Guidelines for facilitating the learning of STEAME
Reference Number: 101102619

Module and Workshop Learning Plan

Module Number and Area/Topic: Module 7 - STEAME LEARNING & CREATIVITY PLANS
Module leaders: Doukas School (P14)

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

This module aims to support STEAME teachers in planning, organising, and recording the STEAME learning activities they implement with their students to support their role as a facilitator of their students' STEAME learning. This module supports the acquisition/enhancement of specific STEAME Teacher Facilitators Competence Framework competences, as the planning and designing of STEAME activities directly relates to specific elements of the competence areas (and subsequently competences –> knowledge, skills, attitudes).

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

Through the implementation of this module, the following learning outcomes, as defined in the STEAME Teacher Facilitators Competence Framework, are being addressed:
Competence 1: Design and implement context-bound STEAME projects
Learning Outcome 1 for both students and in-service teachers, focusing more on a department level, as suggested by the learning outcome itself, and the development of resources and materials, as well as at a subject level (objectives, contents, and teaching methodology.
Competence 3: Monitoring STEAME projects and reporting
Learning Outcome 1, in the sense that the Learning & Creativity (L&C) plans are designed to integrate processes and activities that derive from the design and adoption of a strategy for planning and monitoring learning in STEAME PBL activities (through setting and addressing the STEAME learning objectives, integrating a learning objectives achievement evaluation method, etc.)
Competence 4: Embed learning in truly interdisciplinary STEAME projects
Learning Outcome 1 is one of the most relevant learning outcomes addressed by this module, as it provides a core element to support a co-design of PBL STEAME learning activities facilitating students' PBL in and across two or more STEAME subjects.
Additionally, achievement of Learning Outcome 4 is also supported, as the design of a L&C STEAME plan encompasses the utilization of the identified teaching and learning strategies that will allow for the engagement of students with interdisciplinary practices as part of their PBL learning.
Competence 5: Guide student learning in STEAME projects
The module relates to the achievement and further advancement of the level of mastery of learning objective 1 and 3, as to design a STEAME L&C plan with its respective learning activities STEAME teacher facilitator/s are expected to make informed choice of the appropriate assessment methods,

and also as the module itself will support the understanding that to achieve better learning outcomes for their students they are to establish a set of criteria for PBL STEAME learning activities beforehand.

3. Competences that are developed

This module supports the acquisition/enhancement of the following STEAME Teachers Facilitators Competence Framework:
- Design and implement context-bound STEAME projects,
- Monitoring STEAME projects and reporting,
- Embed learning in truly interdisciplinary STEAME projects,
- Guide student learning in STEAME projects.

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

The structure of the content of the module has as its starting point an introductory activity were the trainer is expected to utilise the module presentation to introduce the importance of adopting a commonly accepted approach of planning, designing, organising, and collecting and storing STEAME PBL L&C activities, thus, introducing the need for a STEAME teacher to have the capacity and competence to develop L&C plans.

Next, at the development activities phase of the module, the trainer presents the L&C plan and its elements/sections. Each section is presented by explaining its context and by providing an example of this section of an actual L&C plan. This section of the training aims to achieve an adequate level of understanding of both the process itself but also for the main tool to be used, the L&C Plan Template. Following the development phase, are the practical activities section, were in this case, participants will be asked to form teams of 4-5 teachers/students of different STEAME subjects, and to collaborate in developing a L&C plan, meaning a set of STEAME PBL learning activities which will aim to achieve the STEAME learning objectives that are to be set. The aim of the practical activities is to familiarize participants with the importance of an interdisciplinary approach in designing a STEAME L&C plan, the design process itself, as well as the process of recording the set of activities in a way that will be useful both during their implementation but also for future utilization.

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

This module adopts two approaches to achieve the set learning objective optimally and effectively.

The one focuses on the design process of a L&C plan and, the understanding of the different elements of an L&C plan, and the importance and add-on value of the collaboration of different STEAME subject teachers to achieve high levels of interdisciplinarity.

The other focuses on hands-on activities between the training module participants, were in teams of teachers of different STEAME subject teachers, they collaborate and work towards designing a set of STEAME PBL learning activities to achieve a set of chosen learning objectives while utilizing the appropriate teaching and learning approaches and evaluating the extent to which the learning objectives has been achieved.

Thus, in the case of a physical or an online collaborative learning/training setting, trainers are endorsed to focus on the practical activities whereas in cases of online training environment with a big number of participants or lack of collaborative features of the utilized digital means, trainers are expected to focus more in the introductory and development activities.

Depending on the form of the implementation of the module, the focus on its part may differ to better facilitate the achievement of the learning objectives, indicatively as shown in the figure below.
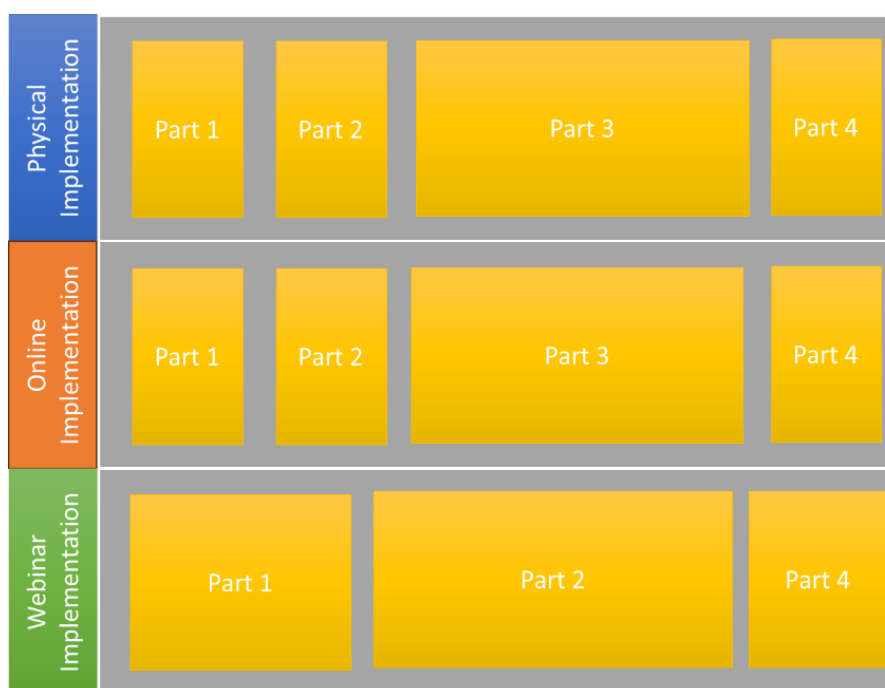

Figure 1 – Module part focus based on implementation

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

During the implementation of the training module, the trainer will utilise the training content that was developed along with content of the STEAME Teacher Facilitators Academy project, and more specifically:

Introduction to STEAME Learning and Creativity Plan (presentation)/ Part 1

Elements and sections of a STEAME Learning and Creativity Plan (presentation)/ Part 2

Templates for Learning and Creativity Plans (document files)/ Part 3

For a physical implementation of the training and workshop the trainer will need to utilise a projector for the presentations, a whiteboard for Part1-3, and printed STEAME Learning & Creativity Plan templates as a workshop sheet to be utilized for Part 3.

For an online implementation, the trainer will need to utilise a communication tool able to support a presenter's mode, but more importantly allow for the break-up in teams and collaboration of participants towards developing their own STEAME PBL Learning & Creativity Plan.

PART 1	Introductory Activities (creation of interest, reference to real-world issues, relation to background and experiences, etc.)
Learning Objectives	This introductory activity aims to support participants in: - achieving a high level of understanding for the importance of adopting an interdisciplinary approach at a STEAME PBL activities design level, - identifying the importance of using a common way in designing, developing, and recording STEAME PBL learning activities.
Learning Outcomes	Upon completion of this part participants will be able to:

	- identify the importance of establishing an interdisciplinary approach in designing STEAME PBL activities involving two or more STEAME subjects, - identify the importance of adopting a common way in the design and development of L&C Plans to allow for the development of STEAME PBL resources and an organisation of a STEAME PBL approach both at a department as well as at a subject level.
Competences	The STEAME Teacher Facilitators Competence Framework competences addressed by this activity are: - Design and implement context-bound STEAME projects (competence 1) - Embed learning in truly interdisciplinary STEAME projects (competence 4)
Content, Resources and Tools	Content: Introduction to STEAME Learning and Creativity Plan (.pptx file) Resources and Tools: Physical implementation: - Projector - Whiteboards Online implementation: - Digital tool for online meetings/webinars
Activities	Activity 1.1: The trainer briefly presents the content of the module and focuses on the need of adopting a common approach in designing, developing, and recording STEAME PBL learning activities. Activity 1.2: The trainer explains the importance of utilising common documents to support the collaboration of different STEAME subject teachers in developing interdisciplinary learning activities while emphasising in the importance of the interdisciplinarity itself.
Estimated Time	**15 minutes**

PART 2	Development Activities
Learning Objectives	This activity aims to support participants in: - Getting acquainted with the phases of designing a STEAME PBL L&C plan, - Achieving a solid understanding of the different sections and elements of a STEAME PBLE L&C plan, - Achieving a high level of comprehension of the importance of designing the activities, in a STEAME subject interdisciplinary manner, able to effectively address the achievement of the STEAME learning objectives set.

Learning Outcomes	Upon completion of this part, trainees are expected to be able to: - Identify the phases of designing a STEAME PBL L&C plan, - Identify and address during the STEAME PBL activities development the different sections and elements of a STEAME L&C Plan, - Address the achievement of the STEAME learning objectives in the design of STEAME PBL learning activities while adopting a STEAME interdisciplinary approach.
Competences	This part of the module aims to support trainees in advancing the acquisition of the following STEAME Teacher Facilitators Competence Framework competences: - Design and implement context-bound STEAME projects (competence 1) - Monitoring STEAME projects and reporting (competence 3) - Embed learning in truly interdisciplinary STEAME projects (competence 4) - Guide student learning in STEAME projects (competence 5)
Content, Resources and Tools	Content: Elements and sections of a STEAME Learning and Creativity Plan (.pptx file) Resources and Tools: Physical implementation: - Projector - Whiteboards Online implementation: - Digital tool for online meetings/webinars
Activities	Activity 2.1: The trainer presents in sequence each of the sections of the STEAME L&C plan explaining the context that needs to be addressed in each one and providing an example.
Estimated Time	**20 minutes**

PART 3	Practical Activities (hands-on activity) in the case of a workshop mode
Learning Objectives	This part of this module aims to support trainees in: - Developing a practical understanding of the STEAME PBL learning activities development process, - Effectively collaborating as members of a team of different STEAME subject teachers to develop STEAME PBL learning activities, - Acquiring experience in addressing all sections of a STEAME L&C plan.
Learning Outcomes	Upon completion of this practical part of the training modules, the trainees are expected to be able to: - Collaborate with STEAME teachers of different subjects to develop STEAME PBL learning activities, - Effectively address and complete all sections of a STEAME L&C Plan.

Competences	This hands-on activity aims to support trainees in acquiring/improving the following STEAME Teacher Facilitators Competence Framework competences: - Design and implement context-bound STEAME projects (competence 1) - Embed learning in truly interdisciplinary STEAME projects (competence 4) - Guide student learning in STEAME projects (competence 5)
Content, Resources and Tools	Content: STEAME Learning & Creativity Plans Hands-on Activity (.pptx) Resources and Tools: Physical implementation: - STEAME L&C Plan template (2 per team)/ (empty for filling) - STEAME L&C Plan/ (with the descriptions/instructions for each section) - A3 empty page for notes and concept map - QR codes and short links printouts (1 per team) for access to online collaboration files (L&C templates and document for notes concept map) The participants will choose if they want to work online or with the physical documents. Online implementation: - Digital tool for online meetings/webinars - QR codes and short links for access to online collaboration files (L&C templates and document for notes concept map)
Activities	Activity 3.1: The trainer briefly (5 min. max) presents the phases of the activity and assigns trainees to teams (4-5 members) caring for a diversity in the STEAME subject of the team members to the extent that this is possible. The trainer may utilise any method for the creation of teams (random selection, one STEAME subject member per team, etc.). Activity 3.2: Each team, using the available content provided (STEAME L&C plan template with section descriptions, empty STEAME L&C Plans, collaborative documents for note keeping and concept map development) designs and develops a set of STEAME PBL activities to achieve a set of specific STEAME learning objectives and record them using the STEAME L&C Plan.
Estimated Time	**35 minutes**

PART 4	Evaluation of Learning Outcomes
Learning Objectives	This part despite mainly aiming to evaluate the learning outcomes, it also aims for trainees to: - Improve their comprehension of the STEAME learning activities development process and use of the L&C learning plan template by

	being presented with and through discussing the L&C plans developed by their peers
Learning Outcomes	Upon completion of this short evaluation part, through their interaction with the outcomes developed by their peer participants and through the engagement in discussions relating to them, the participants are expected to be able to: - Effectively design and develop STEAME PBL learning activities and
Competences	The competence of the STEAME Teacher Facilitators Competence Frameworks addressed in the context of this evaluation part is the following: - Design and implement context-bound STEAME projects (competence 1)
Content, Resources and Tools	Content: For this part of the module the content to be presented is the content developed in Part 3 of this module. Resources and Tools: Physical implementation: - projector for the participants to present Online implementation: - Digital tool for online meetings/webinars
Activities	Activity 4.1: 1 or 2 teams present the STEAME L&C activities and STEAME L&C plans they have developed in the hands-on activity of Part 3.
Estimated Time	**10 minutes**

7. Reflection and Closure activity

To reflect on the module the trainer may engage participants in a discussion, enabling them, initially to freely express themselves on what they learned and what they achieved by collaborating with the peer trainees and then explore if the participants believe they have achieved several of the learning objectives of this module by facilitating the discussion through the posing questions, an indicative set of which are the following:
- Do you believe there is add-on value in the collaboration of different STEAME subject teachers in the design and development of STEAME learning activities?
- Do you feel confident in developing and designing STEAME learning activities by addressing all aspects of a STEAME L&C plan?
- Will a shared set of STEAME L&C plans facilitate the implementation of STEAME PBL learning at a STEM/STEAM/STEAME department level or subject level?