Coding and Robotics for Early Elementary Learners

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Meet Dash!

Dash is an explorer who can:

- Drive around
- Sense objects in front and behind
- Hear and respond to sounds
- Come to life with sounds, lights, and head movements

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Features of Dash

- Sensors to detect objects or walls in front.
- IR beacons and infra-red detectors to detect other robots.
- Accelerometer and gyroscope positioning.
- Eye light ring with 16 programmable LEDs.
- Head motors for pan and tilt. Potentiometers to track head position. 4 programmable buttons.
- Colored ear lights and sound sensors.
- Rechargeable batteries with micro-USB connector for charging.
- Sensors to detect objects or walls behind.
- Red tail lights.
- Encoders to track wheel motion and enable precise control.
- Speaker and audio system that store sound clips, updated wirelessly.
- Sensors to detect objects or walls in front.
- 6 attachment points for accessories.
- Colored ear lights and sound sensors.
- Rechargeable batteries with micro-USB connector for charging.
- Sensors to detect objects or walls behind.
- Red tail lights.
- Encoders to track wheel motion and enable precise control.
- 6 attachment points for accessories.
How Dash and Dot work

Drive - Dash can drive forward, backward, turn left (spin), and turn right (spin). There are two wheels beneath the left and right side of Dash’s body. You can steer Dash by changing the speed of either wheel.

Head Motion - Dash can look up (25 degrees), down (10 degrees), left (120 degrees), or right (120 degrees).

Lights - There are 12 LEDs in Dash’s eye that can be turned on or off. In Dash’s ears (E) and chest (C), there are RBG LEDs. In Dash’s tail, there are 2 red LEDs.

Sounds - Includes a variety of pre-programmed sounds!

Microphone - Dash has 3 microphones, allowing Dash to hear claps and identify the direction of your voice.

Distance Sensors - Dash has 2 distance sensors in front (F) and 1 in back (B), allowing Dash to detect obstacles in front and objects behind with infrared lights.

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How Dash and Dot work

**Lights** - There are 12 LEDs in Dot’s eye that can be turned on or off. In Dash’s ears (E) and chest (C), there are RBG LEDs. In Dash’s tail, there are 2 red LEDs.

**Sounds** - Includes a variety of pre-programmed sounds!

**Microphone** - Dot has 1 microphone, allowing Dot to hear claps and voices.

**Accelerometer** - Dot’s accelerometer allows Dot to know when you are tossing, shaking, or tilting Dot. Note: Dot’s Blockly events are from Dot’s perspective, so you should hold it from behind to have the same perspective.

**Buttons** - Dash and Dot have 4 programmable buttons on their heads.

- Look Up
- Look Down
- Lean Right
- Lean Left
Dot sends out an infrared signal from 4 emitters.

Dash detects Dot's signal from an IR receiver in Dash's eye. You can use the **See Dot** event in Blockly to detect Dot!
# K-5 Learn to Code Curriculum

## Scope & Sequence

The Learn to Code Curriculum is organized into six coding levels and covers six fundamental coding concepts: sequencing, loops, events, conditionals, functions, and variables. For students who are new to Dash and Dot, we recommend beginning with Level A.

Each coding level is aligned to a recommended grade as a guide, but we also suggest that you consider your students’ coding experience when determining where to start.

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Sequencing
A Story is a Sequence

- Beginnings...middles,...and ends...
- Also events!
A Song is a Sequence
A Repeat is a Loop
Sequence
Loop
Sequence
Loop
Events
• Stories and Context

• Relating to the familiar (i.e. music)

• Open-ended
Questions?

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