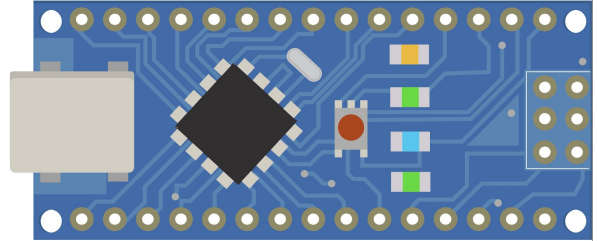# databot™

Intro to Arduino

PDQ 1 - Let's Get Weird

Grades: 5-7
Time: 5 -15 minutes
Subject: Engineering, technology and application of science
Topics: Computer Science, Electronics

Overview

Hang on to your hats coding cowboys, we're about to get way weird. This PDQ is simple and fun, you're going to do some surfing on the web and check out the Arduino community at it's strangest.

Background

Arduino is an Open Source Hardware and Software platform that enables creators, inventors, students and just about anyone to learn basic electronics and coding to make projects.

Objectives

Understand and Recognize:
- "Arduino" as a hardware and software platform for making projects.
- "Community" in the sense of people connected through a common interest such as making cool projects with Arduino.
- "Input" and "output" in both hardware and software based on looking at Arduino projects.

What You'll Need

- The only materials you need for this project are an Internet connected device and an Internet browser! Easy – peasy!

Important Terms

- **Open Source:** A model of sharing inventions and information for others to use, improve and share again.

- **Hardware**: The "physical" part of a computer or device. If you can thump it on a table, it's probably hardware.
- **Software**: The computer program or "instructions you write" for the hardware. It's not something you can thump on the table, but the hardware is worthless without it.
- **Processor**: The brains of your hardware that takes the instructions you write and executes them.
- **Arduino Uno**: One of the many Arduino boards in the Arduino family and probably the most used.
- **Input**: Things that go "into" a computing system are input. When you type on your phone you are "inputting" information.
- **Output**: Something that comes out of your computing system, like the display on a smartphone, is "output."

Prep (5 mins)

- Make sure you have an Internet connected device and an Internet browser!

PDQ 1 (10 mins)

- To get a real flavor for some of the things that can be done with Arduino, do an Internet search for Arduino projects. You can add in adjectives like strange, weird, fun or oddball for example and you will be amazed at what people are creating.

Now:

- Take note of the types of sensors (Input) that people are using in their projects and what kinds of physical actions, like motors (Output) are taking place.
- Modify your search to specify an Arduino Uno – this is the most popular microcontroller in the Arduino family. It's very easy to start your explorations with an Uno when you're ready to jump into the creator pond.
- Look for the Processor on the Arduino project board when you are studying the project. Can you spot it?
- Go ahead and do some searching, watch some videos and you will soon see just how versatile Arduino can be!

Great Work!
PDQ 2 coming up! Ready. Set. Go.
Another PDQ!

Educator Resources

Prep (10 Mins)

- Definitely do some searching and review of your own prior to having students do this activity. Depending on your location's Internet filtering terms like "weird robot" may return undesirable results. Generally, Arduino enthusiasts create projects that are fun, useful, and positive so you should be good!

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Misconceptions

- The media sensations such as Transformers and other wild robot shows and movies can easily build false impressions about robot capabilities. Looking at real examples is a good opportunity to draw comparisons between sci-fi robots and what is practical right now.

Guiding Questions

- Are all of these things you are finding actual "robots?" What constitutes a "robot?"
- What is the most interesting example of input on an Arduino device that you found? How about Output?
- Where are the Arduino inventors from – what countries? Do you see certain countries represented more than others?

Additional Resources:

20 Unbelievable Arduino Projects
https://www.instructables.com/id/20-Unbelievable-Arduino-Projects/
Top Ten Arduino Projects of All Time (Youtube Video)
https://www.youtube.com/watch?v=-p_8u_0GNZE
Digital Trends – The coolest Arduino projects you can build at home (Contains Ads)
https://www.digitaltrends.com/cool-tech/cool-arduino-projects/

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