Pubblicata su *Global Junior Challenge* (http://2017.gjc.it)

Paese, Città/Regione

Paese:
Italy
Città:
Rome

Organizzazione

Nome dell'ente o associazione:
Marymount International School of Rome
Contesto dell'ente o dell'associazione che presenta il progetto:
School

Legge sulla privacy

Consenso al trattamento dei dati personali
Acconsenti al trattamento dei dati personali?:
Autorizzo la FMD al trattamento dei miei dati personali.

Tipo di progetto

Educazione fino ai 15 anni

Descrizione del progetto

Description Frase (max. 500 characters):

Students, using 3D printers and laser cutters, created a model of an area of Italy (it can be done with any other area of the world, of course). The most important part students had to work on is not the surface but the layers of rocks below ground level: they reproduced the faults where two layers of rocks meet. Then, using a little motor (12 Volts, DC) connected to one of the layers, they simulated the presure of one layer on the other one: the pressure increases, slowly yet relentlessly, as it is controlled by a knob (a potentiometer). When the pressure is enough and reaches the trigger point, these two layers of rocks slide and the

pressure is released, altogether, which makes the soil shake. Students also added sensors that measure the pressure and the amount of shaking. This interesting and educational project involves art (3D design, coloring), science (geology), math (measuring pressure and scaling it), technology (using motors, wires, Arduino), and engineering (putting the project together): a full STEAM project!

Project Summary (max. 2000 characters):

Full description of the project: students design on TinkerCad and build (with 3D printers and/or laser cutters) landscapes
divided into two faults. They attach one fault to a servo motor or DC motor. The motor is powered by
a power supply or battery and its power is controlled by a potentiometer. By adjusting the power
sent to the motors, students recreate earthquakes (from which Italy has been affected this year!) and
understand how the tectonic plates and faults work. Moreover, students measure the amount of
shaking by using an Arduino and a tilt sensor. They also use LEDs to visually show how much shaking
has been generated (the equivalent, in small scale, of the real earthquake scales). This is very educational
and helps the students to better understand what has happened to the homes affected by earthquake and why. It educates the kids on a part of the Middle School science curriculum and
helps them to deal with the amount of destruction they experienced.
Students also have time to look at how different structures behave during earthquakes (buildings,
bridges, etc. made with 3D printers): a core part of the Maker and FabLab movements is thinking and
designing to help humanity, and make the world a better place. Students try to come up with an
idea to build safer structures!

Da quando è funzionante il vostro progetto?

2016-10-01 00:00:00

Obiettivi ed elementi di innovazione

This interesting and educational project involves art (3D design, coloring), science (geology), math (measuring pressure and scaling it), technology (using motors, wires, Arduino), and engineering (putting the project together): a full STEAM project! It teaches students how earthquakes work and it helps them to process with what happened to them and their homes, by better understanding what cause these terrible events.

Risultati

Describe the results achieved by your project How do you measure (parameters) these. (max. 2000 characters):
Students learn how tectonic plates work and also learn about 3D printing, electronics, laser cutting, Arduino programming and how sensors work.
How many users interact with your project monthly and what are the preferred forms of interaction? (max. 500 characters):

Students from Middle School and the first two years of High School worked on this project (about 200),

Sostenibilità

What is the full duration of your project (from beginning to end)?:
Meno di 1 anno
What is the approximate total budget for your project (in Euro)?:
Meno di 10.000 Euro
What is the source of funding for your project?:
Finanziamenti pubblici o privati
Il progetto è economicamente autosufficiente?:
No
Since when?:
2017-07-01 00:00:00

Trasferibilità

Has your project been replicated/adapted elsewhere?:
Sì
What lessons can others learn from your project? (max. 1500 characters):

This is a good example of how to use technology to enhance and enrich other school curriculums (science, math, social studies, art).

Are you available to help others to start or work on similar projects?:
Sì

Informazioni aggiuntive

Allegati:
Earthquake Project [1]
Arduino robot sensor stampa 3D printing laser cutter cutting technology math science geogreaphy earthquakes [2]

Collegamenti
[1] http://2017.gjc.it/sites/default/files/earthquakes.jpg
[2] http://2017.gjc.it/it/keywords-separate-commas/arduino-robot-sensor-stampa-3d-printing-laser-cutter-cutting-technology