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Home > Earthquake Simulator

## **Project Location**

Country: Italy City: Rome

### Organization

Organization Name: Marymount International School of Rome Organization Type: School

### **Privacy Law**

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# **Project Type**

Education up to 15 years

### **Project Description**

#### 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

#### 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!

# How long has your project been running?

2016-10-01 00:00:00

### **Objectives and Innovative Aspects**

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.

### Results

Describe the results achieved by your project How do you measure (parameters) these. Students (max. 2000 characters):

How many users interact with your project monthly and what are the preferred forms of interaction? (max. 500 characters): Students

(about 200),

## **Sustainability**

What is the full duration of your project (from beginning to end)?: Less than 1 year What is the approximate total budget for your project (in Euro)?: Less than 10.000 Euro What is the source of funding for your project?: Grants Is your project economically self sufficient now?: No Since when?: 2017-07-01 00:00:00

## Transferability

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

This is a good example curriculums (science, m

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

### **Background Information**

Attachments: 🖹 Earthquake Project 🛯

Arduino robot sensor stampa 3D printing laser cutter cutting technology math science geogreaphy earthquakes [2]

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[1] https://www.gjc.it/sites/default/files/earthquakes.jpg

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