

Connecting Real-World Careers with Simple & Powered Machines



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In Maya Donnelly's classroom, students K-6th grade explore the basics of computer science and tinker with Scratch. Her 45-minute robotics class allows for exploration in projects that connect the real-world to the classroom. "Fostering creativity and thinking outside the box is my number one goal for the group. I always encourage them to build the model that's recommended and then **try making your own solution to the problem,**" says Maya.

Maya uses WeDo 2.0, LEGO® MINDSTORMS® Education EV3 and Simple & Powered Machines in her classroom. From kindergarten to second grade her students begin coding using WeDo 2.0 with simple **computational reasoning programs where they develop their foundational math skills.** By the time they reach 3rd grade, her students explore logic blocks and loops in their programming. In 6th grade, they begin experimenting with Simple & Powered Machines and programming with MINDSTORMS.

Maya aims to connect real-world problem solving with her students' learning. In one class with Simple & Powered Machines, Maya and her students used the pneumatics lessons to build robotic arms. The students connected the mechanical principles to the machinery used in the apple and cherry orchards in their community. The class talked about how the farmers needed to pick the fruit carefully and within a certain season and how machines help.

Alongside the lesson, a Washington State University student shared with Maya's class the robot he was 3D printing to help farmers with their harvest. Maya took her class on a visit to his lab to look at the robotic arm that was nearly identical to the pneumatic arms the class had developed using Simple & Powered Machines. One of the challenges the PhD student was facing was when the apples were irregularly shaped the robot wouldn't always detect the fruit and would miss them.

"My hope is that when they leave my classroom, they keep being curious and are always investigating."

The students learned how the robotic model worked and were able to compare and contrast it to their models. "They could definitely see the relationship between the models. That was a really neat experience. In the pneumatics lesson plan, **the students investigated how to make the most energy efficient robotic arm, the mechanics involved in picking up and placing objects, how to repeat sequences, and where these robotic arms could be used in their everyday lives.**

The relevant experience connected with their classroom projects sparked discussion around challenges they could solve in their community using computer science and the knowledge they were building in the classroom. **"It was very relevant, real-life application problem solving," says Maya of the experience.** It was a perfect example of integrating their learning in the classroom using LEGO® Education solutions with potential careers in STEM.

