



## **Guidelines for facilitating the learning of STEAME**

Reference Number: 101102619

### **Module and Workshop Learning Plan**

**Module Number and Area/Topic: AREA 1 ENVIRONMENT > Module / Workshop 2.**

**MANAGEMENT OF THE STEAME LEARNING SPACE/ENVIRONMENT**

**Module leaders: P9 - Universitat de Barcelona**

#### **1. Introduction and broad description of the context and goal of the area/topic addressed with reference to the STEAME Teacher Facilitators Competence Framework for student and serving teachers**

Virtual Learning Environments (VLEs) are useful tools to support interdisciplinary project delivery in school, as online spaces that can be populated with learning materials for students' easy access. Moreover, these spaces offer safe means of communication and interaction among students and with the teacher, among other, useful features for STEAME project delivery.

One of the characteristics of STEAME projects is that they are interdisciplinary, that is, they involve explicit instruction from one or more STEAME areas. When it comes to VLEs, this means that in a single project, students will engage with teachers and materials in different online spaces. For instance, the Maths Virtual Learning Environment, and the Arts Virtual Learning Environment. It may even be possible to create a dedicated Virtual Learning Environment for the project, where materials from different subjects are hosted, or made available as links to other VLEs. This choice has deep implications in students' learning experience as they find their way through these online spaces, including how much time and effort they invest in finding the materials or doing the tasks, as well as how much support they will require from the teacher.

For these reasons, it is necessary to develop skills to design and manage the STEAME learning environment in a way that responds to the teaching needs, while making students' learning experience as smooth as possible. The overall objective of this module is to develop skills to use Virtual Learning Environments to their full potential as a tool to support STEAME project delivery. More specifically, in this module you will learn to design and set up virtual learning environments to support STEAME projects using Google Classroom. This module contributes to Area 2 of the STEAME Teacher facilitators competence framework, which comprises the Methodological aspects of STEAME projects.

#### **2. Learning objectives and learning outcomes with reference to the defined list of learning outcomes in the Competence framework**

For student teachers:

- LO #1. Design STEAME PBL teaching and learning activities that are aligned with formal education curricula and assessment standards at a local, regional and national level
- LO #2. Understand the need to coordinate STEAME PBL teaching with the school organisation, at a management level (school identity, yearly programming), department level (schedules, materials, resources, other subjects within STEAM), and subject level (objectives, contents and teaching methodology)
- LO #12. Define a productive use of up-to-date technologies to facilitate student learning in STEAME PBL learning activities, including artificial intelligence, virtual and hybrid learning environments.
- LO #23. Understand the need to become a co-learner and co-creator, incorporating creative insight, students' or other colleagues' vision in STEAME PBL activities during or after their implementation

For service teachers:

- LO #1. Design STEAME PBL activities that are aligned with formal education curricula and assessment standards at a local, regional and national level, as well as with the curricular organisation of a specific school
- LO #12. Demonstrate a productive use of up-to-date technologies to facilitate student learning in STEAME PBL learning activities, including artificial intelligence, virtual and hybrid learning environments
- LO #23. Understand the need to become a co-learner and co-creator, incorporating creative insight, students' or other colleagues' vision in STEAME PBL activities during or after their implementation

### 3. Competences that are developed

Competence 6: Support STEAME projects with the right learning environment and resources

### 4. Content and Resources (providing information on the various constituents/ dimensions of the topic under consideration), including presenter's notes for guidelines of the workshops organisation

1. Virtual Learning Environments for STEAME projects: Definition
2. Virtual Learning Environments for STEAME projects: Main and additional functions and features
3. Design of Virtual Learning Environments for STEAME projects according to pedagogical needs
4. Tools to support online Learning Environments for STEAME projects: Google Classroom, Moodle, Class Dojo.

### 5. Methodology and approaches for the module training presentation and guidelines for workshops organisation

The module follows a student-centred methodology: it starts by what participants know about the key concepts, gaining awareness of their own skills, strengths and limitations. Then, the concepts are presented and again the teacher must relate them to their own experience, and work with others. To close the module, the teachers are encouraged to apply what they learnt to their own context. To support this approach, different strategies are used, including presentations by the moderator and group activities, mostly focussed on discussion and synthesis.

### 6. Instruments/Tools/Supporting Materials/Resources to be used

[Presentation material](#)

Readings in PDF format, with URL indicated in the lesson

Virtual whiteboard: Google Slides

Learning Management System tools: [Google Classroom](#), [Moodle](#), [ClassDojo](#)

PART 1	Introductory Activities (creation of interest, reference to real-world issues, relation to background and experiences, etc.)
Learning Objectives	<ul style="list-style-type: none"><li>- Develop an understanding of Virtual Learning Environments</li><li>- Gain awareness about one's expertise, passion, or key skills related to Virtual Learning Environments</li><li>- Express one's expertise, passion, or key skills related to Virtual Learning Environments to the group</li></ul>

<b>Learning Outcomes</b>	<ul style="list-style-type: none"> <li>- Defining Virtual Learning Environments, as well as their most common and additional features.</li> <li>- Representing one's expertise, passion, or key skills related to online learning environments in the form of a self-portrait and effectively communicate it to the group</li> </ul>
<b>Competences</b>	<ul style="list-style-type: none"> <li>- Ability to elicit one's expertise, passion, or key skills concerning online learning environments by means of guided self-reflection</li> </ul>
<b>Content, Resources and Tools</b>	<ul style="list-style-type: none"> <li>● <a href="#">Module 2 presentation material</a> (slides 3 to 7)</li> <li>● Virtual whiteboard: Google Slides</li> </ul>
<b>Activities</b>	<p>1. Learning environment Self-Portrait:</p> <ul style="list-style-type: none"> <li>● The learners are presented with a definition of a Virtual Learning Environment (VLE) and their common and additional features to enable a shared understanding of this concept throughout the module.</li> <li>● Each participant thinks about their expertise, passion, or key skills related to VLEs</li> <li>● Participants draw or write these aspects on a designated section of a paper or Google Slides file, creating a visual representation of their "VLE Self-Portrait."</li> <li>● Selected participants present their Self-Portraits to the group. They will be encouraged to briefly explain why they chose those particular elements and how they see their skills contributing to a collaborative STEAME project.</li> </ul>
<b>Estimated Time</b>	10 minutes

<b>PART 2</b>	<b>Development Activities</b>
<b>Learning Objectives</b>	<ul style="list-style-type: none"> <li>- Consider different configurations of Virtual Learning Environments to support STEAME projects</li> <li>- Critically analyse the suitability of different configurations of Virtual Learning Environments to support a specific STEAME project</li> </ul>
<b>Learning Outcomes</b>	<ul style="list-style-type: none"> <li>- Explaining and defining the multiple ways in which the Virtual Learning Environment can be organised to support effective delivery of STEAME projects</li> <li>- Developing criteria for setting up a VLE configuration for STEAME projects according to pedagogical needs</li> </ul>
<b>Competences</b>	<ul style="list-style-type: none"> <li>- Ability to apply the most suitable configuration of VLEs according to the pedagogical needs of each specific STEAME project</li> </ul>
<b>Content, Resources and Tools</b>	<p>Supporting material:</p> <ul style="list-style-type: none"> <li>- <a href="#">Module 2 presentation material</a> (slides 6 to 9)</li> <li>- Examples of of <b>successful collaborative STEAME projects:</b></li> </ul>

	<ul style="list-style-type: none"> <li>- <a href="https://www.climatepd.eu/images/docs/IO.6.1b_Guideline_HandbookofClimaTePD_EN_Extended.pdf">https://www.climatepd.eu/images/docs/IO.6.1b_Guideline_HandbookofClimaTePD_EN_Extended.pdf</a> (Page 39 and onwards)</li> <li>- <a href="https://teachingthefuture.eu/teacher-storymaps/">https://teachingthefuture.eu/teacher-storymaps/</a></li> <li>- <a href="https://www.citizenheritage.eu/wp-content/uploads/2023/10/O5-final-report.pdf">https://www.citizenheritage.eu/wp-content/uploads/2023/10/O5-final-report.pdf</a> (page 10 and onwards)</li> <li>- <a href="https://femsteam-project.eu/?page_id=737">https://femsteam-project.eu/?page_id=737</a> (page 49 and onwards)</li> <li>- <a href="http://www.scientify-erasmus.net/wp-content/uploads/2023/02/Scientify-ebook.pdf">http://www.scientify-erasmus.net/wp-content/uploads/2023/02/Scientify-ebook.pdf</a> (page 13 and onwards)</li> </ul>
<b>Activities</b>	<ol style="list-style-type: none"> <li>1. Learners are given one successful collaborative STEAME project from the documents provided to work on.</li> <li>2. Learners, working in teams, consider possible ways to organise the learning space for the project: <ul style="list-style-type: none"> <li>• A) Using a dedicated Virtual Learning Environment for the project</li> <li>• B) Using only the VLEs from the subjects that take part in the project. For example, the Mathematics VLE, the Arts VLE and the Technology VLE.</li> <li>• C) Using the VLEs from the subjects that take part in the project and a dedicated VLE for the project</li> </ul> </li> <li>3. Learners assess the pros and the cons of each configuration in terms of: Students' easy access to materials, consistency with the teaching approach (teacher-led, more autonomous? Face-to-face, strictly online, or blended?), teachers' easy access and follow-up of students' work in the VLE (grading, etc.), and other factors.</li> </ol>
<b>Estimated Time</b>	30 minutes

<b>PART 3</b>	<b>Practical Activities (hands-on activity) in the case of a workshop mode</b>
<b>Learning Objectives</b>	<ul style="list-style-type: none"> <li>- Discuss the advantages of the main Learning Management System tools to support STEAME projects</li> <li>- Set up a learning environment to support a real STEAME project with Google Classroom</li> </ul>
<b>Learning Outcomes</b>	<ul style="list-style-type: none"> <li>- Setting up a learning environment with Google Classroom</li> <li>- Finding and using Virtual Learning Environments to support STEAME projects</li> <li>- Naming the most well-known Virtual Learning Environments</li> <li>- Critically analysing Virtual Learning Environments to support STEAME projects in relation to what they offer</li> </ul>
<b>Competences</b>	<ul style="list-style-type: none"> <li>- Ability to choose Virtual Learning Environments to support STEAME projects based on their needs in relation to what they offer</li> </ul>

	<ul style="list-style-type: none"> <li>- Ability to effectively utilise on-line learning environments in all circumstances (physical classroom, on-line, and hybrid learning)</li> </ul>
<b>Content, Resources and Tools</b>	<ul style="list-style-type: none"> <li>- <a href="#">Google classroom user guide for teachers</a></li> </ul>
<b>Activities</b>	<ol style="list-style-type: none"> <li>1. Learners are presented with 3 well-known examples of Learning Management Systems to support Virtual Learning Environments: Google Classroom, Moodle, and ClassDojo.</li> <li>2. If they don't have one, learners are asked to create a Google account in order to be able to use Google Classroom.</li> <li>3. Learners, working in teams, are asked to enter the Google Classroom platform and create their own class for a STEAME project of their choice or from those provided by the instructor by entering the following: <ol style="list-style-type: none"> <li>a. Naming and describing the classroom</li> <li>b. Enrolling students (one another in the team)</li> <li>c. Uploading ready-made (found online) learning content</li> <li>d. Setting up 2 or more assignments</li> <li>e. Grading their peers (even without completing the assignments – to see the grading process)</li> </ol> </li> </ol> <p>The process will allow the learners to comprehend all actions that need to be taken in order to result in a complete online lesson, from creating a new lesson, to adding content and setting the grading process through the different student assignments.</p>
<b>Estimated Time</b>	<b>60 minutes</b>

<b>PART 4</b>	<b>Evaluation of Learning Outcomes</b>
<b>Learning Objectives</b>	<ul style="list-style-type: none"> <li>- Demonstrate understanding of the key concepts of the module</li> </ul>
<b>Learning Outcomes</b>	<ul style="list-style-type: none"> <li>- Arguing for a specific choice and organisation of a Learning Management system for a given STEAME project</li> <li>- Foreseeing management of the STEAME learning space in terms of student interaction</li> </ul>
<b>Competences</b>	<ul style="list-style-type: none"> <li>- Ability to argue for and apply a specific choice of LMS and VLE configuration to a given STEAME project considering pedagogical needs.</li> </ul>
<b>Content, Resources and Tools</b>	

<b>Activities</b>	<ol style="list-style-type: none"> <li>1. In small groups, learners must make a proposal of organisation of a Virtual Learning Environment for the project that they were given or chose in part 2 of this module, covering: <ol style="list-style-type: none"> <li>a. Which LMS to use and why</li> <li>b. In which way will the LMS be organised, from those presented in this module (A, B, or C) and why</li> <li>c. Explain students' interactions needed to do at least one assignment for this project, and how they will get feedback from the teacher</li> </ol> </li> <li>2. One representative from each group shares the results of this evaluation activity with the module facilitator/s and with the class.</li> </ol>
<b>Estimated Time</b>	<b>30 minutes</b>

## 7. Reflection and Closure activity

Pick up the activity from the start ("learning environment self-portrait"):

1. Participants discuss and make a commitment to how they can use Virtual Learning Environments to support STEAME projects based on the insights gained from the activities.
2. Each participant can write down one specific way they plan to collaborate or share their expertise with their colleagues after the module / workshop.