DIRECTORATE GENERAL FOR
INNOVATION AND EDUCATIONAL
TECHNOLOGIES

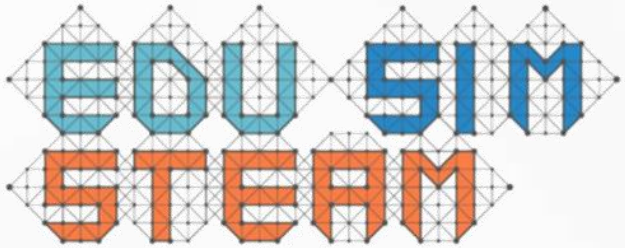
EDU SIM STEAM

Pilot Teacher Training Platform

2021

EDUSIMSTEAM | Erasmus+ KA3 Forward Looking Cooperation Project

With the support of the Erasmus+ Programme of the European Union

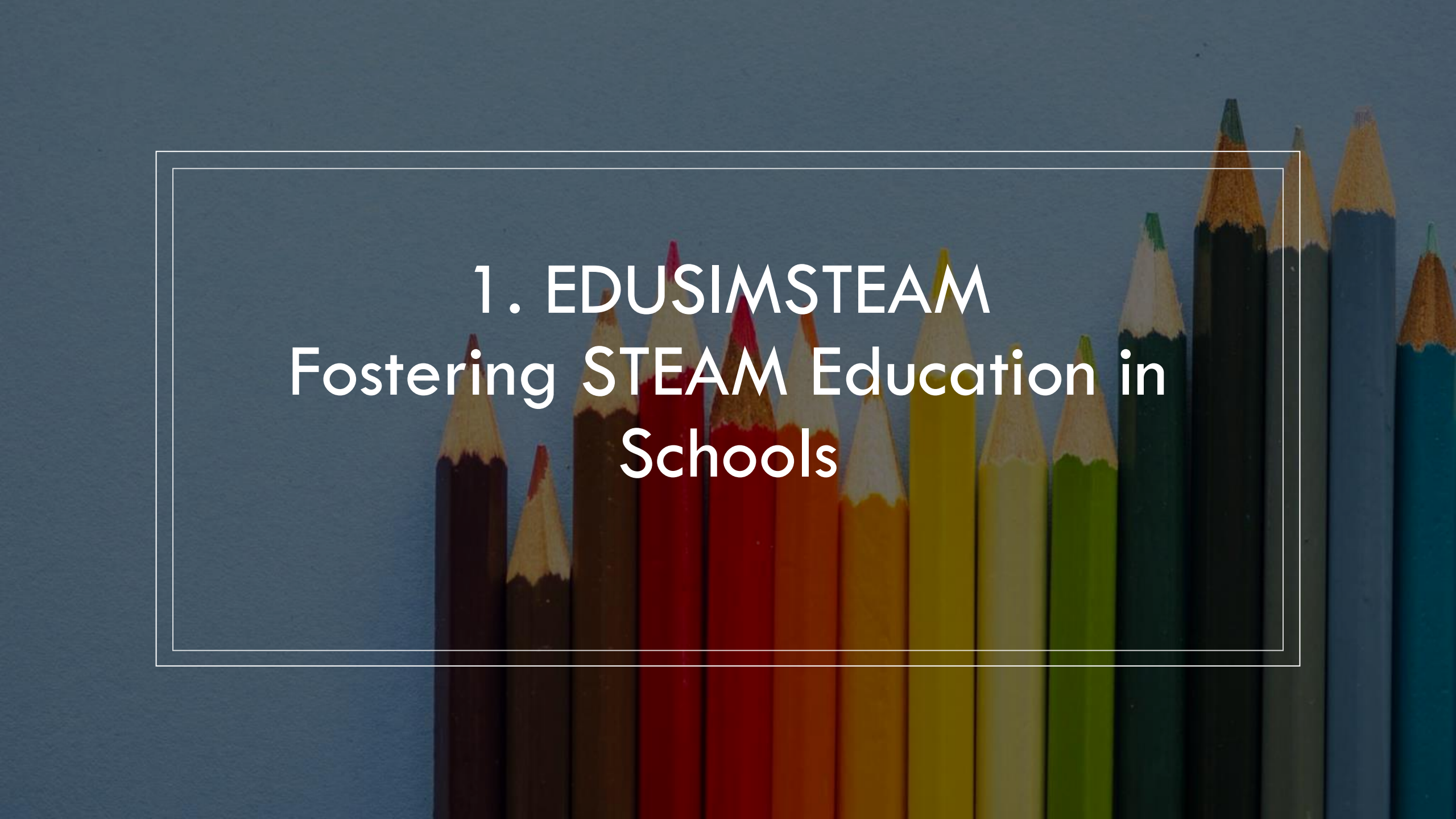


Ministry of National Education

Directorate General for Innovation and Educational Technologies

Edusimsteam Introductory Synchronous Session

September 2021



1. EDUSIMSTEAM
Fostering STEAM Education in Schools

Fostering STEAM Education in Schools

Support the establishment of an EU level action to promote a STEAM approach to education and existing curriculum

Promote an effective STEAM approach in education and enhance the related teachers' skills and curriculum

Support for policy reform

Facilitate the collection and analysis of evidence to substantiate innovative policies and practices

Project Partners

XUNTA DE GALICIA
CONSELLERÍA DE EDUCACIÓN, UNIVERSIDADE E FORMACIÓN PROFESIONAL
EDUCATION DEPARTMENT OF GALICIA

ktu kaunas university of technology 1922

Vilnius University

H2 LEARNING LTD.

BOTH SOCIAL

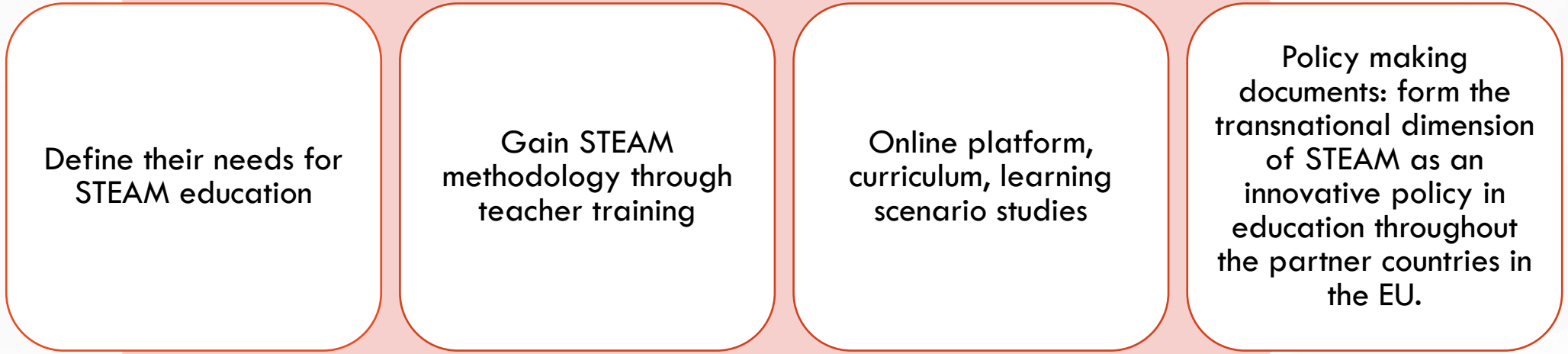
ORTA DOĞU TEKNİK ÜNİVERSİTESİ
MIDDLE EAST TECHNICAL UNIVERSITY

robotsan®
ROBOTIC AND MECHATRONIC TECHNOLOGIES LTD.

CTEM ACADEMY

Blackrock Education Centre
Ionad Oideachais na Carraige Dhuibh

Target: Teachers and Students in K-12 Schools



Project and Pilotting

Mentors

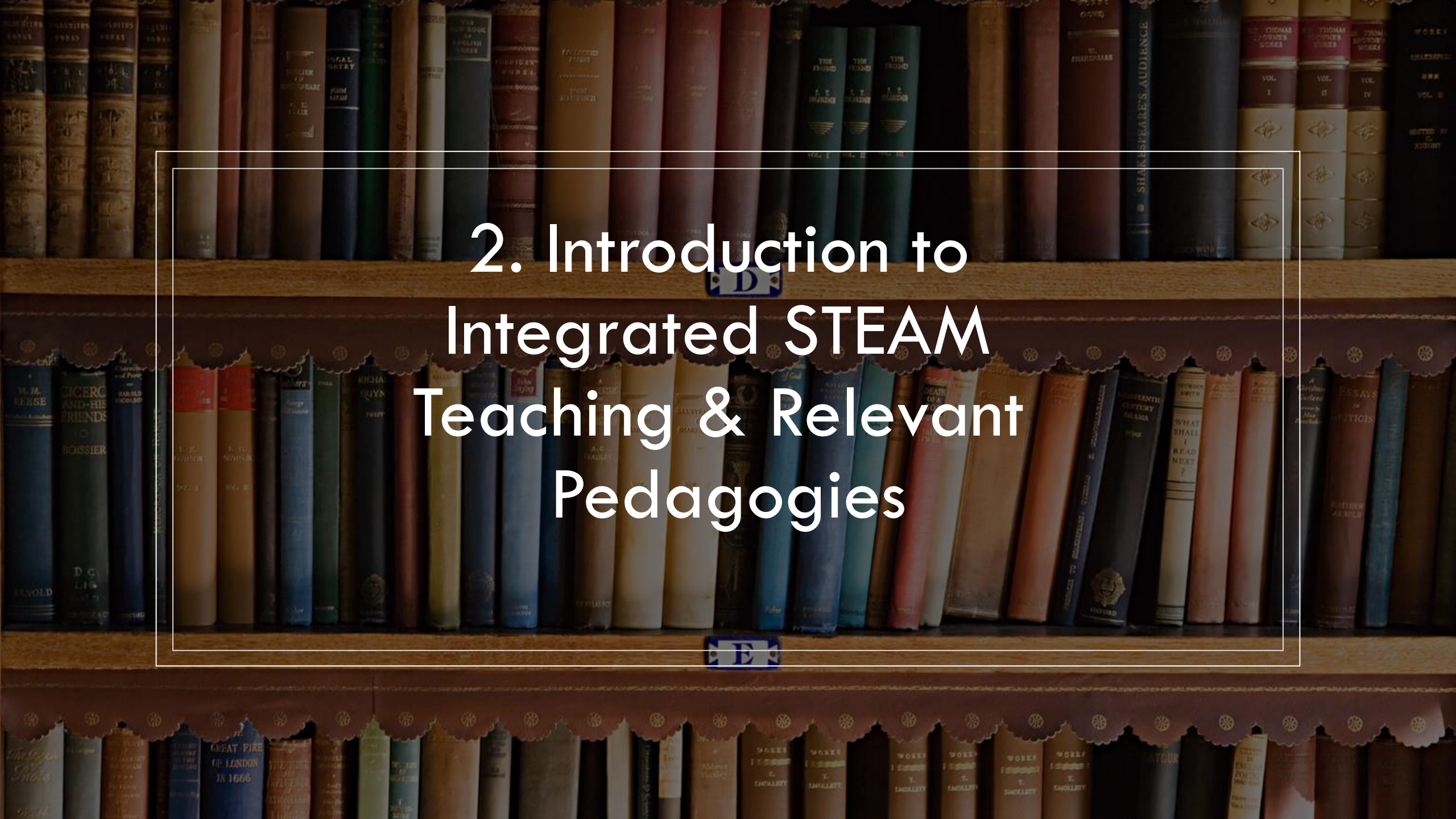
Pilotting

IdeaSim

video

Responsibilities of Mentors

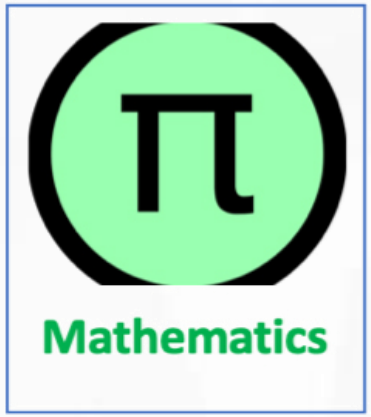
- Investigating the course
- Supporting teachers
- Sharing examples
- Defining timeline
- Sharing the platform: steam.eba.gov.tr



2. Introduction to Integrated STEAM Teaching & Relevant Pedagogies

STEAM Education

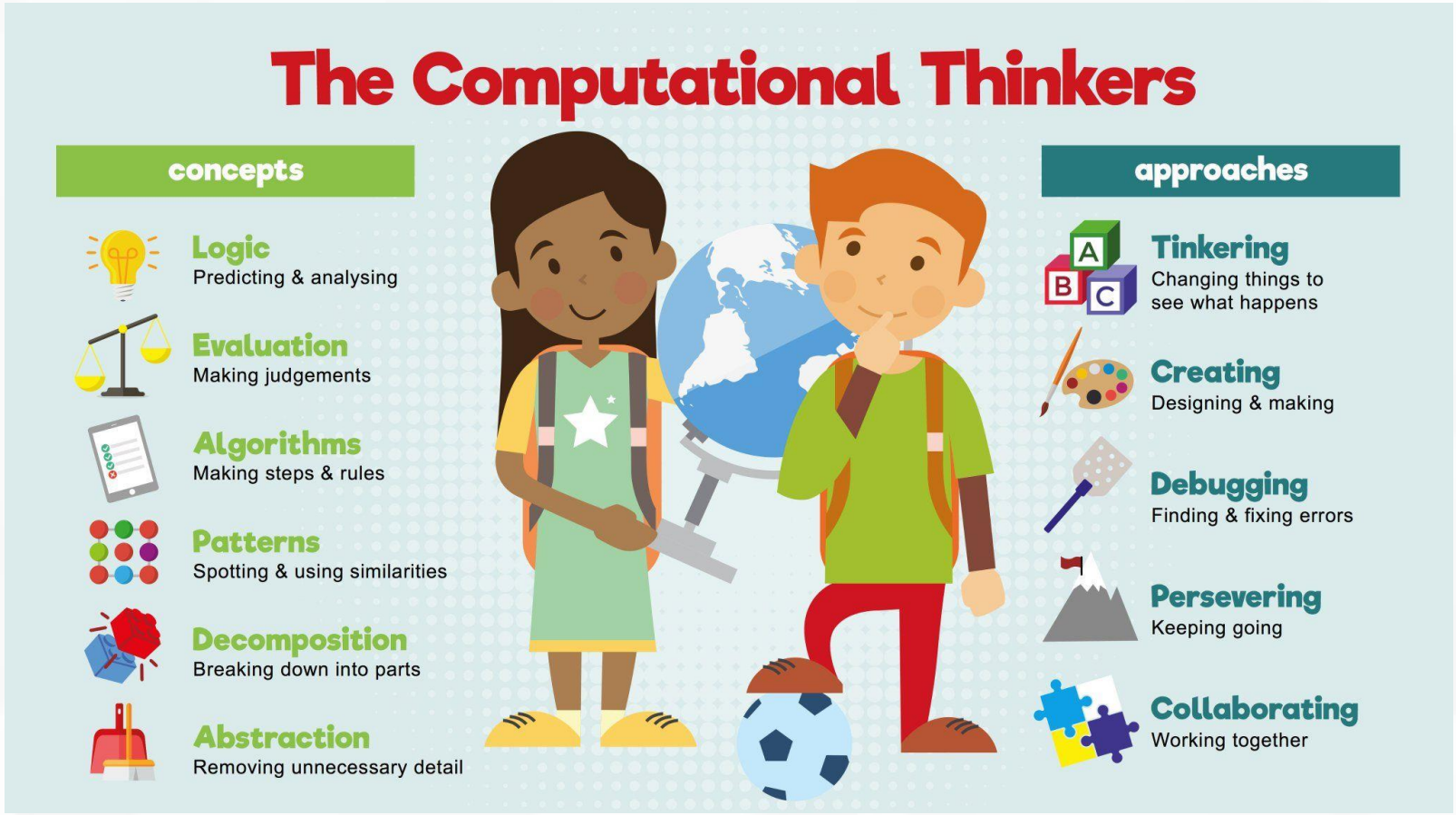
S T E A M



Learning Objectives

- Integrated subjects
- A passion for exploration and growth
- The 4 C's of 21st Century Skills
- Real-world problems
- Hands-on learning
- Teamwork
- Hands-on Learning
- Failure as a necessary part of learning

Computational Thinking



Problem-based Learning

Problem Based Learning Model

1 **DEVELOP PROBLEM**

Design a problem that reflects the learning objectives and the real world. Ensure it is complex enough to sustain inquiry for the desired duration.

2 **ACTIVATE EXISTING KNOWLEDGE**

Identify what learners do know. Activate their existing knowledge and understanding to prep learning.

3 **IDENTIFY REQUIRED KNOWLEDGE**

Prompt learners to realise what they don't know and what they need to know. This will inform their research.

4 **RESEARCH**

Experimenting, searching the web, watching videos, emailing experts, reading texts, viewing images, listening to podcasts, stories or speakers, or working through a trial and error process.

5 **CRITICALLY ANALYSE**

Review, analyse and evaluate information. Assess the validity and reliability of information and sources.

6 **REFLECT & COMPARE**

Reflect on multiple perspectives. Compare initial ideas/beliefs to new ideas/beliefs. Reflect on growth in understanding and skills.

7 **SHARE SOLUTION**

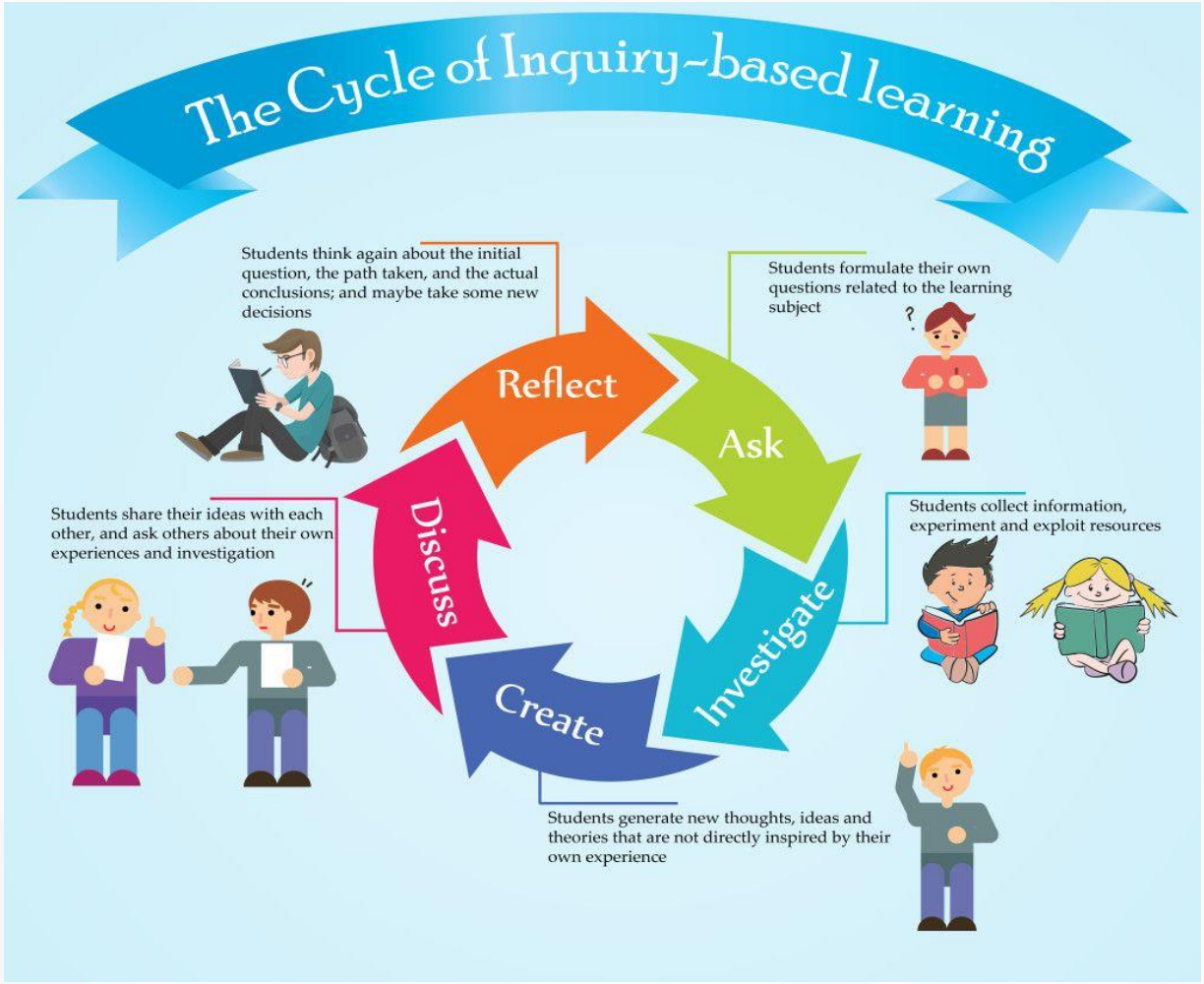
Learners may share their solution/s through presentations, written pieces, graphic organisers, video or other means.

8 **ASSESS**

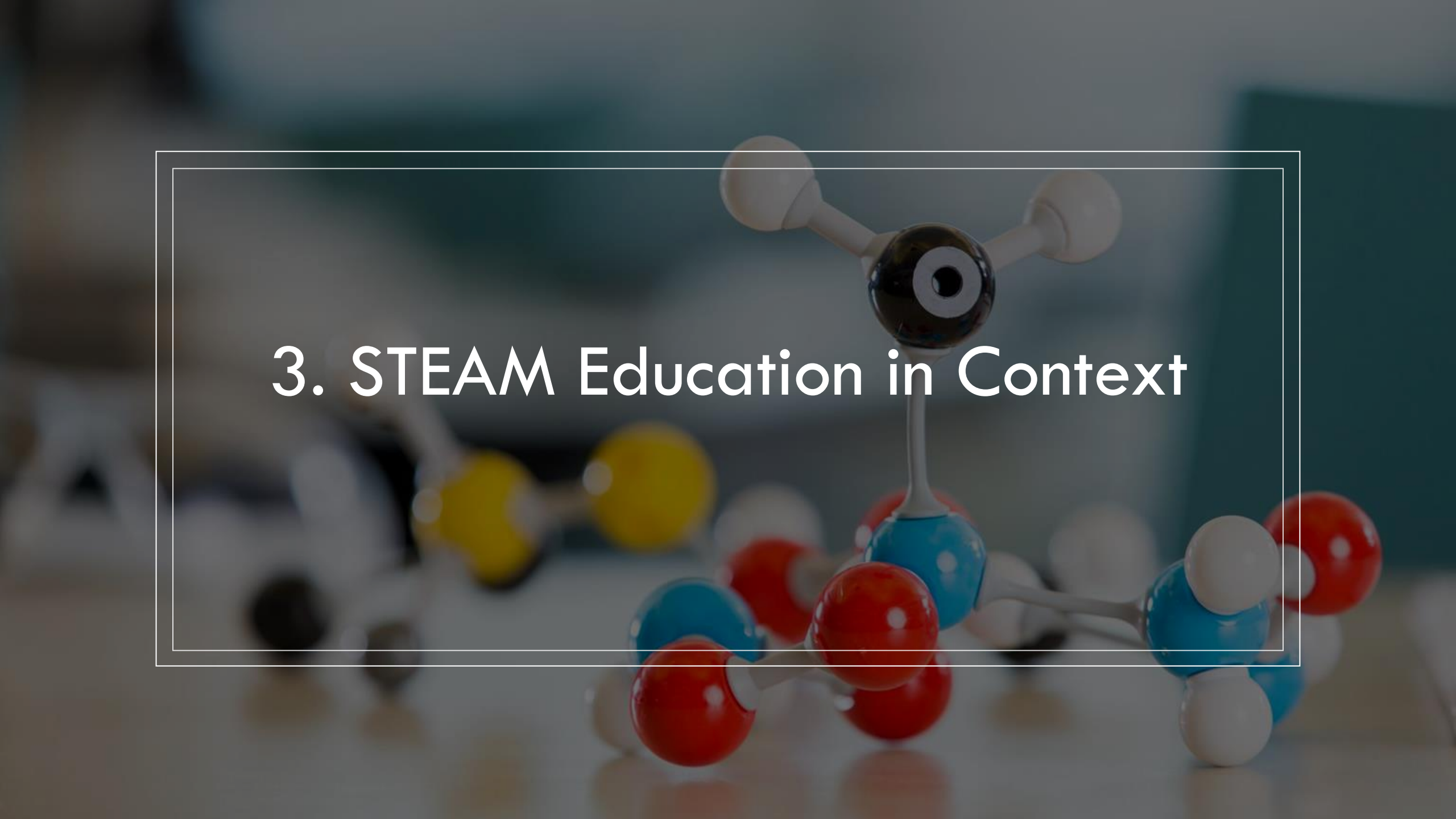
Use multifaceted assessment strategies to evaluate learners understanding and skills.

Project-based Learning

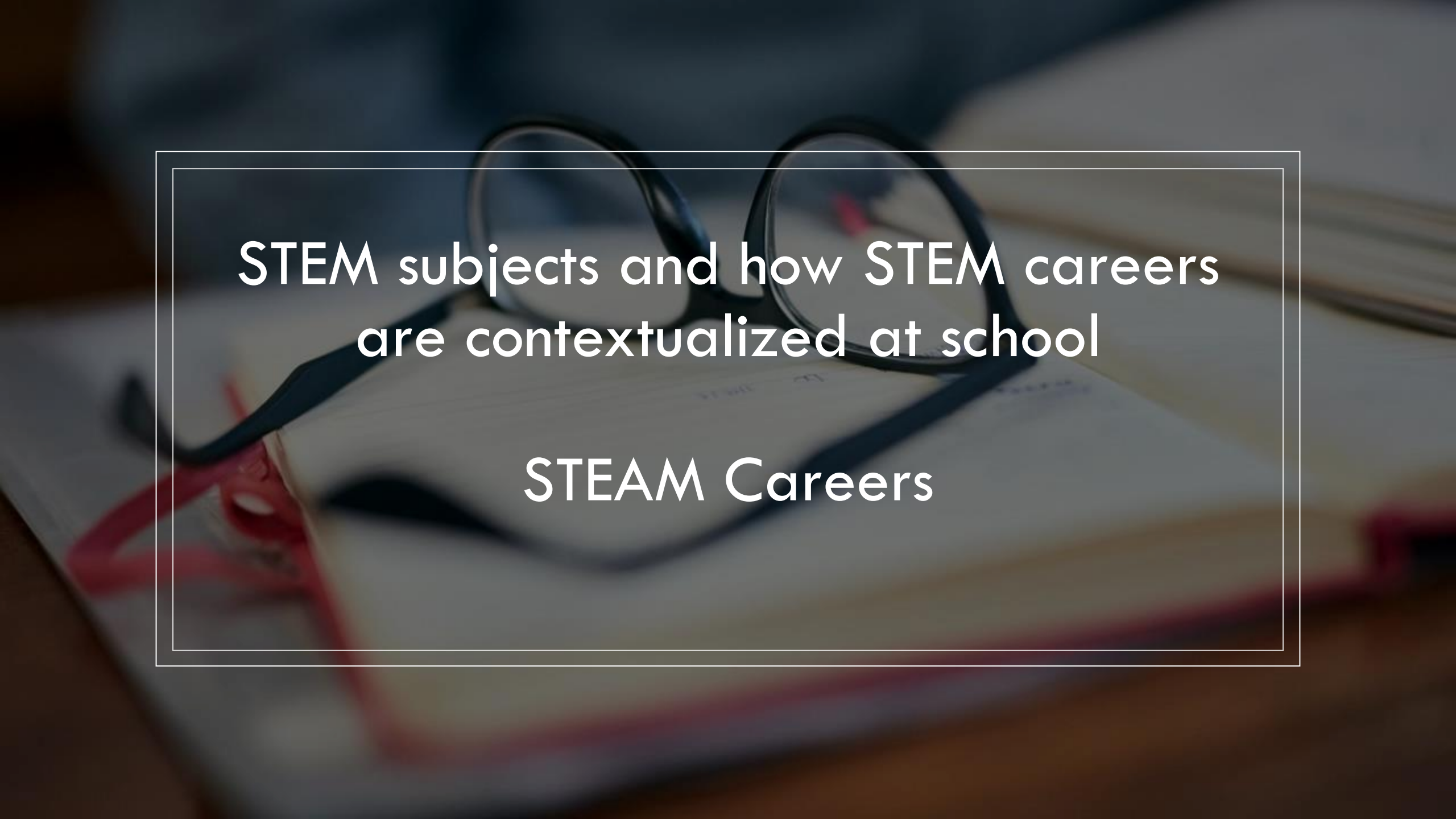
Inquiry-based Learning



5E Model



3. STEAM Education in Context



STEM subjects and how STEM careers are contextualized at school

STEAM Careers

Connection between different subjects

Through creative STEAM activities

Based on real-
life and concrete experiences

Building an authentic STEAM lesson/theories

Gives all students hands-on learning experiences

Shows them a different way to value the arts

Exposes students to the creative process

Provides a unique way to problem-solving

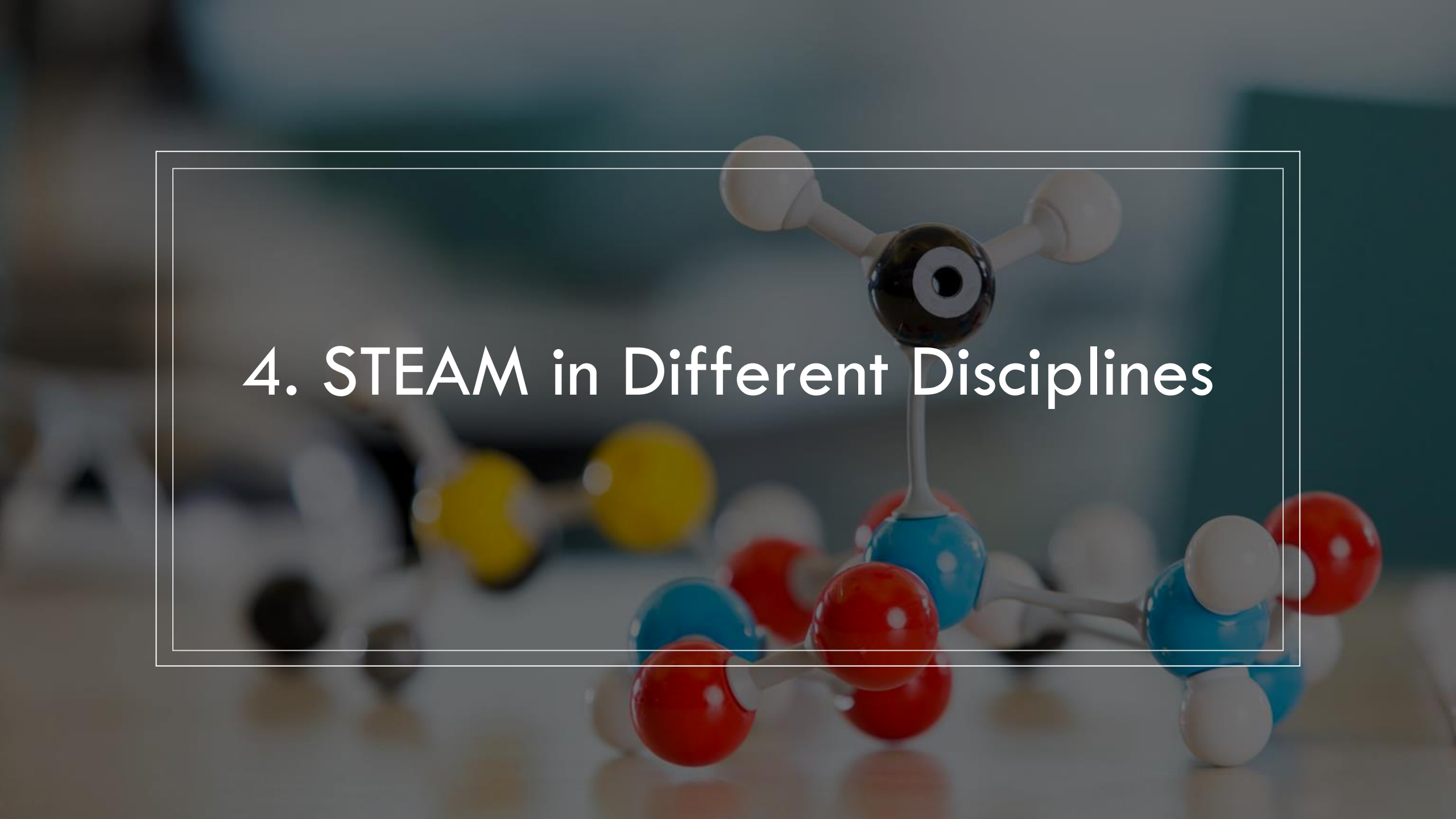
Encourages girls to explore STEAM fields

Offers meaningful collaboration

Increases critical thinking

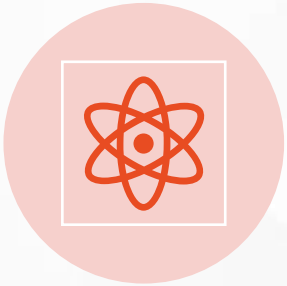
The importance of factors in learning

Incorporating related skills into the general learning environment and curriculum



4. STEAM in Different Disciplines

Discussion Questions

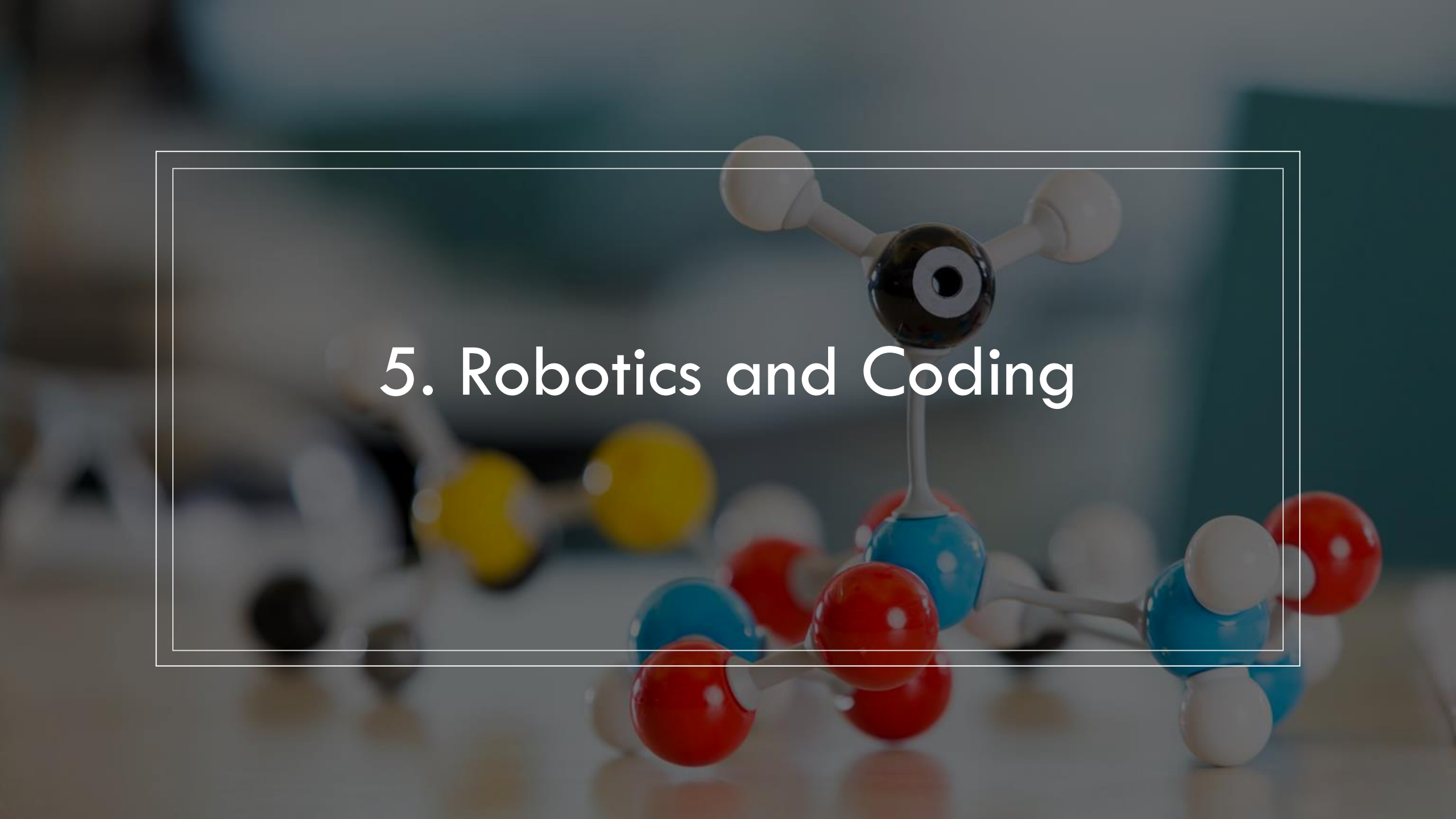


What can **STEAM** do for primary/ secondary/ high school students?

How different disciplines in **STEAM** benefit from this contribution?

How can you integrate **STEAM** education in your class activities?

How can you integrate **STEAM** education into the curriculum?



5. Robotics and Coding

Why do we need robotics in STEAM courses?

Reason 1: It serves as an intersection of all STEAM fields

Reason 2: It supports learning by doing

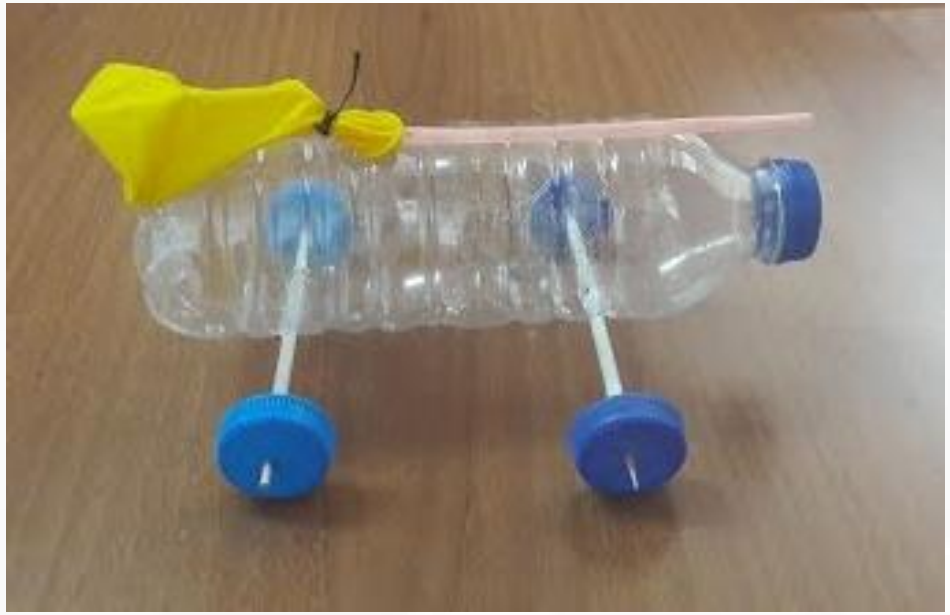
Reason 3: It is engaging

Reason 4: It is scalable

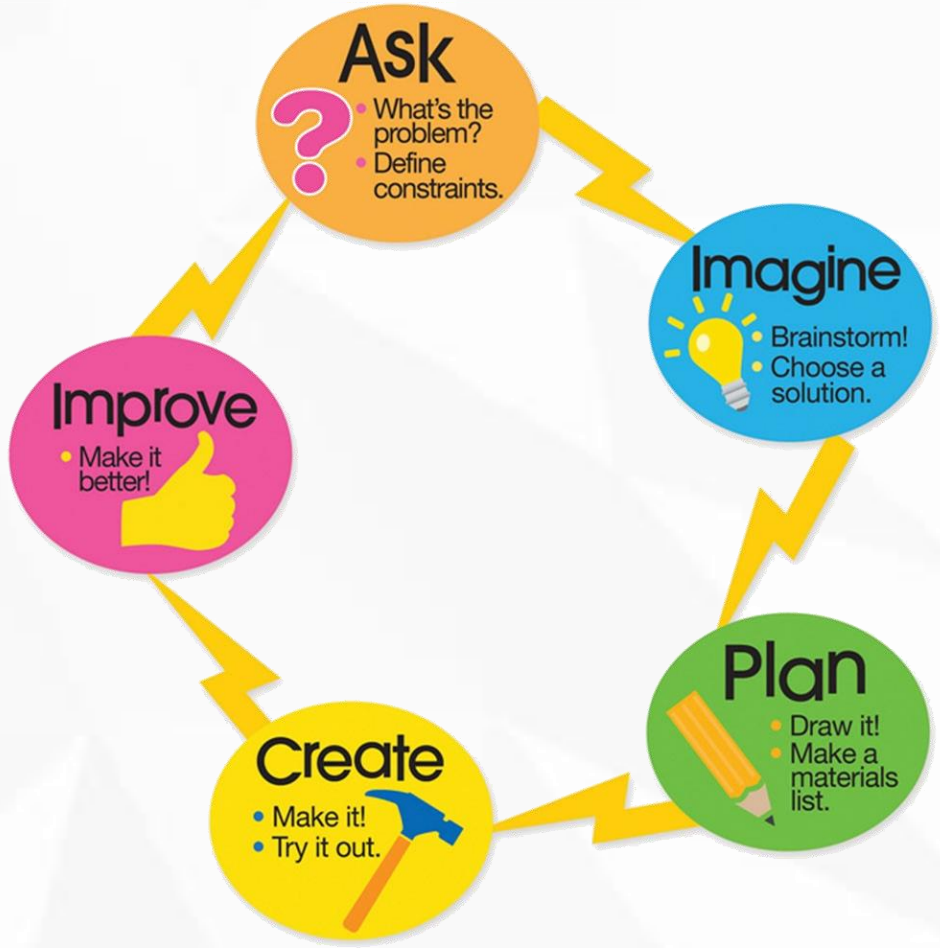
Reason 5: It is inclusive

Which one is best in STEAM education?

vs

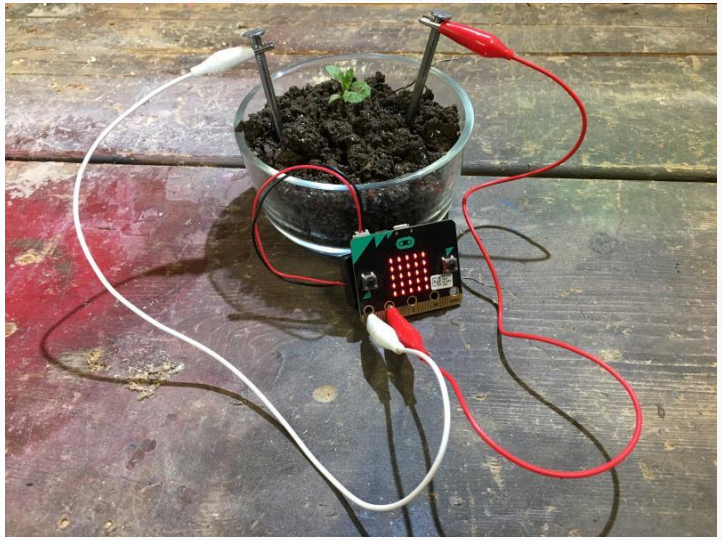


Engineering Design Process

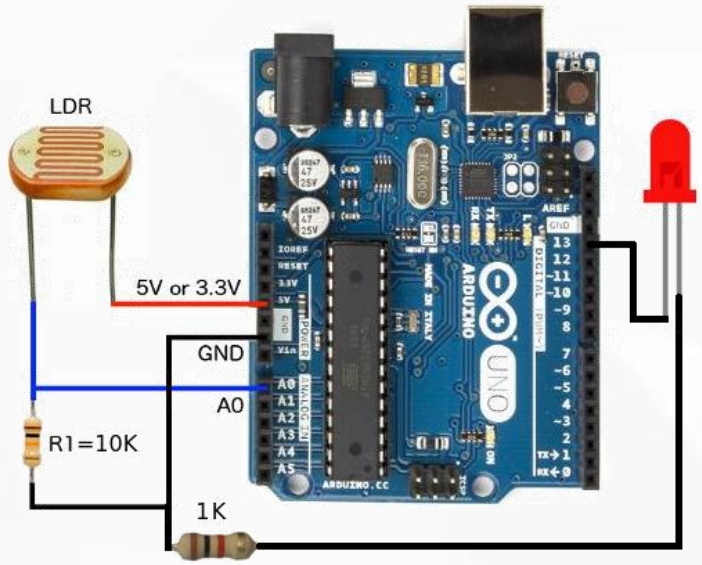


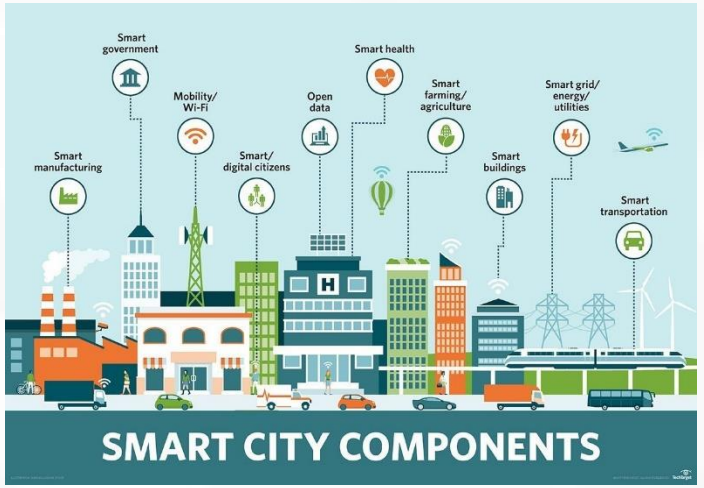
- Robot types according to their purposes
- Robot types according to physical features
- Parts of robots

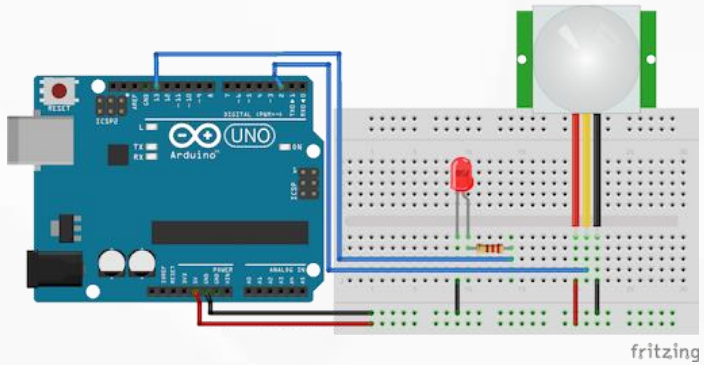
Microcontroller Boards – micro:Bit



Microcontroller Boards - Arduino







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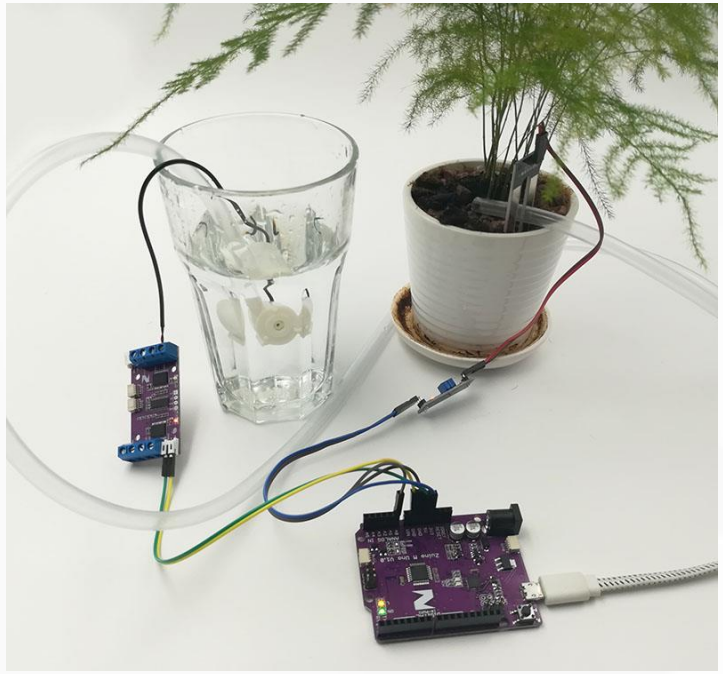

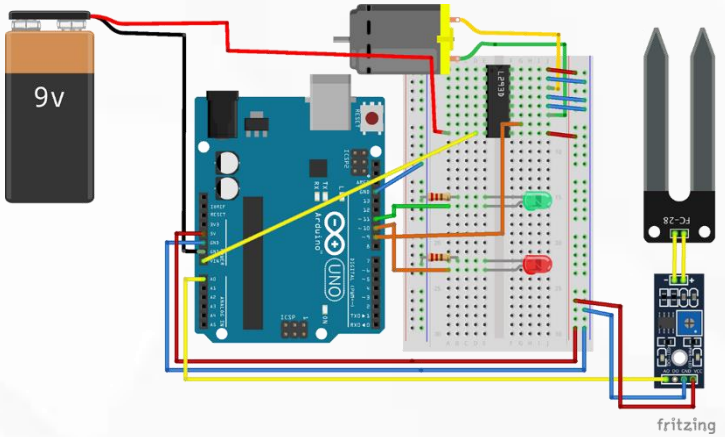

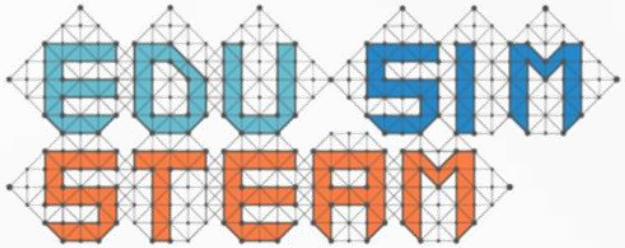

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Question & Answer

Thank you.