Case Study Title:

Smart irrigation system based on Arduino

Problem Backgound

Many students consider that the STEM subjects are boring and/or uninteresting and this limits their participation in STEM activities and stop them in pursuing a STEM related career.

STEM Topics Involved

Physics	■ ■ ■ ■ □ □ □ □ □ □
Maths	■ ■ □ □ □ □ □ □ □ □
Biology	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
Chemistry	■ ■ □ □ □ □ □ □ □ □
Technology	■ ■ ■ ■ ■ ■ ■ ■ ■ ■

Pedagogic Methods Suggested

☐ Lecture	☐ Story Telling
■ Problem Based Learning	■ Peer Instruction
■ Inquiry Based Learning	☐ Simulation
■ Project Based Learning	☐ Role Playing
■ Direct Instruction	☐ Debate
■ Collaborative Based Learning	■ Flipped Classroom Approach
☐ Game Based Learning	

RoboSTEM

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Solution

The proposed solution is an activity that is attractive for students and, in the same time, raises their interest in STEM objects – watering plants with the help of technology.
The methodology include the development and use of a smart irrigation system based on an Arduino microcontroller, a water pump and a soil moisture sensor. A team of students will collaborate to assembly, install, programme, test and use the irrigation system

Equipment & Materials Required

- Arduino board
- Arduino IDE software
- Micro water pump
- Soil humidity sensor
- Breadboard, jumpers
- Water hoses, connectors vessel for water
- Plant pot, soil, plant
- Power supply
- Cutter, hand tools

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Assembly Instructions

1. Wire Arduino, sensor, pump
2. Connect the pump, water vessel and plant pot with hoses
3. Arduino Programming
4. Start using the irrigation system

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