



STEAM EDUCATION AND ENTREPRENEURSHIP

Presentation

The students' attitude towards projects that link Science, Technology, Engineering and Mathematics (STEM) has been approached from different perspectives that include the interest, the own aspirations, and capacities in STEM. In recent years, the A (from Arts) has been included in order to broaden the idea of the need for interdisciplinary work to activate learning and also to give representation to the artistic disciplines in the design of projects.

The research about the concept of self-efficacy (perception that students have about their own abilities when participating in scientific-technological activities) has allowed finding strategies to improve student's motivation and entrepreneur attitudes inside STEAM tasks. Knowing the evidence and existing strategies in this field is a useful resource to improve the capability to design learning situations by teachers.

Objectives

The aims of the course are:

- To know the main characteristics of STEAM projects
- To know the skills required for the 21st Century for both entrepreneurship and STEM.
- To know strategies and tools to develop skills and competences in entrepreneurship.
- To know examples of STEM and entrepreneurship projects in education.

Target group

The training course is addressed to primary and secondary school teachers, VET teachers, VET trainers, adults' teachers, managers, and employees of enterprises as well as social and youth workers of non-profit organization and public entities.

Language of course

This course will be provided in English. It is requested to all participants to have a level of English enough to understand the trainer and to interact and participate actively in the course.

Methodology



KA1 ERASMUS+ COURSES FOR TEACHERS AND TRAINERS
STEAM EDUCATION AND ENTREPRENEURSHIP

The methodology used in the course combines cooperative work techniques and practical tasks with the teacher's explanation of specific contents related to the objectives of the course.

The use of co-evaluation techniques is also practiced as an example of formative evaluation.

It is foreseen 4 days of practical lessons and 1 day of visit to a school or organisation dealing with the subjects of the course. Moments of socialisation have been also foreseen.

Programme

Day 1 – 4 hours

Introduction to STEAM

- Welcome meeting. Presentation of programme.
 - Introduction to the course, presentation of participants and sharing expectations
 - What is STEM?
 - Why is STEM important for education?
 - Motivation and Curiosity: Two key ingredients
 - Examples of STEM projects
 - We live in and increasingly complex world.
 - Practical exercise: tools to develop System Thinking and generate group commitment
-
- City Tour – 1 extra hour

Learning Outcomes:

- ✓ Understanding the importance of STEM Education in our current society
- ✓ Understanding the importance of incentive curiosity and exposure to science
- ✓ Learning some examples of STEM projects of school students

Day 2 – 4 hours

Students on STEAM

- Self-efficacy, self-confidence and self-concept in STEM
- Gender and its impact in STEM
- **Incorporating STEM into students' vocabulary: STEM literacy**
- Resources to evaluate cooperative work among students
- Creating a STEAM entrepreneur project (practical transversal exercise)



KA1 ERASMUS+ COURSES FOR TEACHERS AND TRAINERS
STEAM EDUCATION AND ENTREPRENEURSHIP

Learning Outcomes:

- ✓ Acquisition of gender perspectives and realities in teaching
- ✓ Understanding project evaluation systems
- ✓ Practice with a tool for analyzing interest groups and types of learners.

Day 3 – 4 hours

Entrepreneur competences for XXIst century

- The Big 13: Understanding the meaning of Entrepreneur competences
- Entrepreneur education verbs
- Entrepreneur competences passport
- Creating a STEAM entrepreneur project (practical transversal exercise)

Learning Outcomes:

- ✓ Acquisition of practices for the promotion of entrepreneurial skills in the classroom
- ✓ Understanding of interdisciplinary narrative presentation tools
- ✓ Practice with a project narrative planning and management tool.

Day 4 – 4 hours

Creation of a STEAM entrepreneur project

- Analysis of STEM / STEAM projects
- What should we take into account when designing a STEAM entrepreneur project?
- Creating a STEAM entrepreneur project (practical transversal exercise: conclusion)

Learning Outcomes:

- ✓ Consolidation and practice of skills on evaluation and self-evaluation of STEAM projects
- ✓ Practice in communicating interdisciplinary STEAM projects

Day 5 – 4 hours

Professional visit, Evaluation, Certification and Farewell

- Visit to a school
- Evaluation and certification
- Farewell activity

Learning Outcomes:

- ✓ Foster intercultural exchanges between different cultures and countries
- ✓ Go deeper into how to give and receive feedback

ESMOVIA
Training and Mobility

C/ Pintor Martínez Cubells, 2, pta. 6
46002 Valencia SPAIN
www.esmovia.es



KA1 ERASMUS+ COURSES FOR TEACHERS AND TRAINERS STEAM EDUCATION AND ENTREPRENEURSHIP

- ✓ Engage in a process of self-reflection through open conversations and new cultural experiences

Quality Commitment

ESMOVIA, as course provider, commit to respect and follow the quality standards for courses under Key Action 1:

<https://erasmus-plus.ec.europa.eu/resources-and-tools/quality-standards-key-action-1>

Fees

Course fee: 435,60 €/participant VAT included. Possibility of invoicing 360,00 €/participant if sending organization has Intracomunitary VAT number. The price includes:

This amount includes:

- Preparation for the course
- Tuition
- Training materials
- Administration costs
- Organizational costs
- Professional visit to school
- City tour in Valencia
- Farewell activity

Requirements

Minimum of 8 participants. For smaller groups, contact us.

Dates

You can find the dates of the course on this link (you have to click on "I'm interested" to see the different sessions scheduled)*: <https://school-education.ec.europa.eu/en/professional-development/courses/steam-education-and-entrepreneurship>

*The course will take place if the minimum number of participants is reached.

Please contact us for any other dates.

Courses in ESMOVIA

ESMOVIA
Training and Mobility

C/ Pintor Martínez Cubells, 2, pta. 6
46002 Valencia SPAIN
www.esmovia.es



KA1 ERASMUS+ COURSES FOR TEACHERS AND TRAINERS
STEAM EDUCATION AND ENTREPRENEURSHIP

You can also find a list of all the courses we organize in ESMOVIA on this link:
<https://www.esmovia.es/en/training-and-mobility/teachers/professional-development-courses/>

Contact

Clémence Hugon
Groups Coordinator
hugon@esmovia.es
+34 963 38 46 20
Skype: hugon_19

References

- Balka, D. (2011). Standards of mathematical practice and STEM. Math-science connector newsletter, 6-8.
- Bruning, R., Schraw, G., Norby, M., y Ronning, R. (2004). Cognitive psychology and instruction. Columbus.
- Bybee, R. W. (2010). Advancing STEM education: A 2020 vision. Technology and engineering teacher, 70(1), 30.
- Pellegrino, J. W., y Hilton, M. L. (2012). Committee on defining deeper learning and 21st century skills. C.f.E
- Ready, Rotherham. The Big 13-Enterprise Entitlement through the curriculum.
- Sanders, M. E. (2009). Stem, stem education, stemmania. The Technology Teacher, 68(4), 20-26.
- Zimmerman, B. J. (2000). Self-efficacy: An essential motive to learn. Contemporary educational psychology, 25(1)
- Zollman, A. (2012). Learning for STEM literacy: STEM literacy for learning. School Science and Mathematics
- [steam4u.eu]