

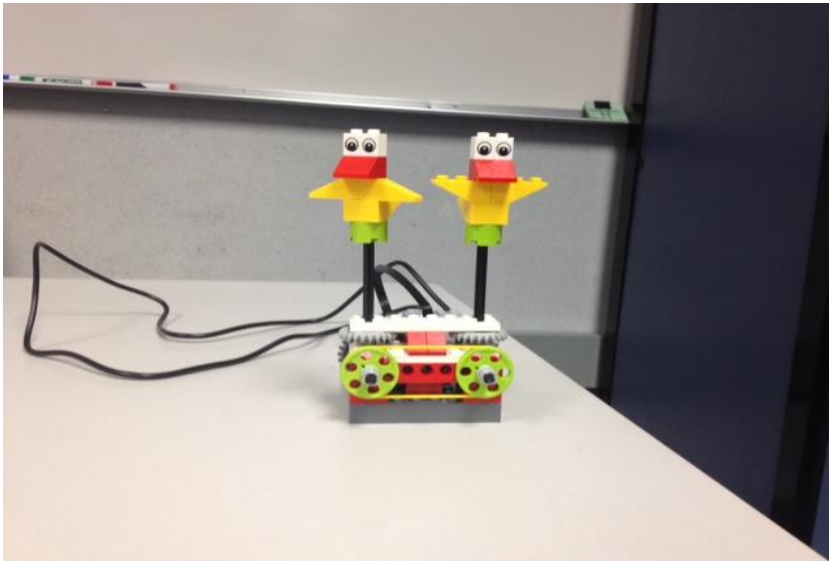
LEGO ROBOTICS

Training Engineers from grades K through 6



The Robots

Lego Wedo®



LEGO Mindstorms® EV3





Projects and Objectives

Wedo Objectives

- Help younger students (K-3) understand basic programming techniques and capabilities of the robots
- Builds skills they can apply to EV3 robots down the road
- Develop understanding of how the robots work and how they are able to function autonomously

Programming the Wedo Robots

- Software program comes with the kits, can be installed on as many devices as desired
- Drag and drop interface
- Different “blocks” serve different purposes (movement, duration, sensors, etc)

Programming EV3 Mindstorms

- Online download connected to your Lego Education account
- Drag and drop interface similar to Wedo software
- Different blocks serve different purposes
- Many more features, capabilities, and settings than Wedo

Student Projects

- Drive Straight
- Drive Straight and stop on its own
- Stop on a line using light/color sensor
- Robot Sumo Wrestling (push opponent out of circle, use ultrasonic sensor to find opponent, light sensor keep your robot from driving out)

Students At Work





Establishing a Robotics Curriculum

Associated Costs

- Wedo kits: \$75/kit
- EV3 Mindstorms: \$350/kit
- Cost of laptops or tablets
- Instructor
- Other materials: electrical tape, white boards, wood, etc.

Funding

- Innovation School Grants: materials and devices purchased with grant money
- Use laptops already at the school
- Instructor: Computer/IT position within regular budget; afterschool program funded with grant

Schedule

- Afterschool:
- Two 1-hour sessions
- 1st session K-3 2nd session 4-6
- Regular School Day:
- Each homeroom gets one 1/2 hour period per week
- Time comes from science (robotics and engineering account for 25% of new frameworks)
- Homeroom teacher stays with class

What's Next?

- Expand time spent on robotics/engineering
- Eliminate library; combine computer lab and library to media class and spend extra time on engineering
- Goal: at least 45 minutes per class per week
- Have one position be focused solely on STEAM