About us.

We are Modular Robotics, the makers of Cubelets® robot blocks, the building blocks of better thinkers.

Modular Robotics is headquartered in Boulder, Colorado, USA. We believe toys shape the way children think about the world, so we design little robots to help build better thinkers.

Our goal is to make captivating robot toys that inspire an intuitive understanding of complexity, computational thinking, emergence, design, and a bunch of other vital thinking skills.

Enjoy making, exploring, and creating with Cubelets robot blocks!

Modular Robotics

What’s inside.

- Educator resource hub & social.
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- Classroom management.
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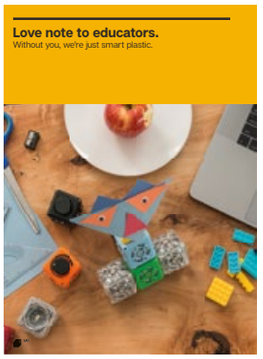
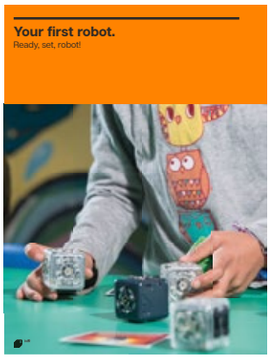
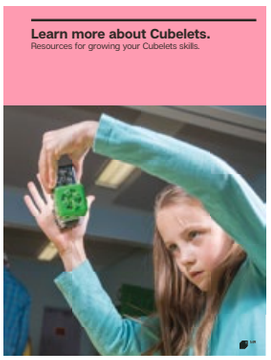
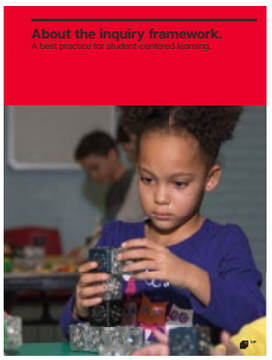
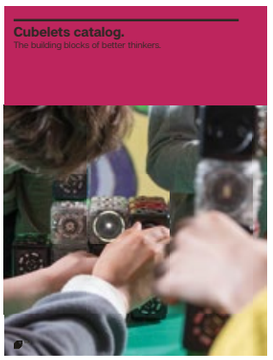
- Lesson plans.
- Blackline masters.

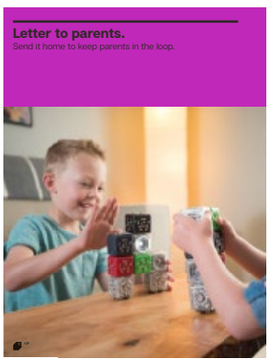


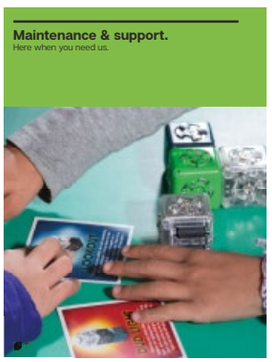


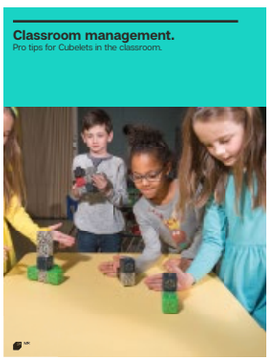


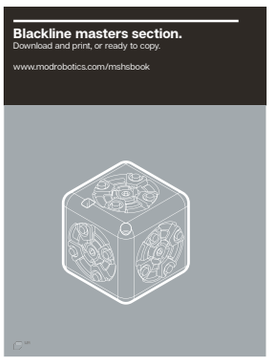












Hello.

Dear Educator,

You are one of the most important people in the lives of your students, and your work is hard. Thank you for everything you do for your students every single day!

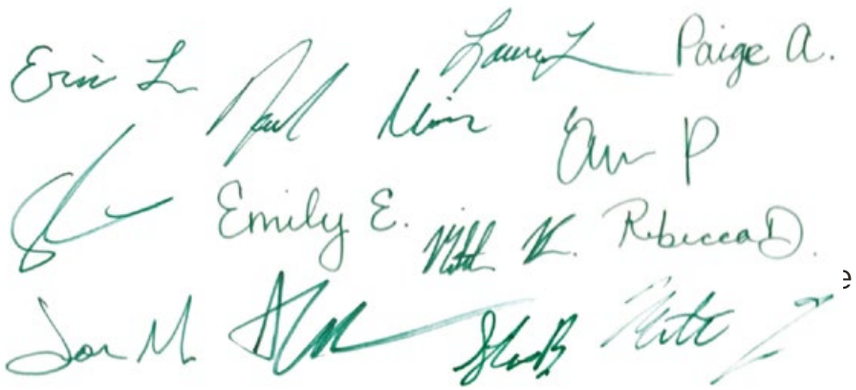
In this bundle, and on our free educator resource hub (found at modrobotics.com/thehub), we have tried to make it easy to introduce Cubelets to your students. However, the best advice we have, echoed by educators around the globe, is just go for it!

Cubelets were designed specifically for kids. Try learning alongside your students so they can see how you learn. Cubelets are the perfect tool for think-alouds because students may be able to help you!

As you look through these getting started lessons and resources, keep in mind that we are always here for you. If you have any questions – even specific to your students, classroom, or school – feel free to email our support team at support@modrobotics.com. They'll be able to connect you to the resources you need and can also refer you to our Education Design Team.

We hope you enjoy these little robot blocks as much as we do!

Sincerely,
The Team at Modular Robotics



Your first robot.

Start with the Distance, Battery, and Drive Cubelets. They represent the three types of Cubelets you need to build a robot construction.

SENSE

THINK

ACT

To build a robot construction, you need:

(1) SENSE Cubelet (Any SENSE Cubelet)	**(1) THINK Cubelet** (Battery always required)	**(1) ACT Cubelet** (Any ACT Cubelet)

Connect the magnetic faces so you have a robot construction that looks like this:

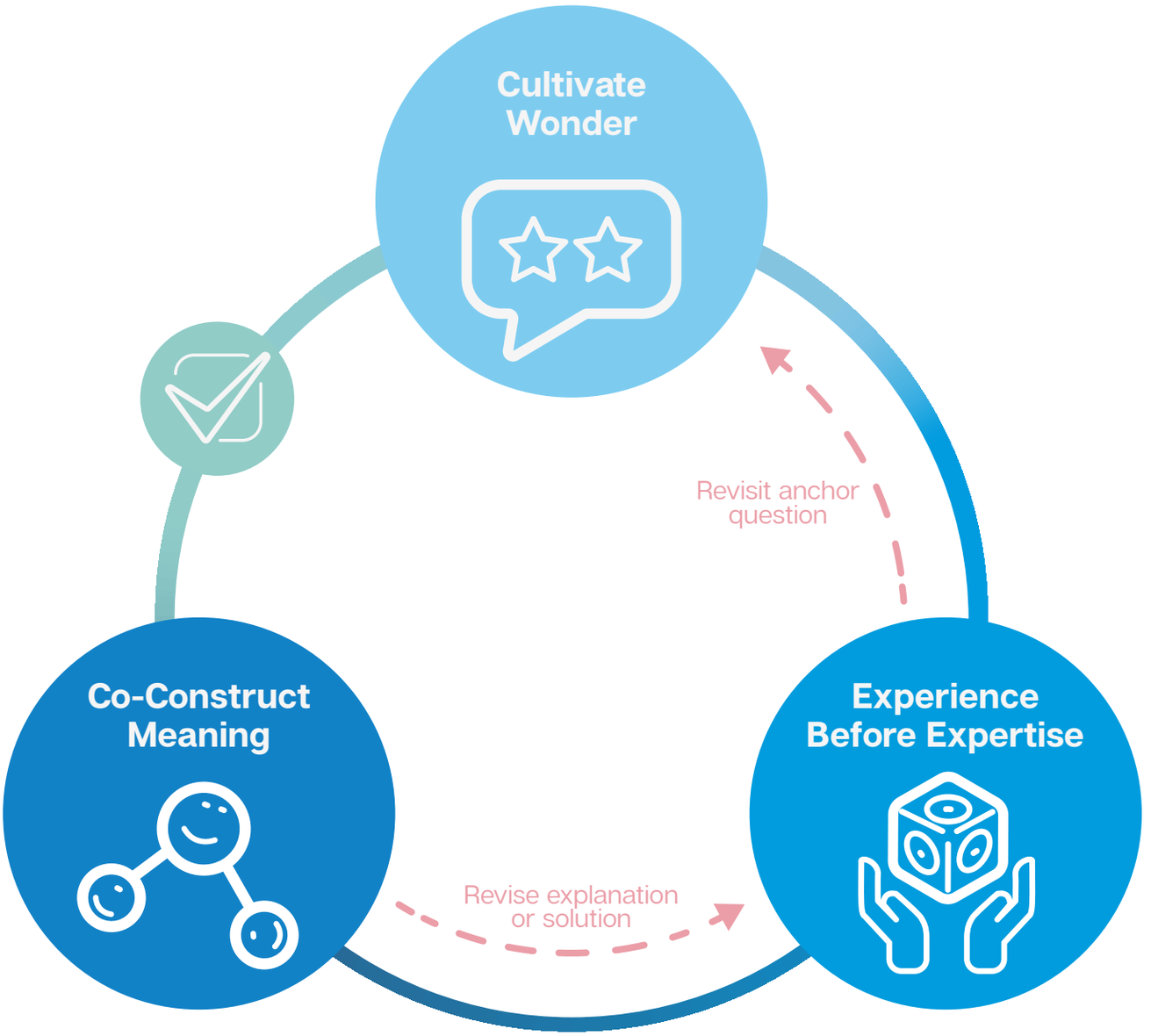
Find the switch on the side of the Battery Cubelet and turn it to the ON position.

Congratulations! You've completed your first robot construction!

What happens when you place your hand in front of the Distance SENSE? Can you figure out what makes the robot construction move faster and slower?

Cubelets Inquiry Framework.

As you dig into the Cubelets Lesson Plans, you will notice they all use a common format. This format represents our version of an Inquiry Framework. In each lesson, after you find the Overview and Classroom Prep sections, you'll notice the following sections:



01

Lighthouse.

01 02 03

Lesson overview.

Students create design criteria and design a robot to meet those criteria.

Early learners will listen to *The Little Red Lighthouse and the Great Gray Bridge* by Hildegarde H. Swift and Lynd Ward (or any picture book about lighthouses – ask your local librarian for ideas). Students will define the most important characteristics of lighthouses and design their own Cubelets lighthouses.

Objectives	Students design robotic lighthouses based on a list of design criteria.
Assessment	Students compare their lighthouses to the design criteria.

Supplies needed.

Cubelets (6 groups of)

- Battery THINK
- Flashlight ACT
- Rotate ACT
- Distance SENSE
- Brightness SENSE

Other

- *The Little Red Lighthouse and the Great Gray Bridge* by Hildegarde H. Swift & Lynd Ward

Vocabulary.

- Above
- Below
- Spin (or rotate)
- Criteria

Pacing.

- 20 minutes: Read *The Little Red Lighthouse and the Great Gray Bridge* and agree on the main characteristics of lighthouses
- 10 minutes: Students design Cubelets lighthouses
- 10 minutes: Wrap up and reflect

Sample lighthouse

01 Lighthouse.

Cultivate wonder.

Read *The Little Red Lighthouse and the Great Gray Bridge*.

"Today, we're going to design Cubelets lighthouses with our groups. What do you know about lighthouses? What do lighthouses look like?"

Students share what they know about lighthouses.

If needed, read *The Little Red Lighthouse and the Great Gray Bridge* or watch the Youtube read-aloud.

- *"What did you notice in the story?"*
- *"What does the Little Red Lighthouse do in the story?"*
- *"What is the most important job of the Little Red Lighthouse?"*

"When we're designing our lighthouses today, what are some important criteria they need to have?"

Today, the criteria for your robot to be a lighthouse will be:

01. It is a tower.
02. It has a light on top.
03. The light spins.

If students already have enough background knowledge to come up with the criteria for a lighthouse (tower, spinning light on top), then you may not need to read *The Little Red Lighthouse*.

Experience before expertise.

Design a Cubelets lighthouse.

- *"Now it's time for you to work with your group to design a Cubelets lighthouse that meets all of our criteria."*
  - Students build lighthouses.

Notes:

- It may be helpful to point out that there aren't many whole buildings that rotate – on student lighthouses, only the lights should be rotating.
- Refer students back to the criteria with your guiding questions:
  - Where is the light on your lighthouse?
  - How does your light move compared to the criteria? (rotate/spin)
  - Does just your light move, or is the rest of the building moving with it?
  - What sense does your robot use to start rotating and lighting up? Give an example of what that would look like in real life.

01 Lighthouse.

Co-construct meaning.

Students compare their lighthouses to the design criteria.

"Now it's time to figure out how our lighthouse designs compare to our design criteria. Everyone, turn on your robot lighthouses. As we look around the room, what do we notice?"

- Point out the tallest lighthouse.
    - You might have a conversation about how building a robot that's too tall could make a lighthouse that would fall down during a storm. Height isn't the only important thing. We also want it to be sturdy during a storm. Should that be a design criterion in the future?
- Point out the lighthouses that have the light as the top-most block.
    - If any students have their lights in a different spot on their robots, have a conversation about the design criterion that says the light should be on top, but also discuss why this group made a decision that was different than the design criterion. They might have had a really compelling reason!
- Point out the lighthouses that have rotating parts.
    - The most effective version of a lighthouse would be designed so only the Flashlight Cubelet is spinning (no other blocks), but perhaps students wanted to include a different block at the top of the lighthouse that serves as an observatory or a place for birds to land? These are all great ideas to be celebrated too!

Check for understanding.

Students reflect on their building and design process.

"What was your favorite part of today's robot challenge?"

- Have several students share out.

"What was the most challenging part of today's robot challenge?"

- Have several students share out.

Notes:

* Be mindful of helping students practice using the correct Cubelet names to describe their robot constructions.

01 Lighthouse.

Differentiation – Intervention & extension.

Intervention

You might need to prompt students who are struggling to design a robot lighthouse to attach a Cubelet to the Rotate face. This is a great place to start, because the rest of the lighthouse Cubelets can simply be stacked **below** the rotating section. (But shh! Let your students figure that part out!)

Extension

Challenge your students to make an **automatic** lighthouse: one that turns on at night (when it's dark outside) and turns off during the day (when it's bright outside). These students will need a Brightness Cubelet and an Inverse Cubelet to be successful!

Don't give your students too many hints. This challenge is the focus of the next lesson!

Automatic lighthouse

END OF LESSON #1

How did this lesson work for you? Let us know!
Check out our newest resources at [redacted]