Topic: "STEAM-based Approaches for More Practically Orientated Education"

The structured course provider: T-OPPI OY

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Location of the course: Helsinki, Finland

Language: English

Teachers play a key role in STEM education. STEM education needs to begin in pre-schools, continue in primary, pre-secondary, and secondary schools and should aim to prepare young people for active participation in their future. Instead, an ideal STEM learning environment is all about asking questions and encouraging independent thinking. The best STEM lessons involve practical activities where students/kids can use their hands, whether they're designing a concept or creating and building something themselves. This way, students are far less likely to become bored or distracted, plus it is rewarding for them to have a final product to evaluate. Most importantly, STEM education is about bridging the gap between the classroom and real life.

STEAM isn't just a grouping of different subjects, it is a campaign to develop the deep scientific, mathematic and problem-solving skills that our students/kids are going to need to be competitive in the workforce. By introducing this way of thinking in the early years, we are laying the foundation for our future leaders.

In this structured course we'll be discussing STEM teaching methods, how to plan STEM lessons, the best ways to assess students in STEM and how to engage your students. We will talk about the importance of implementing the Art in the STEM concept (STEAM). The structured course participants will learn ICT tools to organize their classes

and groups, how to create a lesson plan suitable for STE(A)M method, to use ICT tools to create resources for teaching based on STE(A)M method.

Target group:

• Teachers of kindergarten, primary schools, secondary schools and vocational schools.
• Adult education teachers.
• Teachers of special needs.
• Teacher trainers.
• Career officers, educational guides and counselors.
• Headmasters/principals/managers of schools and organizations offering adult education or vocational education.

Each participant needs to bring his/her own tablet and/or laptop. We don't provide computers or tablets.

Daily   programme:
The standard programme comprises 7 days. Participants are expected to arrive one day before the start of the course and leave one day after the end. The host organization will organize cultural and sightseeing programs for the participants' free time. Some of the workshops are planned to take place in the science center with an entrance fee, which the participants will cover:

- The practical workshop at Heureka (23 euro)
- The practical workshop at Fazer (15 euro)

During the course, the participants will visit educational institutions in Helsinki to learn more about the educational system in Finland and how they implement the STEAM method. The participants will learn what is STEM and who are STEM subjects and why Project-Based Learning, Problem-Based Learning, Inquiry-Based Learning, Place-based education/learning, and Critical thinking are the keystones of STE(A)M method. The structured course is very practically orientated. The participants will know how to use different Apps to organize the classwork and to create educational resources. The participants will have hands-on activities to work with a platform that will give them real-

time insights into student understanding through interactive lessons, interactive videos, gamification, and activities.

Main topics of this course:

- Introduction to STEAM Education
- Pedagogical Approaches in STEAM Education
- What is STEAM education and What is STEAM subject
- Engineering Design Process and it's steps – Ask; Imagine; Plan; Create; Improve and Share
- ICT tools for classwork management
- Collaborative Project Planning. ICT tools

Methodology of the course:

The course is designed as an interactive process. The format of the course is didactic, experiential, and interactive along with discussions, and individual and team exercises. The focus is on experiential learning and workshop approaches, lectures and group discussions. It is presenting up-to-date knowledge, concepts, methodologies, and examples from different countries. The participants will see examples of STEM and STEAM lessons and will learn how to develop lessons implementing the STEAM. They will work on individual and team tasks to create lesson plans for teaching based on STEM method.

Sharing: Participants share experiences and expertise on the topic and learn from one another.

Collaborative workshops: Working in groups on a learning scenario, lesson plan, formative assessment, and creating learning resources to be used in their school.

Validation:

- The course participants will receive a certificate of participation.
- Europass mobility document

- Learning Agreement and Learning Agreement compliment
- Declaration of attendance

Accommodation and meals:

The structured course will take place in Helsinki, Finland. The course provider T-oppi takes care of booking the hotel for all participants and will send an InfoPack with information about airport-hotel-airport transfers, the local transport in Helsinki, and the extra fee for some of the workshops (Heureka and Fazer). Accommodation will be on BB base (7 nights).

Course fee:
Duration of the course - 7 days.
Fee for tuition and learning materials: 560 euros
(This is covered by the course fee you get with your grant: 80 euros per day).

Primary school teachers, trainers, school managers, pedagogical advisers and any other staff of educational organizations are eligible to receive an Erasmus+ grant covering all the costs including travel, accommodation and daily subsistence, cultural activities and all fees. The training course is designed to be fully funded by the Erasmus+ programme.

Billing procedure:

1. About 2 months before the start of each course T-oppi will send an invoice by email to the participants.
2. The invoice will be sent to the contact person of the school or the institution. The billing address will be the school/institution address. The name mentioned in the invoice will be the name of the participant.
3. All billing correspondence will be done by the contact person of the school.
4. The invoice can be paid by the individual teachers or by the school. The reference number of the invoice should be mentioned when paying.

Note: The taxes for the bank transfers have to be paid by the participants. In case the customer cancels their participation after paying the fee, T-OPPI OY will offer them other courses and dates.

Our quality standards:

We are committed to Erasmus Quality Standards and comply with the basic principles of the Erasmus Quality Standards. Participating organizations are also expected to comply with the basic principles when planning project activities.

Provisional program of the course:

Day 1: Introduction to STEAM Education
Morning Session (11-13):

- Welcome and Registration
- Icebreaker Activities
- Overview of the Course and Learning Objectives. Importance of STEAM Education
- Creating mixed groups.

Afternoon Session (14-16:30):

- Key Components of STEAM (Science, Technology, Engineering, Arts, Mathematics)
- Presentation of schools/participants and how they use ICT tools in teaching
- Group Discussions and Brainstorming

Day 2: Strategies for Effective STEAM Integration
Morning Session (9:30 – 13):

- Pedagogical Approaches in STEAM Education
- What is STEAM education and What is STEAM subject
- Workshop: Engineering Design Process and its steps – Ask; Imagine; Plan; Create; Improve and Share

Afternoon Session (14 – 16:30):

- ICT tools for classwork management and how to divide the students in groups
- Workshop: Collaborative Project Planning. ICT tools.
- Workshop: Designing and conducting the lesson plan based on STE(A)M method

Day 3: Technology in STEAM Education
Morning Session (9:30 – 13)

- STE(A)M education in pre-primary and primary level based on Lego Duplo
- Workshop: Constructing activities with Lego Duplo
- Teaching methods based on Augmented Reality – Augmented content
- Workshop: Practical work on the platform Augmented content

Afternoon Session (14 – 16:30):

- STEM education through MS Hacking STEM
- Workshop: MS Hacking STEM platform and tasks
- Online platform Nearpod
- Workshop: Group Project on Creating a Lesson content in Nearpod

Day 4: Engineering and Creativity in STEAM (whole day practical workshops at science center Heureka)
Morning Session (10 – 13):

- STEAM tasks for Maths
- STEAM tasks for Natural science subjects
- Team Challenges

Afternoon Session (14 – 17):

- STEAM tasks and AI
- STEAM and Engineering tasks. Engineering and Art: Kinetic Sculptures. Activity: Kinetic Sculpture Engineering
- Group Discussions and Reflection

Day 5: Arts and Creativity in STEAM
Morning Session (9-13) (lectures and workshops at Oody)

- The educational system in Finland
- The Role of Arts in STEAM. Integrating Arts into STEM Subjects
- Workshop: Science: Scientific Illustrations. Activity: Organism Anatomy Drawing

Afternoon Session (14-17) (outdoor practical activity at Suomenlinna)

- Collaborative Art and Science Projects. Art and Science
- Environmental Art. Activity: Eco-Art Installation *(Objective: Raising awareness about environmental issues. Description: Participants create eco-art installations using recycled materials, focusing on environmental themes. This activity integrates science concepts with artistic expression)*
- Exhibition of Participants' Creations

Day 6: Assessment and Evaluation in STEAM Education
Morning Session (9-13) (lectures and workshops at Oody)

- Formative and Summative Assessment Strategies
- Portfolios and Project-based Evaluation. ICT tools (hands-on activities)
- Peer Review and Feedback. ICT tools (hands-on activities)

Afternoon Session (14-16:30)

- Workshop at Fazer.
- Workshop: Planning for Assessment in Participants' Institutions (Work on a group task)

Day 7: Implementation and Action Plans
Morning Session (9:30 – 13)

- Participant Presentations: Lesson Plans and Project Ideas
- Group Discussions on Overcoming Challenges
- Creating Action Plans for Implementing STEAM in Participants' Settings

Afternoon Session (14-17)

- Q&A and Open Forum
- Course Evaluation
- Certificate Distribution
- Closing Remarks and Networking