ARDUINO
EDUCATION

ARDUINO STUDENT KIT

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A PROGRAMMING AND ELECTRONICS KIT DESIGNED FOR REMOTE LEARNING, INCLUDING STEP-BY-STEP LESSONS AND COMPLETE GUIDANCE

LEARN THE BASICS OF PROGRAMMING, CODING, AND ELECTRONICS, INCLUDING CURRENT, VOLTAGE AND DIGITAL LOGIC. NO PRIOR KNOWLEDGE OR EXPERIENCE IS REQUIRED!

WHAT IS THE ARDUINO STUDENT KIT?

- Affordable and inspired by the original Arduino Starter Kit, the **Arduino Student Kit** provides step-by-step-lessons with information and learning material, such as detailed teacher guidance, vocabulary, exercises, extra optional activities, concepts, history, and interesting facts, for a complete and in-depth class experience for middle school students aged 11 +.

- You'll get all the hardware and software you need for one person, making it ideal to use for **remote teaching, homeschooling,** and **self-learning.**

- Educators can teach their class remotely using the kits, and parents can use the kit as a homeschool tool for their child to learn at their own pace.

BENEFITS OF THE ARDUINO STUDENT KIT

- Affordable
- Quick and easy to get started with step-by-step lessons
- No experience required for educators, parents or children
- Lessons are fun and engaging with real-world topics
- Use the kit at home just like students would be using in class
- Go to at the speed of individual ability
- Improve problem-solving and critical thinking skills

CURRICULUM ALIGNMENT

This Student Kit follows the US Common Standards Concepts and focuses on core concepts of coding and electronics.

KEY LEARNING VALUES

- Learn electronics step-by-step, with no prior coding or electronics experience required
- Learn about current, voltage, digital logic, and programming

- Suitable for ages 11- 14
- Individual use
- 9 lessons and 2 open-ended projects
- Available in English and Spanish. Italian and German coming soon! (2020)

The Arduino Student Kit includes:
1 Arduino Uno rev 3, 1 USB cable, 1 Breadboard 400 points, 1 multimeter, 1 Solid core jumper wire, 1 Easy-to-assemble plastic base, 1 9v battery snap, 1 Stranded jumper wire (black), 1 Stranded jumper wires (red), 1 Phototransistor, 2 Potentiometers 10k Ohms, 2 Knob potentiometers, 5 Pushbuttons, 1 Temperature sensor [TMP36], 5 LEDs (red), 5 LEDs (green), 5 LEDs (yellow), 5 LEDs (blue), 1 Piezo capsule [PKM17EPP-4001-B0], 2 Capacitors 100uF, 5 Resistors 220 Ohms, 5 Resistors 560 Ohms, 1 Resistors 10k Ohms, 1 Resistors 10k Ohms, 2 Resistors 4.7 KOhms, 1 Battery 9V, 1 Female-male Jumper wires (red), 1 Female-male Jumper Wires (black), 1 small servo motor , 3 nuts and bolts.

- 1 Arduino Uno Rev 3 board
- A collection of sensors and actuators
- Access to an online platform with content and extra resources for extended and in-depth learning
- Specific online content for educators, with guidance

CONTENT

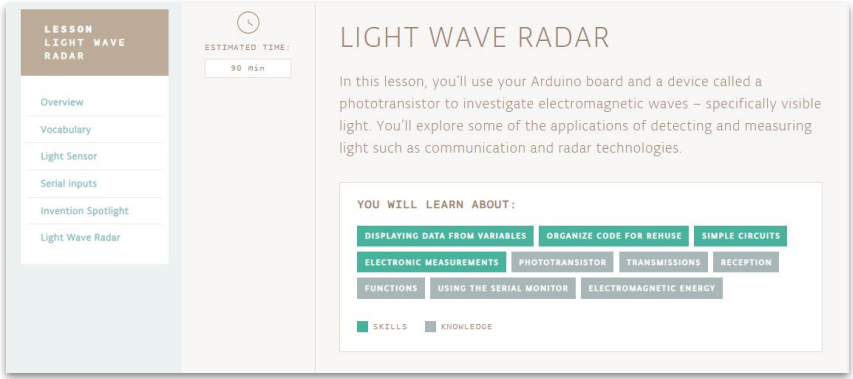
- **Online content for 9 lessons and 2 open-ended group projects** for middle school students (11+).

- **Optional and useful extra content** for both educators and students , such as resources for extended learning, teacher notes for educators, and further notes for students.

- Each lesson builds off the next and provides the **opportunity to apply skills and concepts** that were covered in previous lessons.

- Each lesson is designed to be completed **individually, working with one Arduino Student Kit and one computer.**

- The online course comes with **a logbook in a PDF format** that students complete as they work through the lessons.



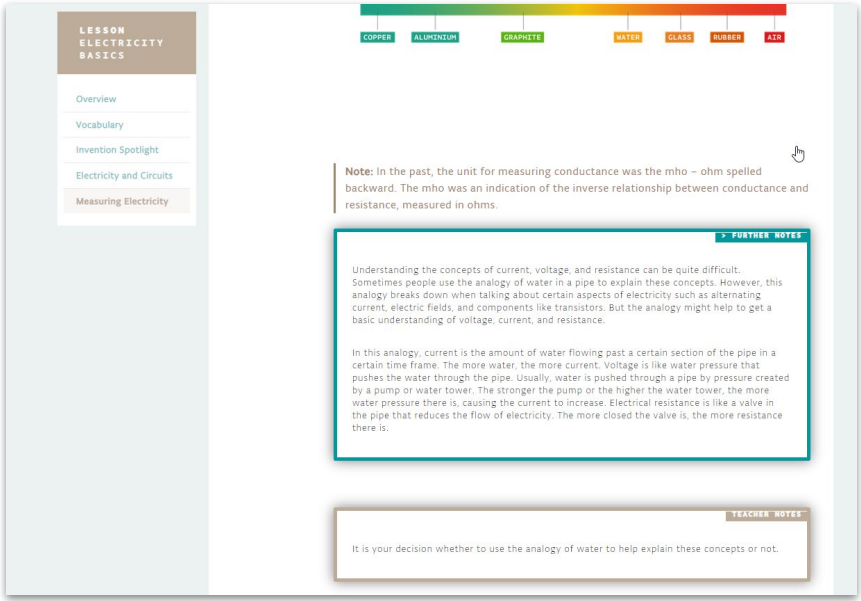
EXPLAINING THE LESSONS

Each lesson should last around 90 minutes. The lessons are planned with the possibility of being divided in two ways:

- Covering the basics of electronics takes approximately **17 hours**
- Extra resources are provided within each lesson to provide extension possibilities. **These resources bring the total lesson time to 25 hours**

EXPLAINING THE LESSONS

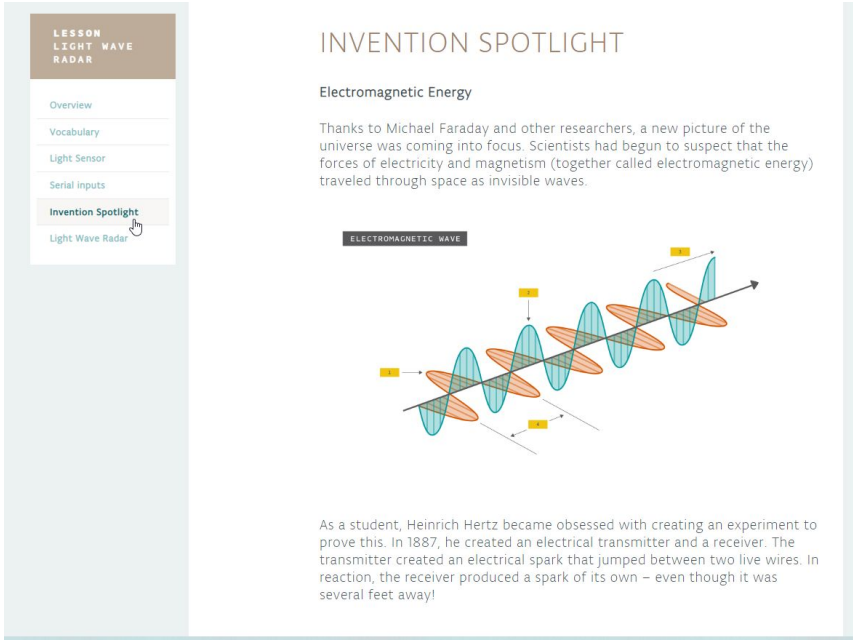
- The start of each lesson includes an overview, estimated completion times, and learning objectives.
- Throughout each lesson the teachers can use the helpful **teacher notes for lessons to go more smoothly.** The teacher notes are recommendations and extra information for teaching and learning guidance.
- Another learning tool inside the lessons is the **further notes for students,** including extended information for better understanding.



INVENTION SPOTLIGHT

- The Arduino Student Kit takes students on a journey through past ideas, inventions, and innovations that have shaped our world.

- In the Invention Spotlight, students learn about different inventions and facts behind the topics and lessons, giving them a broader view and historical insight.



RESOURCES

- The resources are extra content which provide extended learning information for a more comprehensive experience. Resources aren't included in lesson time, but rather are optional extras, so it's up to students how they use this section. You'll find the resources on a content tab outside the lessons as well as in the "learn more about" botton within the lessons themselves.

VOCABULARY

- Every lesson comes with a vocabulary section including words that might be unfamiliar to students. There are numerous vocabulary activities a teacher can do with their students. These activities can be considered as in-class extension activities or as additional assignments for students to complete on their own.

PROJECTS

- The course includes **two open-ended projects**. These projects can be completed individually or in groups, and there's no right or wrong answer since students are free to develop the projects in a way they want to. They just have to meet certain constraints and criteria.

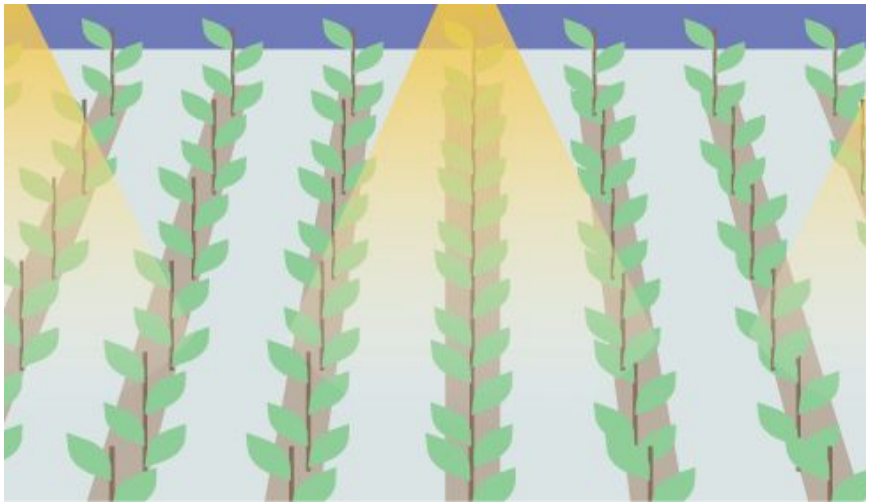
- Students will find different solutions and ways to develop the projects, inviting innovation, creativity and problem-solving thinking.

PROJECTS

Lesson 5- 90 mins

Students design, build, and program their own holiday light circuit.

Lesson 10- 180 mins



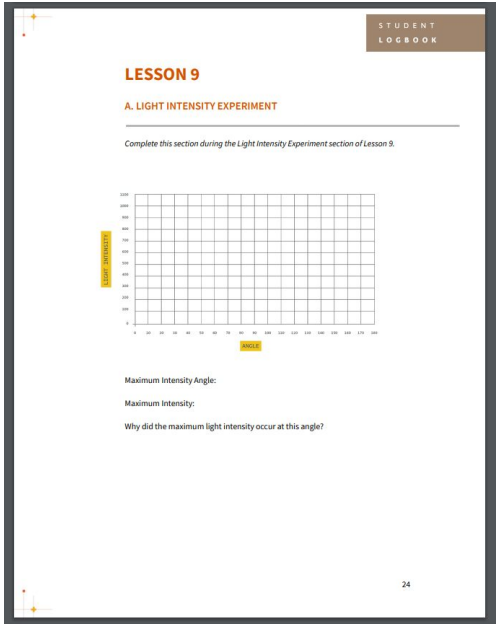
Students design, build, and program a climate-control system for a greenhouse.

LOGBOOK

- The Arduino Student Kit comes with an logbook.
- The logbook is a downloadable PDF with exercises related to the concepts learned during the lessons. Students answer the exercises as a way of reinforcing their newly-learned knowledge.
- The logbook comes with the solutions to the exercises at the end, inviting students to reflect on their answers and mistakes.
- You can print as many copies as needed for your class, and it can be completed either individually or in groups.

LOGBOOK

EXERCISES


STUDENT LOGBOOK

LESSON 9

A. LIGHT INTENSITY EXPERIMENT

Complete this section during the Light Intensity Experiment section of Lesson 9.

Maximum Intensity Angle:

Maximum Intensity:

Why did the maximum light intensity occur at this angle?

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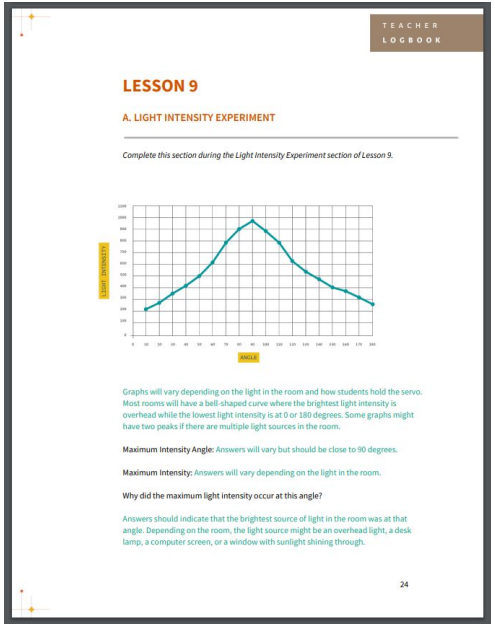
During the lessons, students will be asked to do exercises as a way of reinforcing what they are learning.

SOLUTIONS


TEACHER LOGBOOK

LESSON 9

A. LIGHT INTENSITY EXPERIMENT

Complete this section during the Light Intensity Experiment section of Lesson 9.

Graphs will vary depending on the light in the room and how students hold the servo. Most rooms will have a bell-shaped curve where the brightest light intensity is overhead while the lowest light intensity is at 0 or 180 degrees. Some graphs might have two peaks if there are multiple light sources in the room.

Maximum Intensity Angle: Answers will vary but should be close to 90 degrees.

Maximum Intensity: Answers will vary depending on the light in the room.

Why did the maximum light intensity occur at this angle?

Answers should indicate that the brightest source of light in the room was at that angle. Depending on the room, the light source might be an overhead light, a desk lamp, a computer screen, or a window with sunlight shining through.

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At the end of the logbook, students will find solutions to the exercises so they can double check their answers and self-reflect.

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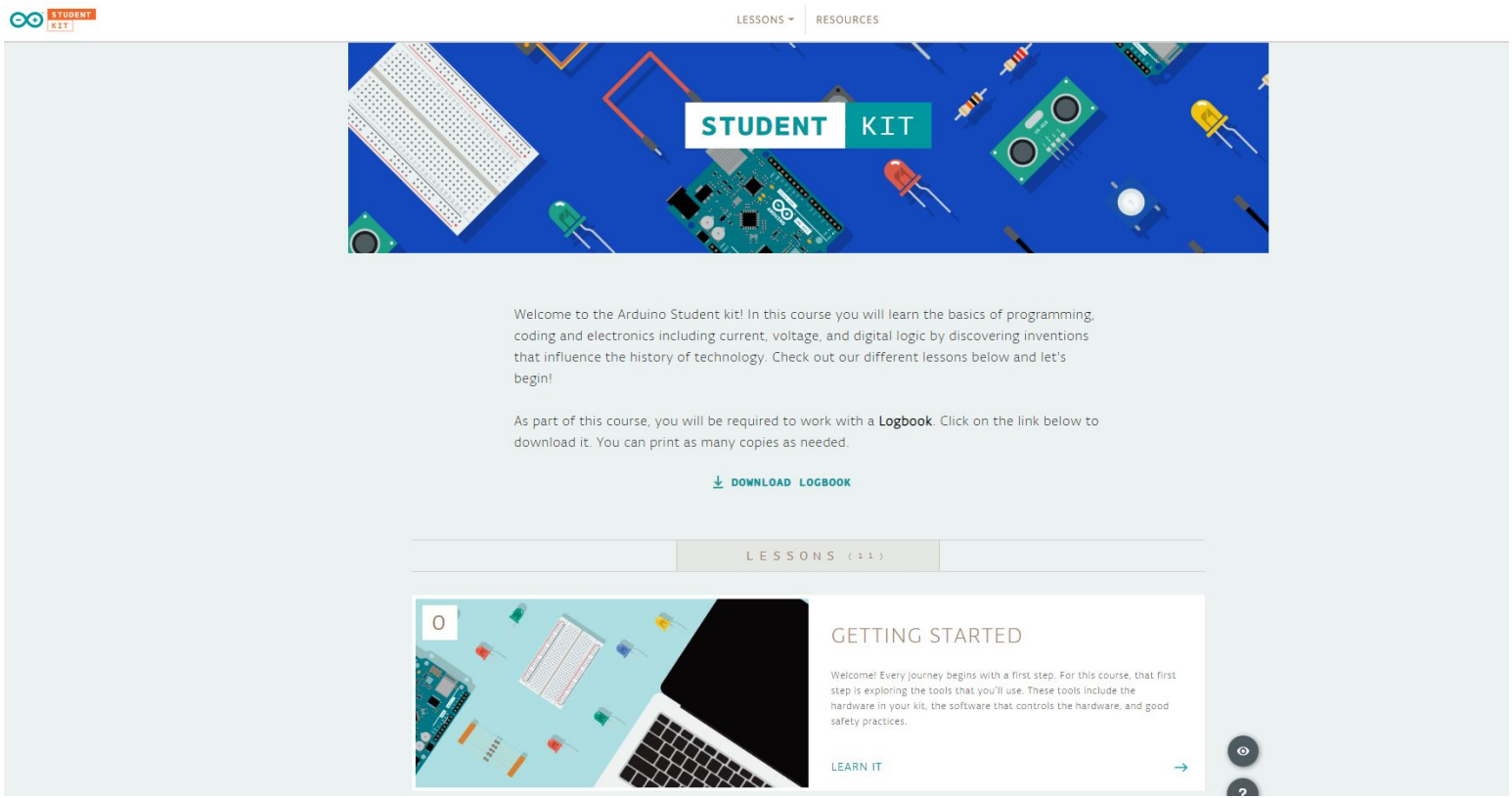
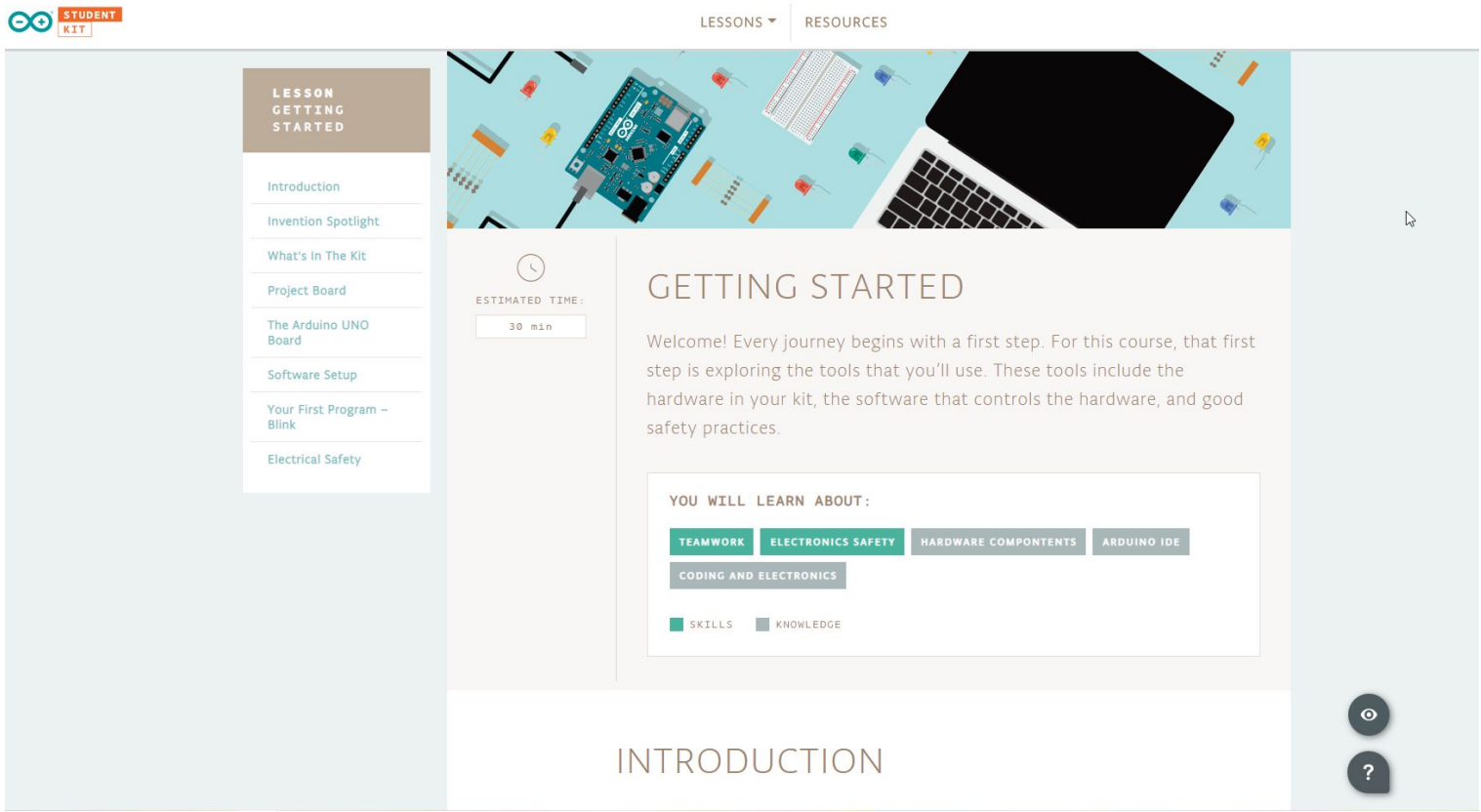
PLATFORM OVERVIEW

LANDING PAGE



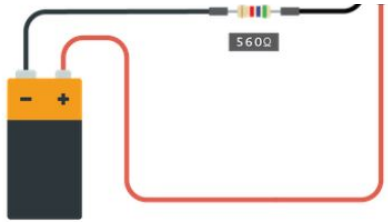
INSIDE THE LESSONS



RESOURCES PART 1

BASICS

- Overview
- Vocabulary
- Invention Spotlight
- Electricity and Circuits
- Measuring Electricity

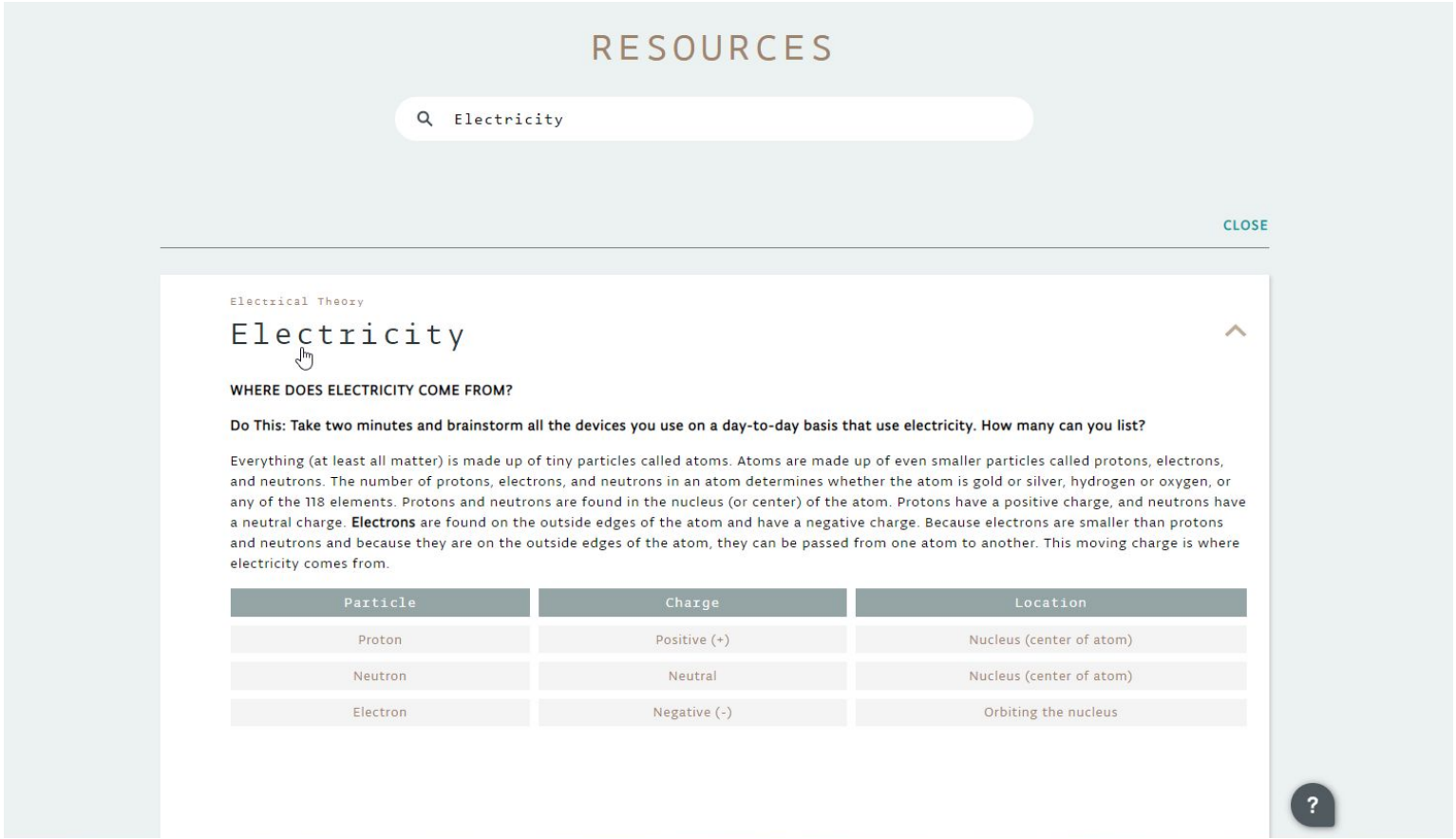


Before you start building your first circuit, check out where **Electricity** comes from.

LEARN MORE ABOUT
ELECTRICITY

1) Locate your project board. This board includes the Arduino board and a circuit breadboard. You will use only the breadboard side of the project board for this activity.

RESOURCES PART 2



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THANK YOU FOR YOUR TIME!

ANY QUESTIONS?

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Arduino:
AKX00025