

STEM event by Alex M

General event idea

On Wednesday, some Westbourne pupils and I went to a STEM event to compete against two other schools. We were given a topic of problem and were asked to solve it using an invention that we would design and make using items that we could buy from a shop. The shop consisted of different assortments of simple electronic circuit items, eg: buzzers, motors and wires and other construction materials like plastic and tape. We were given a budget of faraday (a made up currency for this event) and were told to use it wisely to purchase items as we would only get 50% back. Different roles were assigned to different people, eg: an accountant, electronic manager and safety manager. I was given the role of project manager. The topic of the problem was about helping our local roads and drivers. We decided that a good problem to use would be how water builds up from rainfall. It was a very common problem due to how water freezes and becomes slippery and also how drivers' tires get stuck and swerve. We named our invention 'The Suckbot 3000'.

The invention

The road would be curved to allow water to easily flow to the sides into a ditch to avoid blockage. The rails of the road would be slightly in front of the ditch so that drivers would not collide with the invention themselves. The invention would sit above this ditch firmly fixed into the ground. The device had a moisture sensor to detect when it was time to empty the ditch. The moisture sensor consisted of two metal nails connected to the main internal circuit. When the water touched the nails it would complete the circuit turning it on.

The machine had a normal battery cell, an LED, a moisture sensor, a side water collection tank, the sucking device connected at the bottom of the ditch and an external solar panel. The LED was there to let technicians know if the machine was receiving a proper power flow. If the LED did not turn on when the moisture reached the desired level, the technicians would know if the sucking device wasn't receiving power and would be able to quickly be fixed.

The water tank on the side was where the sucked water would collect. A second moisture sensor was placed at the top of the tank along with an LED connected to the main cell with a parallel circuit. When the tank was filled the LED would light up, letting us know when the tank would need to be replaced and drained. The tank was able to easily detach to be transported to other areas, such as for agricultural purposes like farms or greenhouses.

The solar panel was in place to charge up the main fuel cell and to temporarily replace the fuel cell if a malfunction occurred. The LED would shine much dimmer than normal when the cell went offline, giving technicians a sign to come and fix it.

The nozzle of the sucking device would be placed at the bottom of the ditch to get rid of all water. It would pump water directly to the side tank. The front of the machine had a maintenance panel for easy access to the interior circuit for repairs.

Presentation of the invention

After the device was crafted, we would be sent up to the front to present the device and give some details. Everyone was instructed to speak about the project and no one person was allowed to take over the presentation. Unfortunately, our project did not win. The judge of the

challenge stated that the main reason for the other's teams victory was because of their excellent presentation of the device and the level of detail conveyed within the presentation.

Overall I think that the event was extremely fun but challenging and I think that the entirety of our team was able to take away a new skill or idea from the event. Our team being on our own and having to manage funds, technical issues and ideas was a great way to force us out of our comfort zone and work together with our teamwork and hardworking minds to create an invention.