



Global Junior Challenge

Marymount students participated in the 8th Edition of the Global Junior Challenge on October 25 and 26, 2017!

The Global Junior Challenge is the international competition that rewards the innovative use of technology for education and social inclusion. It takes place every two years and is a unique opportunity to reflect on the importance of the challenges posed by 21st century education and the role of technology in didactic innovation, social innovation, development and the reduction of world poverty.

About 5,000 schools and universities applied but only less than a hundred were chosen as participants: Marymount International School Rome was one of them! Not only did our Middle and High School students attend the event as visitors, but they also had the chance to present their projects to the press, televisions and the thousands of people who visited the Global Junior Challenge!

The projects we took to this international event are the Line Follower Cars and the Earthquake Simulators. A Line Follower Car is a vehicle capable of driving itself: it follows a black line on a white surface. This turned out to be a very educational and complex project which entailed the study and understanding of many academic topics. Students learned how to 3D design the chassis of their cars and how to 3D print them. While this is a very important process because it teaches the students how to take something from the world of ideas into the world of reality and the tangible, other students chose to laser cut their chassis using compressed cardboard or light wood. It has been very interesting and educational for the students to compare and contrast the two approaches through the lens of engineering. In addition, students worked on choosing the proper wheels for their motors: they discovered that keeping the same amount of revolutions per minutes, which their motors provided, a bigger wheel allows something go faster ...but it also requires a higher angular momentum, hence more powerful motors! By experimenting like real engineers students had to find the right balance between wheels and motors.

Secondly, students learned about the electronic components required to put together this project, namely: LiPo batteries, voltage regulators, breadboards, IR sensors, motor drivers, motors and Arduino Nanos. By doing so, they also learned about voltage, current, electric signals and how to use oscilloscopes, multimeters and balanced battery chargers.

Finally, our students worked on the C++ code required by Arduino to process the information from the IR sensors and turn that into instructions for the motor drivers.

The other project our students presented at the Global Junior Challenge is the Earthquake Simulator. By using 3D printers and the laser cutter, students created different kinds of buildings, including the Colosseum, and the ground below them. Then they made an eccentric motor (a motor with a decent weight attached to it) to reproduce the vibrations generated by earthquakes and study their effects on the buildings. In order to regulate the amount of vibrations, therefore the intensity of the earthquake, students placed a potentiometer between the motors and the batteries (the power supply). They also added Arduino boards and tilt sensors to measure the amount of shaking and a small monitor to display the aforementioned earthquake intensity. This interesting and educational project involved art (3D design, colouring, gluing), science (geology), math (measuring vibrations and scaling them), technology (using motors, LEDs, wires, Arduino, etc.), and engineering (putting everything together): a real STEAM project!

The chance that the Global Junior Challenge offered our students is really invaluable: they had the opportunity to talk about their projects in many interviews with the press and in front of cameras. They also saw the projects presented by the other schools and universities which had been selected like us and talked to their peers from these other schools about what they do and learn, exchanging experiences and knowledge!

Finally, a tour to the "Museo Civico di Zoologia" was the perfect way to end this truly unforgettable day!

Many thanks go to the teachers who chaperoned with me, Ms Canepa, Ms De Paoli and Mr Southwell, and to everybody else who helped organize this beautiful event.

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