

**MODULE 2****Principles of Learning and Integrating STEM Education Pedagogy: Problem Solving, Critical Thinking, Capacity Building****TRAINER:** Maxime Miraillet**DESCRIPTION**

In a world of globalisation and connectivity, authentic and experiential teaching and learning is of primordial importance. Curiosity, problem-solving, critical thinking and creativity skills are crucial for the learner of today. As such, STEM project-based learning using the design cycle and applied use of technology is becoming crucial for capacity building in schools. Therefore, through the development of hands-on projects or experiments, teachers will gain a different perspective on how to engage students with syllabus content of STEM disciplines.

**LEARNING OBJECTIVES**

Participants will:

- recognize the value of concept-based teaching and learning
- understand how interdisciplinarity applies to STEM and enables creation
- acquire an understanding of how cutting-edge technology is empowering teachers
- explore the creative arc: from idea to working prototype
- recognise the potential of the Maker's movement in education and the wider world

**THEORY**

- What is the Maker's Movement and why/how to implement it in schools
- From the hammer to the laser cutter: Breaking down the hierarchy of tools
- How microcontrollers and open source tools have changed the game

**PRACTICAL/HANDS-ON**

- Introduction to CAD software: design, preparation and 3D printing of a model
- Microcontrollers: From Arduino to EZ-Builder, how to control stuff.
- Soldering: tips and tricks
- Assembly of parts of a 3D printed prosthesis with servo control
- A brief intro to Virtual Reality