

Implementing STEAM in Early Childhood Classrooms

Course Description

This course aims to support preschool teachers in integrating the STEAM approach (Science, Technology, Engineering, Arts and Mathematics) into early childhood education through creative, inquiry-based and play-oriented learning methods. Participants will explore practical strategies for encouraging curiosity, experimentation, problem-solving and creativity among young children.

Throughout the training, educators will engage in hands-on workshops, collaborative activities and guided reflections that demonstrate how STEAM concepts can be introduced in age-appropriate ways in preschool classrooms. The course focuses on developing pedagogical methods that promote exploration, observation and critical thinking while supporting children's natural curiosity about the world.

Participants will also learn how to design interdisciplinary learning activities that connect science, mathematics, creativity and problem-solving in everyday classroom practice. Special attention will be given to inclusive teaching strategies, collaborative learning environments and the development of children's transversal competences.

By the end of the course, participants will be able to design and implement STEAM learning scenarios, facilitate inquiry-based activities and foster creativity and active learning in early childhood classrooms.

Target Group

The course is designed for:

- Preschool teachers and early childhood educators
- Kindergarten pedagogical staff
- Educational coordinators and school leaders in early childhood education
- Teacher trainers and educational consultants working in preschool education
- Professionals involved in curriculum development or innovative teaching practices in early childhood settings

Participants Requirements

Participants are expected to:

- Have basic experience working in **early childhood or preschool education**
- Be interested in **innovative teaching methods and STEAM pedagogy**
- Be willing to participate actively in **collaborative workshops and practical activities**
- Have a working knowledge of **English sufficient for participation in discussions and group activities**

No prior experience with STEAM methodology is required.

Learning Outcomes and Competences

After completing the course, participants will be able to:

Pedagogical Competences

- Design and implement STEAM-based learning activities for preschool children
- Apply inquiry-based and play-based learning strategies in early childhood classrooms
- Encourage curiosity, creativity and problem-solving in young learners
- Create interdisciplinary learning scenarios connecting science, mathematics, arts and engineering

Competences aligned with DigCompEdu

Participants will be able to:

- Integrate digital and non-digital resources to support STEAM learning
- Use simple digital tools to document and present learning activities
- Facilitate collaborative learning and active participation
- Apply formative assessment strategies in creative classroom activities

(DigCompEdu areas: **Digital Resources, Teaching and Learning, Assessment, Empowering Learners**)

Competences aligned with GreenComp

Participants will:

- Promote responsible use of resources in classroom activities
- Encourage children to explore relationships between people, materials and the environment
- Develop awareness of sustainability through creative and exploratory learning
- Foster collaborative problem-solving related to environmental awareness

(GreenComp areas: **Embodying Sustainability Values, Envisioning Sustainable Futures, Acting for Sustainability**)

AGENDA

Day 1 – Introduction to STEAM in Early Childhood Education

09:30 – 10:30 Welcome and Course Overview

10:30 – 11:30 Understanding the STEAM Approach

11:45 – 13:00 Learning Through Exploration and Play

14:00 – 15:30 Materials for STEAM in Preschool (recycled and natural materials)

Day 2 – Engineering and Construction

09:30 – 10:30 Basic Engineering Concepts for Young Children

10:30 – 11:30 Building Structures with Everyday Materials

11:45 – 13:00 Stability and Balance Experiments

14:00 – 15:30 Collaborative Construction Challenge

Day 3 – Mathematics Through Hands-on Exploration

09:30 – 10:30 Early Mathematical Thinking

10:30 – 11:30 Counting and Sorting Activities

11:45 – 13:00 Patterns and Sequences

14:00 – 15:30 Spatial Thinking and Shapes

Day 4 – Science Exploration

09:30 – 10:30 Scientific Inquiry in Early Childhood

10:30 – 11:30 Simple Experiments (water, air, motion)

11:45 – 13:00 Exploring Nature Through STEAM

14:00 – 15:30 Creating Mini Science Projects

Day 5 – Creativity and Art in STEAM

09:30 – 10:30 Creativity and Imagination in Learning

10:30 – 11:30 Creative Construction and Design

11:45 – 13:00 Storytelling Through Creative Models

14:00 – 15:30 Integrating Art into STEAM Activities

Day 6 – Designing STEAM Activities

09:30 – 10:30 STEAM Lesson Planning for Preschool

10:30 – 11:30 Designing Learning Scenarios

11:45 – 13:00 Creating STEAM Learning Corners

14:00 – 15:30 Micro-Teaching Sessions

Day 7 – Presentation and Reflection

09:30 – 10:30 Presentation of Designed Activities

10:30 – 11:30 Implementing STEAM in Kindergarten Practice

11:45 – 13:00 Peer Feedback and Discussion. Course Evaluation and Certification