

The Adaptive Rowing Machine team completed the Potato Power outreach activity on Friday, March 24, at Spring Harbor Middle School in Madison, WI. Spring Harbor Middle School has a minority enrollment of 44%. Specifically, 16% of students are Hispanic/Latino, 10% are African American, 10% are Asian or Asian/Pacific Islander, and 8% are multiracial. Our activity was conducted in a seventh grade science classroom that consisted of approximately 15 students. We gave a presentation on Biomedical Engineering and explained the circuit terminology and background information necessary to complete the main activity, which consisted of creating a circuit powered by potatoes that could light up an LED. The classroom split up into groups of two to three students so that they could collaborate with each other during the activity. Each group was tasked with finding the voltage created by a single potato and determining how many potatoes it would take to light up a 2.1 V LED. Additionally, the activity challenged students to figure out how to attach multiple potatoes together to light up the LED since one potato was not sufficient to power the light.

Because our target student population was middle schoolers, we focused our activity on the brainstorming and creative-thinking aspects of engineering. During our presentation, we asked the students questions about their experiences with and prior knowledge of Biomedical Engineering. For our activity, rather than walking the students through each individual step and showing them exactly what to do, we allowed the students to creatively problem-solve how they could wire multiple potatoes to create enough voltage to power an LED. Throughout the activity, we walked around and asked the students if they needed help and asked them leading questions to try and get them on the right track instead of simply telling them the solution.

We did not have any irregular constraints that we had to abide by while completing our outreach activity. Overall, the audience reacted positively to our activity. There were some students that were more eager to participate than others; however, there were not any students that were completely against completing the activity. One part of the outreach that students really enjoyed was the interactive discussion about Biomedical Engineering. On the other hand, one part of the activity that was slightly difficult for students was figuring out how to connect multiple potatoes together to light up the LED. If they were not making any progress, some of the students would give up and not try as hard unless given guidance. To improve the outreach activity, our team could have made a few changes. First, if we noticed that multiple groups were having the same problem, we could have given the whole class some help by making an announcement. Additionally, in order to promote more collaboration and problem-solving between classmates, we could have had students that were doing well help out students that were running into problems. Ultimately, our activity was completed successfully and was a fun opportunity for the students to engage with engineering principles.