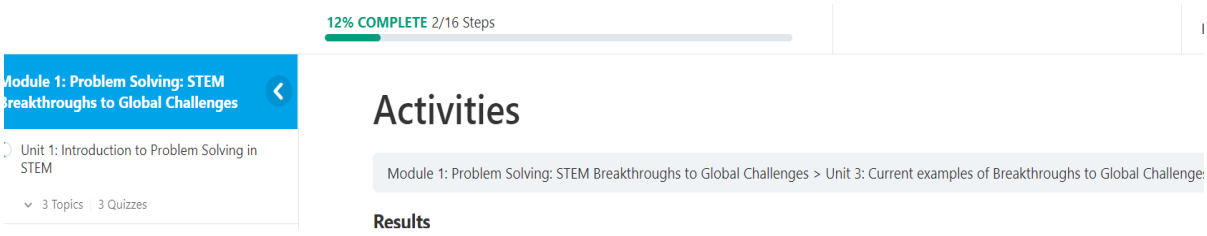
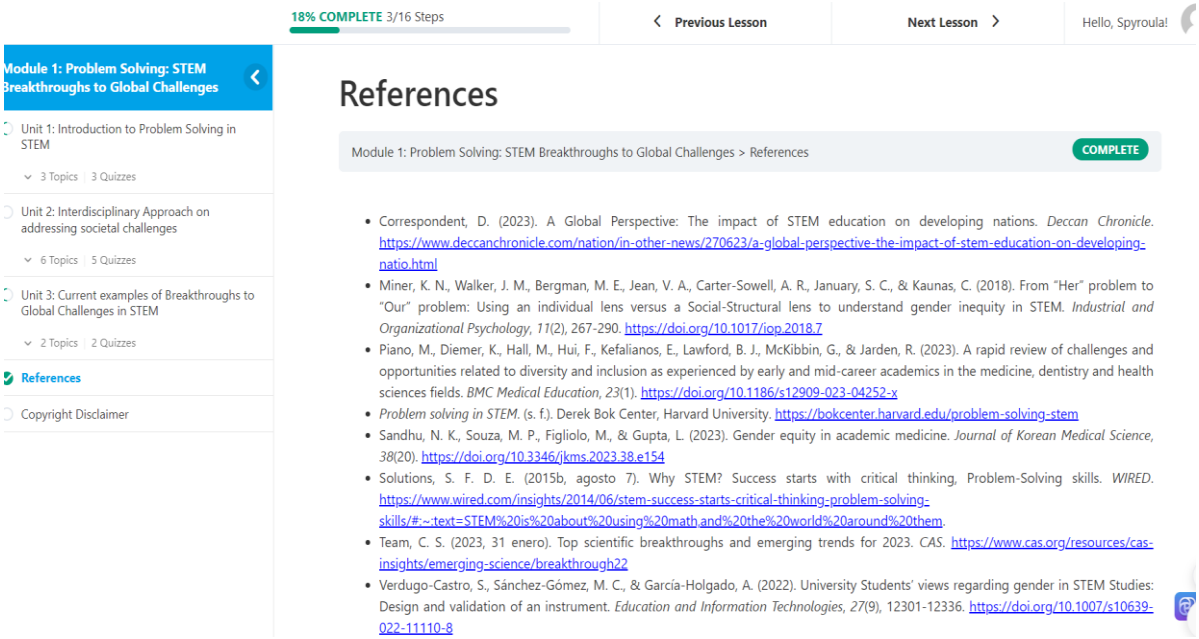
After completing each quiz, **feedback** is provided along with three options: *View Questions / Restart Quiz / Click Here to Continue.*



For each Unit where the visitor goes through their **progress** is registered:



References are provided throughout the sections to support and substantiate the information presented.



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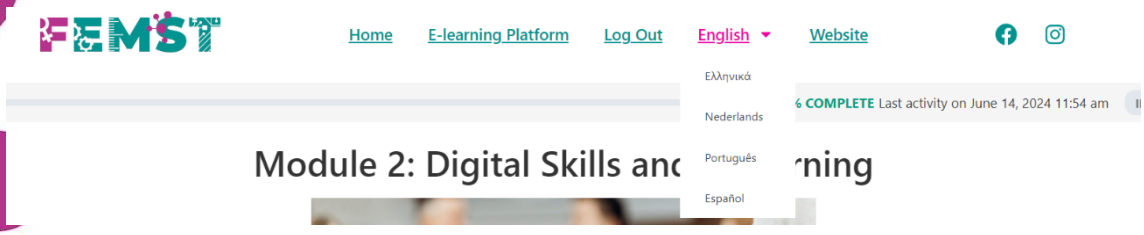
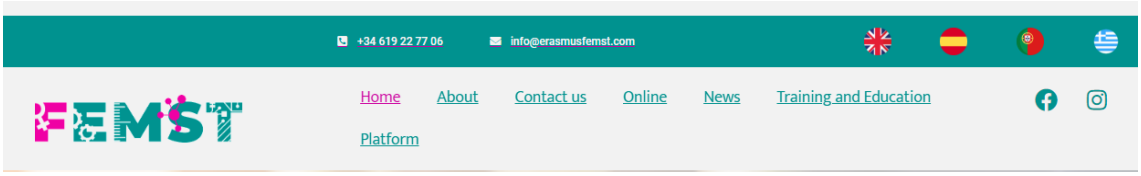
The modules are translated into the **Consortium's languages:**



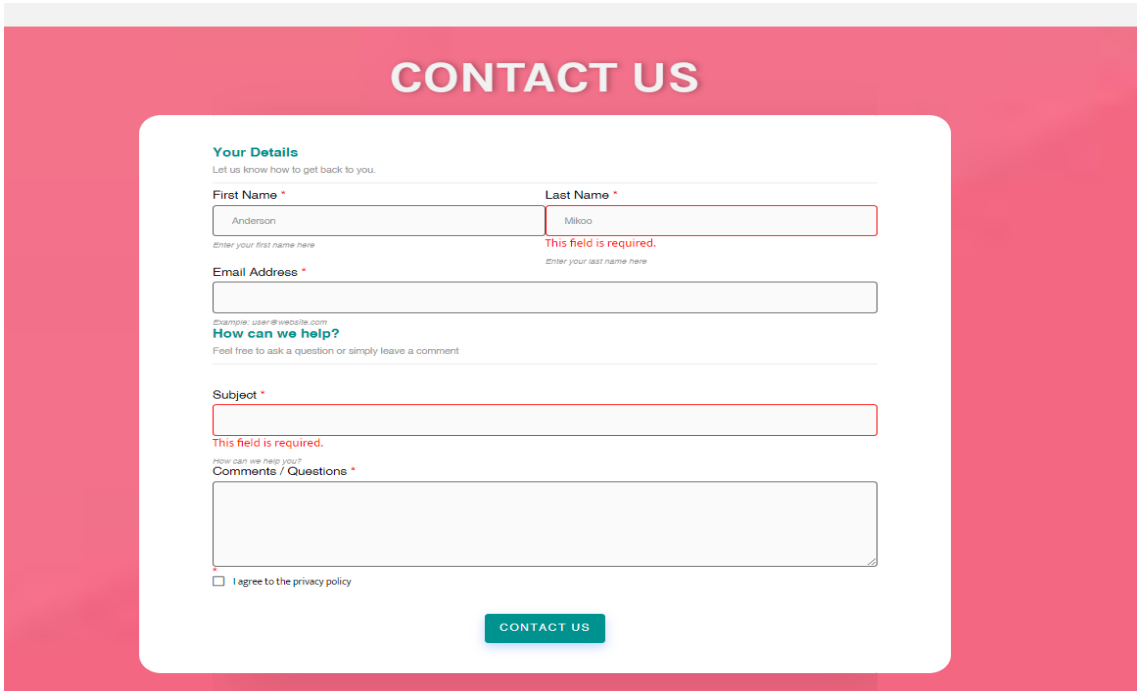
The content is translated into Greek, Dutch, Portuguese, and Spanish to cater to a diverse audience and facilitate accessibility across multiple language speakers.

C. Help Desk / Contact Us

For any help or inquiries, visitors can go to https://erasmusfemst.com/ as shown below:



At the bottom of the page, the **Contact Us** form is provided:



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D. Usage and Techniques of the FEMST Toolkit

Some recommendations illustrating the educational potential of the toolkit and suggesting possible uses and implementation techniques for STEM learners are:

1. Interactive Learning Modules

Incorporate the toolkit's interactive learning modules into STEM courses to enhance engagement and understanding. Teachers can encourage students to investigate videos and simulations that illustrate intricate STEM ideas to promote experiential learning.

2. Collaborative Projects

Encourage STEM students to work together on projects by providing resources and materials from the toolkit. Assign tasks that require students to research, analyze data, and present findings using multimedia resources available in multiple languages, promoting teamwork and critical thinking skills.

3. Integration with Real-World Applications

Connect the toolkit's content with real-world applications and current STEM advancements. Encourage creativity and innovation in students by setting challenges that require them to use the theoretical knowledge from the toolkit to solve real-world issues or to compete in STEM-related events.

Το Χαμόγελο του Παιδιού

TU/e Technische Universiteit Eindhoven University of Technology

INDEPCIE

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4. Self-Paced Learning Paths

Make use of the toolkit to design individualized learning pathways for students according to their STEM interests and skill levels. Allow students to navigate through modules at their own pace, completing quizzes and assessments to track progress and reinforce learning outcomes.

5. Multimodal Resources for Different Learning Styles

Use multimodal tools from the toolkit, like interactive simulations, audio explanations, and visual diagrams, to accommodate different learning styles. Give students options so they may decide how to interact with the material, which will improve their understanding and retention.

6. Enhanced Assessment Techniques

Utilize the quizzes and self-assessment tools provided in the toolkit to enhance traditional assessment methods. Use these resources as part of your routine testing regimen to provide students with instant feedback, pinpoint areas in which they might require more assistance, and modify upcoming sessions to fill in these gaps.

7. Flipped Classroom Approach

Implement the toolkit in a flipped classroom setting, where students review the toolkit's materials, such as videos and readings, at home. Then, use class time for hands-on activities, discussions, and problem-solving sessions that deepen their understanding and application of STEM concepts.

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E. Conclusion

By implementing these recommendations, educators can effectively harness the educational potential of the FEMST toolkit to inspire STEM learners, promote active learning, and prepare students for future academic and professional endeavors in STEM fields. The diverse resources and interactive elements of the toolkit make complex concepts more accessible and engaging. Additionally, fostering a collaborative and personalized learning environment helps students develop critical thinking and problem-solving skills essential for success in STEM careers.

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