cubelets
ROBOT BLOCKS

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Cubelets Open-Play



Lesson Overview

Students experience Cubelets with their natural curiosity while teachers gather baseline data.
Early Learners need many opportunities to learn through play and Cubelets are made for play! Today, students will practice playing with Cubelets in their assigned groups. Teachers may choose to have conversations about expectations for group work or to have students practice having group roles such as: leader, materials-gatherer, and team monitor. Today also serves as a great data-gathering opportunity for educators to assess their students' natural affinities for various parts of the Cubelets experience.
Check out this Learning Progression to **track your students' growth during this unit! goo.gl/xBkywV**



Lesson Tags

Grade Level
Preschool & Kindergarten

Difficulty
All Levels

Duration
30 minutes

Prerequisite Knowledge
None.



Supplies

Cubelets (6 groups of)
1 Distance SENSE
1 Brightness SENSE
1 Rotate ACT
1 Drive ACT
1 Flashlight ACT
1 Battery*
1 Passive THINK
1 Inverse THINK
*Hold Batteries separate from the rest - see lesson plan

Other Supplies
Group Norms Anchor Chart



Description

Outline
1. Class & Teacher set expectations
2. Students open play with Cubelets
3. Reflect on Open-Play experience

Objectives
Students will use their natural curiosity and prior experience to explore Cubelets.

Assessment
While students are working, teachers collect data on student collaboration skills. After initial play, students attempt to explain how Cubelets work.

How did this lesson work for you? Let us know! goo.gl/sLsypR
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Standards

ISTE

1.c. With guidance from an educator, students recognize performance feedback from digital tools, make adjustments based on that feedback, and use age-appropriate technology to share their learning.
1.d. With guidance from an educator, students explore a variety of technologies that will help them in their learning and begin to demonstrate an understanding of how knowledge can be transferred between tools.
4.b. Students use age-appropriate digital and non-digital tools to design something and are aware of the step-by-step process of designing.
4.d. Students demonstrate perseverance when working to complete a challenging task.
5.b. With guidance from an educator, students analyze age-appropriate data and look for similarities in order to identify patterns and find solutions.
6.b. Students use digital tools to create original works.

Common Core

NA

NGSS

NA

Vocabulary

Collaborate
Cubelets
Robot
Sense
Think
Act
Battery

Resources

Attachments

NA

Tips & Tricks

- Introducing Cubelets without the Battery is a helpful classroom management trick. By starting today, you set the precedent for future lessons that if students are getting ahead of themselves, you may help by taking away their Battery while they plan and think together.
- Before class, have your groups planned - think also of what collaboration structures make the most sense for your class or your school. Possible team roles:
  - Materials Manager
  - Team Leader (in charge of making sure group stays on task)
  - Recorder

Pacing

5 minutes: introduce learning target and success criteria
10 minutes: review collaboration norms and expectations
10 minutes: open-play
5 minutes: reflect

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Instructional Steps

Step 1 - Pre-class setup

Time: 10 minutes

Cubelets Needed

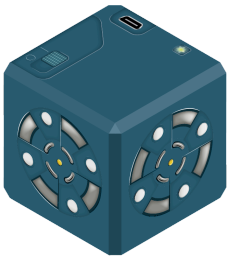
- ❏ Separate Cubelets into 6 groups, each containing:



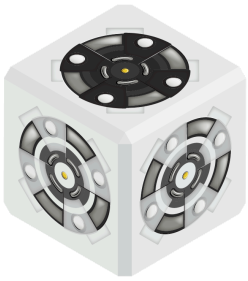
1 Distance SENSE



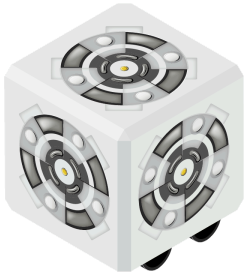
1 Brightness SENSE



1 Battery*



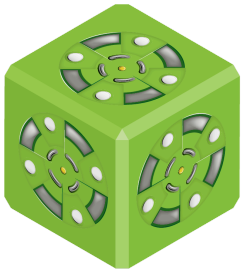
1 Rotate ACT



1 Drive ACT



1 Flashlight ACT



1 Passive THINK



1 Inverse THINK

Classroom Management

- ❏ Plan 6 student groups (groups should be no more than 4 students, and are best with 2-3).
- ❏ Brainstorm your preferred collaboration norms ahead of time so you have a draft to help you summarize your students' thinking in Step 3 - Experience Before Expertise.

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Step 2 - Cultivate Wonder

Time: 5 minutes

Fraidy Bot

"Today we're going to work in groups to build robots. We'll be using a toy called Cubelets. Here is a robot I built before class."

- Show students the Fraidy Bot on a flat surface as it runs away from your hand.

"What do you notice?"

- Students share out observations. As they do, take apart the blocks and put them back together in different orientations.

"Today, you'll have the opportunity to build robots with your group, but before we begin, we need to remind ourselves what it means to work in a group."



Step 3 - Experience Before Expertise

Time: 10 minutes

Group Norms and Expectations

"Do you remember the group norms we came up with at the beginning of our Cubelets unit?"

- Students share out what they remember

"So as a class, could we agree on our group norms being [list of norms from first day of Cubelets Open Play]"

"Today, you will be in groups of [2, 3, or 4] students. Each person will have a very specific job. [Review the jobs you decided on during your preparation for class]."

- Wrap up conversation by reviewing the group norms, separating students into their groups, and assigning group roles.
- Once students are in their groups, have them share with the other group members what their role in the group is.

Notes

★ Some teachers choose to use visual cues (like a necklace or a hat) to represent each group role.
★ It is recommended that one of your group norms be: Be respectful of materials. Cubelets are made for children and can sustain the hazards of normal play (falling off low tables, for instance), but are also machines that can break. Students may need help remembering to be gentle with Cubelets.



Step 4 - Co-Construct Meaning

Time: 10 minutes

Open Play

Have Materials Managers pick up their tray of Cubelets (or pass Cubelets out to each group, if you do not have a Materials Manager role).

Groups play with their Cubelets.

Notes

The goal of this open play time is for students to practice their group roles and to get familiar with how Cubelets attach together. Some things to look for as you walk around the room:

- ❏ Look for students and groups who are rotating single Cubelets within their robots
- ❏ Look for which groups are trying to build specific robots vs. using the Cubelets as passive stacking towers.
- ❏ Pay attention to students adhering to the expectations associated with their group roles.



Step 5 - Check for Understanding

Time: 5 minutes

Whole Class Review

"How did your group work together today? Do you have anyone you want to celebrate or thank in your group?"

- Students share out.

"What did you learn about Cubelets today? What is your favorite part so far? Is there anything you wish you already knew?"

- Students share out.

Materials Managers put away Cubelets.



Differentiation - Intervention & Extension

Time: NA

Intervention

Depending on their age, some students will be only interested in using Cubelets as building blocks as opposed to robots. Today, let these students play in this way, but make notes of which students are at this developmental level because they may need fewer blocks for future lessons until they get used to what Cubelets can do.

Extension

For students who are ready to build robots that *do* things, make sure they have a Battery Cubelet as early as they can. Then consider asking them to find a way to build a robot with only three blocks. (Hint: one of the blocks will need to be the Battery!)