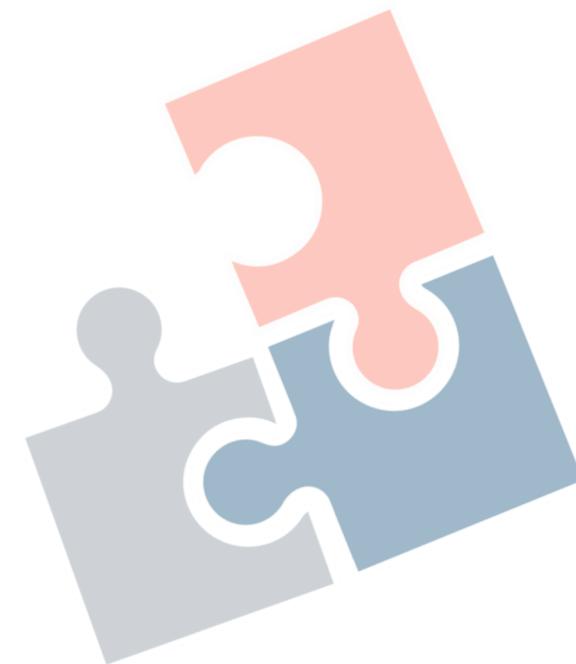


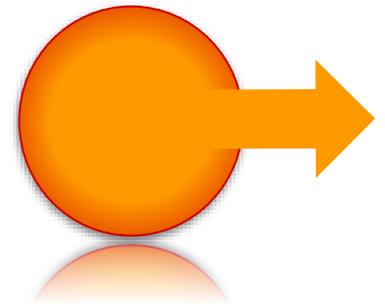
What does a Learning Scenario for Integrated STEM Teaching Look like?

STE(A)M IT Master Learning Scenario



STE(A)M-IT Master Learning Scenario

STE(A)M IT FRAMEWORK



Right now, there is no integrated STE(A)M education framework in Europe that will further enhance the existing STEM education.

The STE(A)M IT project is aimed at creation and testing of the 1st Integrated STE(A)M framework, and to strengthen the coherence in STEM education collectively with MoEs and STEM teachers.

The teaching of each STEM subject individually often prevents students from linking those subjects, consequently missing out on a cohesive educational opportunity that might largely affect their study path choice and eventually career. **There is a need to combine STEM classes with other disciplines, ensuring that the integrated STE(A)M education will contextualize STEM teaching in such a way that it becomes more attractive for every student.**

The focus group teachers were engaged in developing and implementing interdisciplinary and innovative teaching and learning scenarios that will be used to test the STE(A)M IT framework for integrated STE(A)M education

What is needed in the classroom for integrated STEAM education

STEM education is an interdisciplinary approach to learning apply science, technology, engineering, and mathematics in a real world context that make connections between school, community, work and the global enterprise enabling the development of STEM literacy and with it the ability to compete in the new economy

The core idea of project-based learning(PBL) is that real-world problems capture students' interest and provoke serious thinking as the students acquire and apply new knowledge in a problem-solving context. The approach helps prepare students for the critical thinking and collaboration skills required in the workplace.

Real-World, authentic problems, and contexts

STEM and PBL focus on preparing students for life after school. To be ready to solve the complex challenges and problems that exist in our world

Interdisciplinary approach

Students no longer study and practice science, math or engineering in isolation.

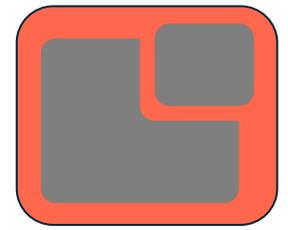
Teachers engage students in thought-provoking work that requires them to utilize and make connections among their knowledge.

Real-world are rarely connected to one single (discipline) subject.

Skills needed for success in the workplace

Being able to apply what you know to solve problems is important, and being able to collaborate, communicate, innovate and think critically are equally necessary to ensure long-term success.

STE(A)M IT MASTER LEARNING SCENARIO: the baselines



For the STE(A)M IT MLS its important that teachers of different disciplines work together in the creation of innovative and **cross-disciplinary approaches** to STE(A)M teaching in education, each adding their own insight, expertise and knowledge.

The STE(A)M IT learning scenario is a **teacher's detailed description** of the course of instruction or "learning trajectory" for a lesson, a guide and a document that will be continuously improved and updated.

Each lesson needs to **combine at least three subjects**, two of the subjects must be STEM and the third subject is supposed to be a non-STEM subject

The lesson plan is about **designing educational activities that facilitate deep learning to enhance 21st century skills** such as critical thinking, collaboration, communication and creativity and divergent thinking.

Designing a path based on methodologies such as Problem, Project and Challenged Based learning allow to incorporate problem-solving, inquiry and design based learning into the teaching activity taking care of **real world challenges in an authentic context**

STE(A)M IT MASTER LEARNING SCENARIO: the structure



Lesson planning is a significant element of teaching-learning system,

Essential tool to classify the learning outcomes for the class.

Helps the teachers group in maintaining the focus on the common learning goal

Coordinating the pedagogical approaches of the single teachers

Prepare classroom equipment for the activities (ICT, space)

Connection points of the integrated activities (Learning Products, necessary to achieve the common learning goal)

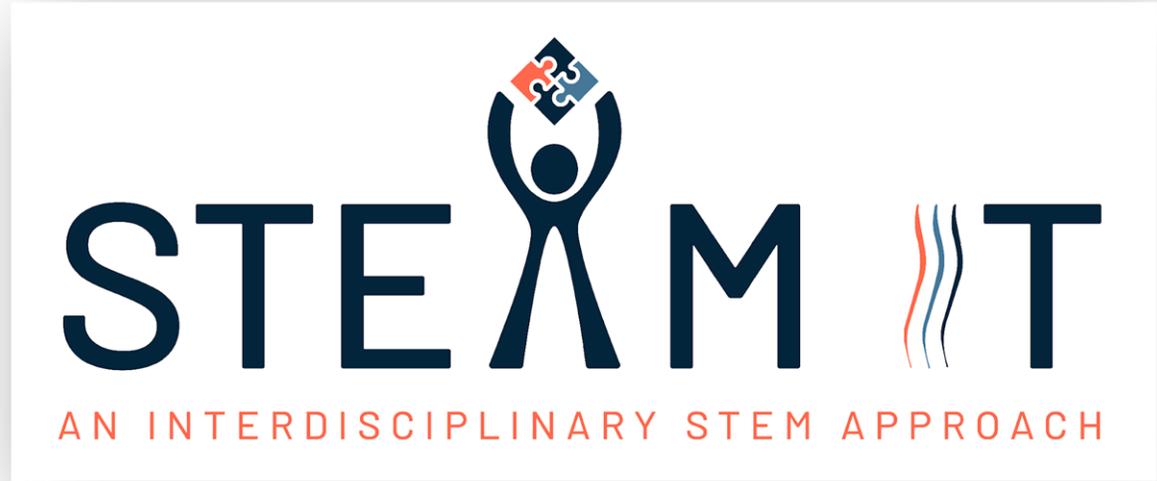
- Subject
- Real-life questions
- Goals
- Connection to STEM Careers/Skills
- Age of Students
- Time (preparation and teaching time)
- Resources
- Learning Products
- Assessment
- Feedback (Teacher / Student)

Master Learning Scenario in action

1st Lesson		
Non-STEM subject 1	Citizenship	1 x 50 min
Brainstorming, discussion, and preparation for the next lesson.	<p>How do you use water at home? And at school?</p> <p>Give examples from your daily life, where you think you are wasting water? How can we stop wasting water?</p> <p>Water: do we have enough?</p> <p>Do you think there is enough water for everyone in the world? Do you think water will end?</p> <p>Using Flipped Classroom, ask students to explore some information about water.</p>	50 min
Learning products	<p>Collect information online and offline. See annex 2.</p> <p>Students can storage all the data to an online folder (dropbox), or use google classroom.</p>	

Master Learning Scenario in action

4 th and 5 th Lessons		
STEM Subject 2	Mathematics	2 x 50 min
Water Statistics in your school	Read and write statistics about the misuse of water.	50 min
	Build and implement a survey (using QR codes) to understand the reality in your school community.	50 min
Learning products	Survey Poster with graphic information about the collected data.	



#STEAMIT_project