Code the Future
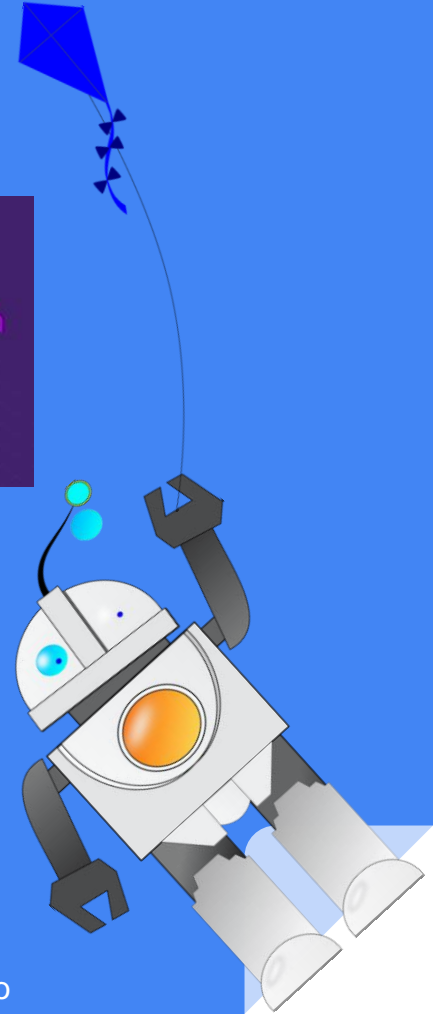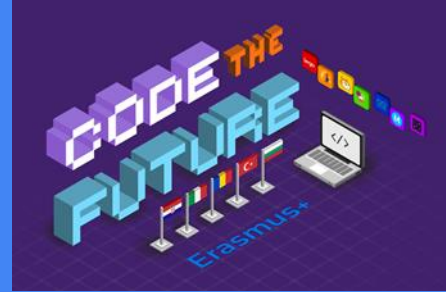
2019-1-TR01-KA229-074007
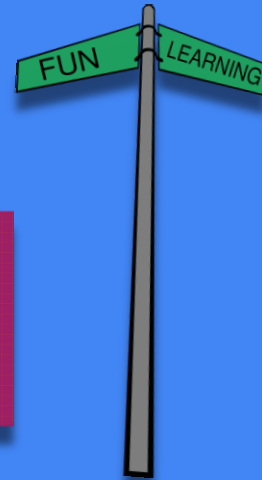
Tinkering and Robotics

What "tinkering" means ...

Tinkering is a "Learn by Doing" method

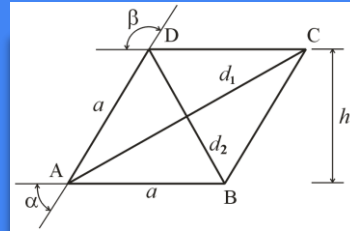**to make   learning   fun**
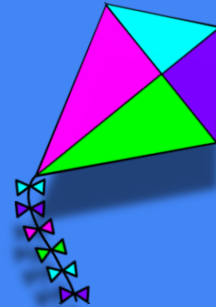
FUN   LEARNING

What "tinkering" means ...

to understand   *... just to say ;) ...*

a geometry concept ...

without knowing geometry...

What "tinkering" means

It is an educational method

for motivating students

to learn ... *S.T.E.M.*

Science

Technology

Engineering

Mathematics
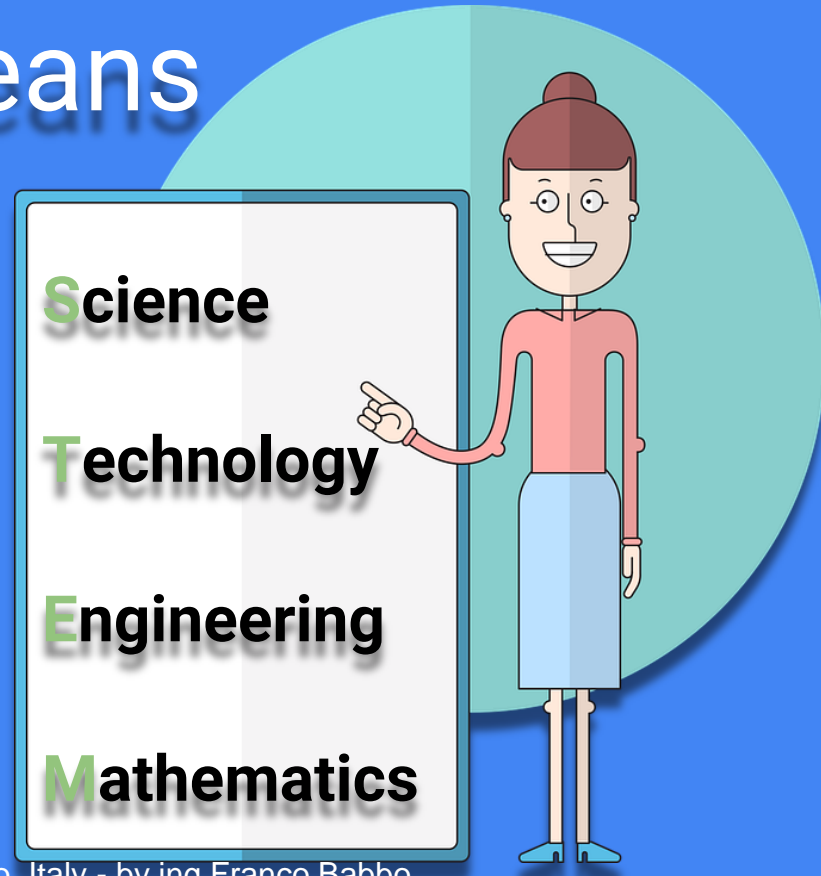
and know ...

what "robotics" means ...

... at school

to explain this …

let's take a look at

what "robotics" means …

… in our school …

Tinkering and Robotics...

overall
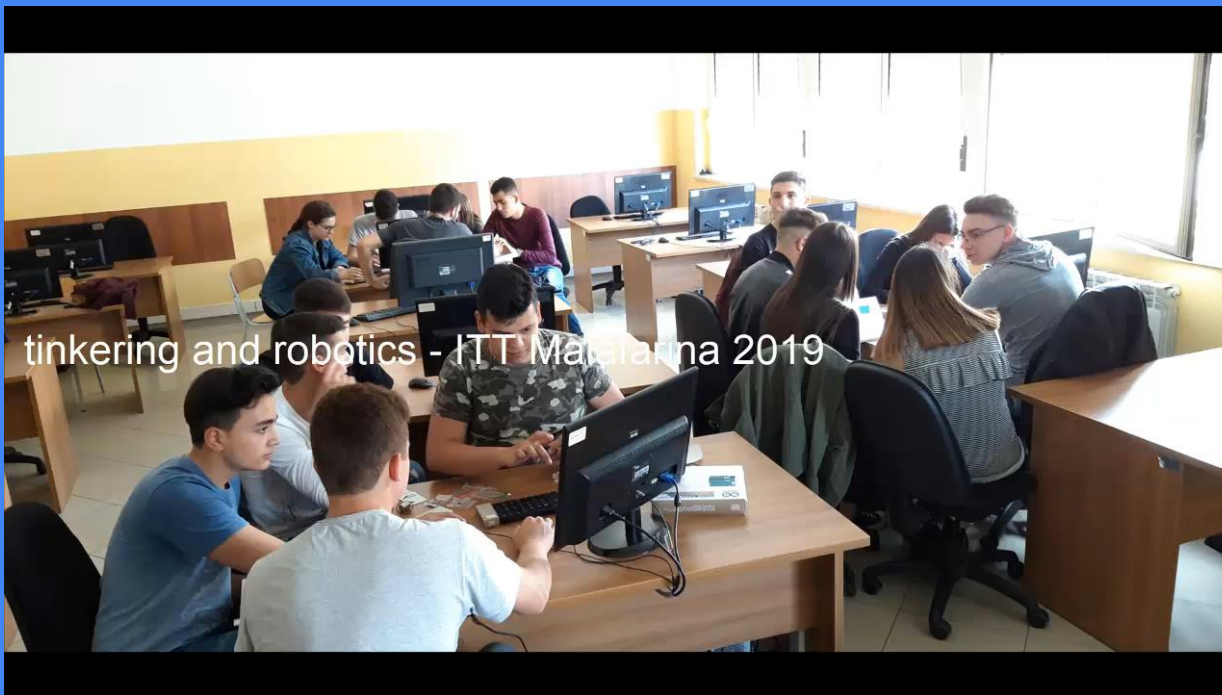
tinkering and robotics - ITT Malafarina 2019

...at ITT Malafarina

Tinkering and Robotics...

this is a Lego based prototype that solves a labyrinth

Lego Mindstorms

...at ITT Malafarina

"Code the future" - 1st Joint Staff Training 2019 - I.T.T. Malafarina Soverato, Italy - by ing.Franco Babbo

Lego Mindstorms and Arduino

these legs are produced using Lego components

but they're controlled by an Arduino electronic board

using a microphone we can make the legs dance ...

DANCING...

...at ITT Malafarina

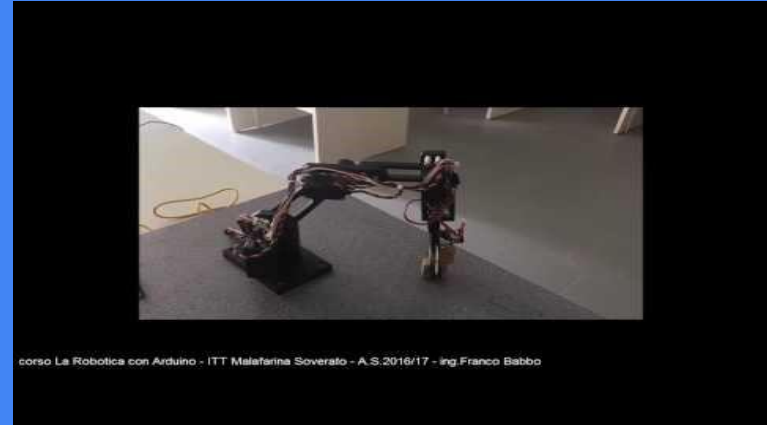*Tinkering and Robotics...*

Arduino in Robotics

this is a six-motor robotic arm

we control it using a gyroscope connected to an Arduino

so the robotic arm follows the hand movements

at the end of this presentation we will see the prototype in action in the Telecommunication lab

corso La Robotica con Arduino - ITT Malafarina Soverato - A.S.2016/17 - ing.Franco Babbo

...at ITT Malafarina

Arduino in Robotics

this is an example of a real time interaction between an Arduino board and a computer

using a gyroscope connected to an Arduino board we can control the movement of a 3d object on the screen

the draw is obtained using the Processing software

...at ITT Malafarina

Tinkering and Robotics...

in this Arduino board based system we can control the rotation of an asyncronous 1000w motor using a smartphone

Arduino in Robotics

...at ITT Malafarina

Tinkering and Robotics...

this is a domotic home Arduino based prototype

we can:

- **turn on and off lights through a proximity sensor**
- **play and stop music through proximity sensors**
- **control some applications using an Internet browser**

we have developed it for the thirty-year anniversary of our institute

at the end of this presentation we will see the prototype in action in the Telecommunication lab
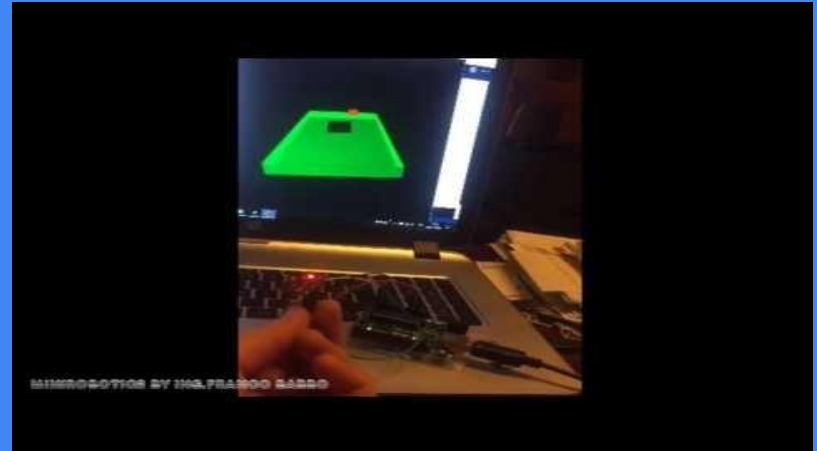
Arduino in Domotics

...at ITT Malafarina

Tinkering and Robotics...

Lego and Arduino in Robotics

this is the 3rd step of an Erasmus project *"smart-i"*

It's a robotics irrigation system

when a plant needs water sends a radio signal to the robot that recognizes and irrigates it

the robot stops irrigating when the plant needs no more water and sends a second radio signal

this prototype will be ready by next year on March

many other functionalities will be implemented ...

at the end of this presentation we will see the 4th step version of it in the Telecommunication lab

...at ITT Malafarina

Lego and Arduino in Robotics

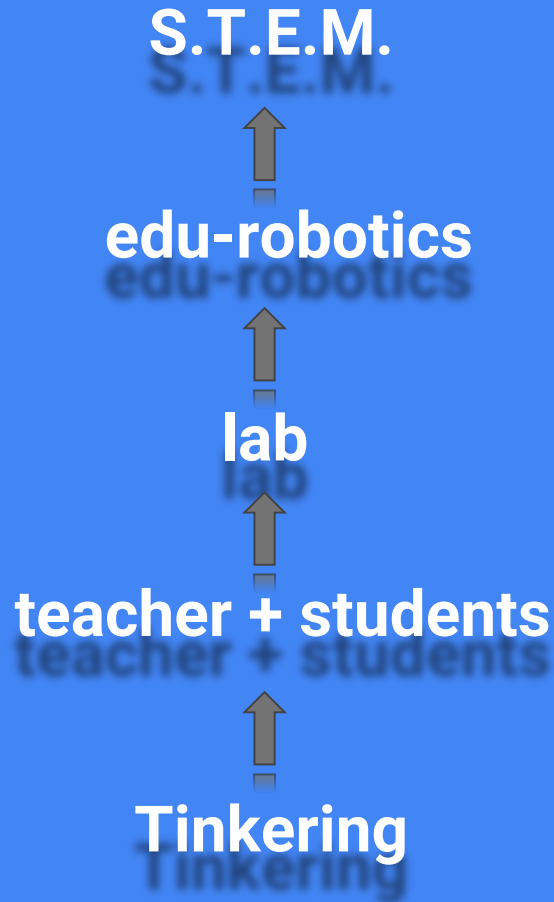**S4A**

Scratch for Arduino

This is an example of interaction between the computer and the real world using S4A software and the Arduino board

"Code the future" - 1st Joint Staff Training 2019 - I.T.T. Malafarina Soverato, Italy - by ing.Franco Babbo

...at ITT Malafarina

S.T.E.M.

↑

edu-robotics

↑

lab

↑

teacher + students

↑

Tinkering

thanks for your attention ...