DASH and DOT

Lesson 9 – Wait for

Description: In this activity, students are introduced to the Wait for Blocks.

Objectives:

1. *To understand how to express conditions in a program that can affect what the robot does*
2. *To understand how using the Wait for block will cause a program to pause until an event occurs or a set amount of time has elapsed*

Skills:

Learning to Code

Students will explore:

- *the Wait for and Wait for "x" seconds blocks.*
- *how conditions can be used to pause programming until that condition is met.*
- *the events that can prompt the wait for condition to occur.*

Coding to Learn and Create

Students will learn about:

- *how many activities in daily living require us to wait for a particular event to occur or a set amount of time to elapse before proceeding.*
- *the conditions under which they need to wait for things they want/require in life and how to be patient in the interim.*

Curriculum Connections

- Math – Measurement (time)

Vocabulary:

Note: All vocabulary from previous lessons should remain visually accessible to students.

1. Review vocabulary: *event*
2. New vocabulary: *conditional, wait for*
3. Review category: *Control*

Required Materials:

NOTE: Consider limiting groups to a maximum of 4 students per robot

Introduce	Anchor	Model
• Projection unit **Whole Class Materials** Digital: • *Dash and Dot – Lesson 9*** Print: • *Dash and Dot – Vocabulary cards:* conditional, wait for • *Dash and Dot – Category Vocabulary card:* Control	• Projection unit **Whole Class Materials** Digital: • *Dash and Dot – Lesson 9*** Print: • *Dash and Dot – Vocabulary card:* event	• Projection unit • Dot the robot • Device with the Blockly app

Practice	Apply
• Dash and Dot the robots • Device with the Blockly app *one per partner group* **Individual Materials** Print: • *Dash and Dot – Blockly Parameters and Events Reference Cards (with or without option items)* • *Dash and Dot – Blockly Events Reference Page* • Blockly Block sets (1 per partner group)	• Dash and Dot the robots • Device with the Blockly app *one per partner group* **Individual Materials** Print: • *Dash and Dot – Blockly Parameters and Events Reference Cards (with or without option items)* • *Dash and Dot – Blockly Events Reference Page* • Blockly Block sets (1 per partner group)

***Digital resources listed are available in multiple formats.*

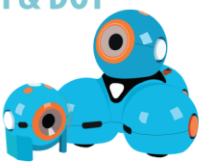
Adapted Materials:

- *Dash and Dot Lesson 9 – Apply*

(available in Clicker 6, Clicker 7, Clicker 8 and Boardmaker)

Some students may require additional adaptive solutions. Refer to the following documents for more ideas:

- *Dash and Dot – Ensuring Active Participation*
- *Dash and Dot – Blind/Low Vision Considerations*



Introduce

1. Open the whole class digital activity *Dash and Dot – Lesson 9.*

Say *Today we will learn about a new type of block called a **conditional.***

2. Point to the vocabulary card: **conditionals**.

Say *Conditional blocks help Dash and Dot make decisions. When we use conditional blocks, Dash and Dot will need to stop and check for the certain conditions, or events, before they can perform the next task. Today, the block we are going to learn about, will tell Dash and Dot to stop and **wait for** a specific event to happen before they can finish the program. There are 2 blocks that do this. They are called the **Wait for** and **Wait for "x" seconds** block. They are in the Control category with the Repeat blocks.*

3. Point to the vocabulary cards: **wait for,** and the category vocabulary card Control as they are addressed.
4. Show **slide 3.**

Anchor

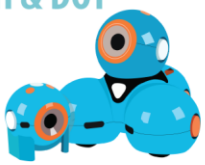
Say *Using the **Wait for "x" seconds** block is easy. We have already used a block like this - the Repeat for "x" seconds block! We just type the seconds we want in the parameter window, and Dash and Dot will **wait for** that number of seconds before continuing.*

1. Refer to the parameter window on the wait for "x" seconds block on **slide 3.**

Say *Sometimes we wait for time to pass before doing an activity.*

2. Show **slides 5 – 7.**
3. For each slide, point out the time that we wait before the next action:

Slide	What happens before	Wait time	What happens after
5	We eat	Wait for "x" time	Go swimming
6	We get upset	Wait for "x" time	Talk about it
7	We put food in the microwave	Wait for "x" time	Take it out



Say

*The **Wait for** block means that an event will have to happen before Dash and Dot can continue. Sometimes we need to "wait for" something to happen before we can finish what we are doing. Let's look at some examples.*

4. Point to the vocabulary card, event.
5. Show **slides 8 - 13.**
6. For each image, point out the "wait for". Emphasize what was happening *before* (actions leading up to the wait for), the event that triggers us to continue the task, and what happens *after* that event occurs. For example:

Slide	What happens before	***Wait for***… Trigger event	What happens after
8	Students listen to question and raise hand	Teacher says their name	Student answers question
9	Player that is "it" walks around circle, touching heads saying "Duck"	Player touches someone's head and says "Goose"	Players race around circle to empty spot
10	Walk to bus stop and sit	Bus arrives	Get on bus
11	Walk to corner	Green light	Walk across street
12	Walk up to front door and ring doorbell	Someone opens and answers door	Say hello/enter house
13	Put scoops of hot chocolate in mug and plug in kettle	Kettle boils	Pour boiling water in cup and stir

Say

*In coding, we can use the **Wait for** block to pause the program and wait until an event happens. Once it has happened, then the program resumes. If we had to code ourselves to make hot chocolate, this is how it might look!*

7. Show **slide 14**.

Say

The Wait for block will stop Dash and Dot and make them wait for an event to happen before continuing. These events are the same ones we used with the other conditional blocks.

8. Show **slide 15.** Review the blocks for each robot.

Model

1. Switch projection to display the device with the Blockly app.

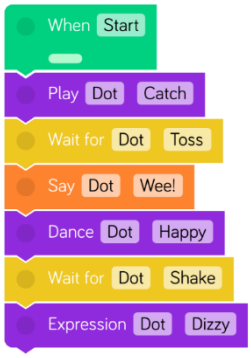
Say *Let's create a program where we want Dot to "wait for" something to happen. Since Dot loves to play, let's play catch!*

2. Think aloud as you drag the blocks on to the canvas as shown.

Say *What do you think Dot will do when we play this sequence? (Dot will playfully say "Oh catch me!" then wait to be tossed. When tossed, Dot will say "Wee!")*

3. Attach the sequence to the When Start block and run the program. Discuss whether their prediction(s) were correct or not.

Say *Let's add more blocks to our sequence. Dot loves to dance too! Let's have Dot sing "shake our robot" and use another Wait for block so we can grant that wish!*



4. Think aloud as you add the additional blocks shown.
5. Test the program. Emphasize the "wait". Ask students *"How long do you think Dot will wait for us to toss/shake?"* [forever] *That's right! Dot will wait…and wait…and wait…for that event to happen. Dot is VERY patient!*

Say *Dot sure likes to play! When play is over, I bet Dot will be happy! Let's make Dot laugh after a few seconds after it's all over.*

6. Think aloud as you add the final 2 blocks and change the seconds to 3 in the parameter window.
7. Test the program one final time. Continue to emphasize the "waits". Count down the 3 seconds of wait time at the final block.

Practice

Have students work in partners and choose/create a story or scenario to code! Have students plan their code by using Blockly Block sets, prior to testing. Support students by providing the individual print materials: *Dash and Dot – Blockly Block* set, *Dash and Dot – Blockly Events Reference Page* and *Dash and Dot – Blockly Parameters and Events Reference Cards,* as required. Students should also be provided with the opportunity to practice with both robots where possible.

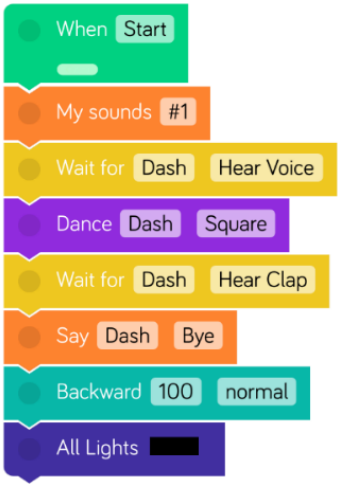
Dash

DASH: DESIGN HACK CHALLENGE #1

Dash loves to dance! He always asks for someone to join him and when someone says yes, off he goes! Dash likes when people clap for the band when the song is over. What will Dash do when the dancing is done?

Design Tips:

- Have Dash ask you to dance and wait for your response [hear voice].
- When the dance is over, give the band some applause [hear clap].



DASH: DESIGN HACK CHALLENGE #2

Dash is a fast runner! He is competing in a race against his friends. Dash and the other runners line up at the start line and wait for 'go.' What happens in the race? Who will be the winner?

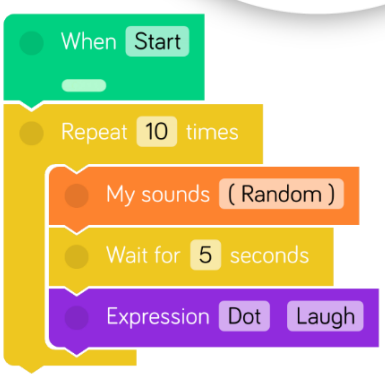
Design Tip:

- Have Dash wait for someone to start the race (i.e. saying "go" [hear voice] or wave a flag [obstacle in front].

Dot

DOT: DESIGN HACK CHALLENGE

Dot loves to play "follow the leader". Dot is VERY silly when she's the leader. Are you silly enough to keep up?



Design Tips:

- Use the Say block to record 10 of your own silly moves
- Select "random" when using the block in the program
- Guide students to use a repeat block to keep the game going!

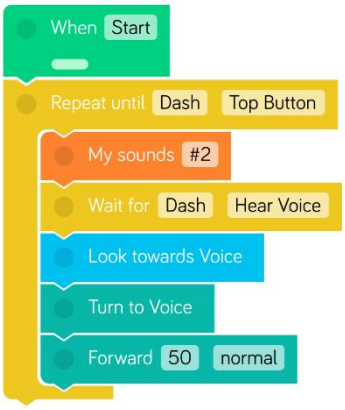
Scaffolding Tip: Provide partner groups an opportunity to explore and practice with each robot when possible. Since Dot remains stationary, she would be a good choice to start with, for students who require more support.

Apply

Support students by providing the individual print materials: *Dash and Dot – Blockly Events Reference Page* and *Dash and Dot – Blockly Parameters and Events Reference Cards* as required. Students should also be provided with the opportunity to attempt the tasks for both robots where possible.

Dash

Play "Marco Polo" with Dash!



1. Create a simple sequence that will allow students to play Marco Polo with Dash!
2. Support students in breaking down the components of the game, what each requires and the blocks that can be used to achieve it:
   a. Dash needs to say "Marco".
   b. Dash needs to wait for someone to say "Polo".
   c. When Dash hears "Polo", Dash will need to turn towards the voice and move forward.
   d. Dash will need to repeat this process until a player is reached.
3. Test by playing the game with Dash. Place a blind fold over Dash's eye so he can't peek!

Dot

Play "What am I?" with Dot!

1. Create a simple sequence to play a guessing game with Dot.
2. Use a Wait "x" seconds block between different sound blocks. Students can choose specific sounds or "random". Consider making each block a different number of seconds for variety.
3. To play the game, have 2 or more students compete to guess what Dot is before the next sound plays.
4. The player who guesses first wins a point. The player with the most points at the end, wins!

Reflect and Share

Provide vocabulary cards, display Dash and Dot and the Blockly interface.

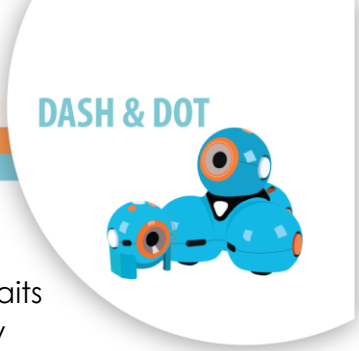
Take some time to share the learning experiences from the day. Refer to Tip Sheet: *Working Together* as you remind students what to do while others are sharing. Validate and reinforce each contribution. Write and display students' responses on a chart/concept map, etc. so that it can be used to activate background knowledge in future lessons.

Allow each student to share one thing they learned. Consider prompting group discussion with questions such as:

- Can you think of an example in class, when we need to *wait for* or *wait for x seconds*?
- How did you use the wait for blocks today when coding Dash and Dot?
- Share the joke you coded for Dot today (allow students to play the program or play a recording of the joke).
- Share the video of the race (or relay race) with Dash and friends.

Extend and Connect

1. Give students an "Extra Challenge" that extends Dash's practice Design Task #2! Partner up with other groups and make it a RELAY RACE using multiple Dash's. This will require students to collaborate on the following:
   a. Determine start and finish locations.
   b. Determine "hand off" locations for each robot.



c. Create the code in a logical order; this will require that each student "waits for" their turn to code their robot in the relay so that they can accurately program from the "hand off".

Extra Challenge Design Ideas and Considerations:

- First racer needs to wait for the start signal – what will it be?
- Will the racers run around a track or a straight line?
- Other racers in the relay must 'wait for' the "pass off" – how will the exchange happen?
- Once the final racer crosses the finish line, what will they do?
- Video tape the race to share with the group later.

2. Throughout the school day, point out when students need to 'wait for' or 'wait for x seconds' to reinforce this concept.

   Examples:

   a) Physical Education
      i. When it's your turn to serve the ball in volleyball, you must 'wait for' the referee to blow the whistle. Then, you can serve the ball.
      ii. When running a relay race, you must 'wait for' the runner to pass you the baton before you start running.

   b) Daily activities
      i. During small group or class discussions, you must *wait for* others to finish speaking before you contribute your idea.
      ii. When lining up at the water fountain, you must *wait for* the person ahead of you to finish their turn or wait for x seconds (count to five.)
      iii. Before you can go out for recess, you must *wait for* the bell to ring.
      iv. Before cleaning off the table, *wait for* everyone to finish eating.
      v. Before you serve dessert, you should *wait for* everyone to finish their meal.

   c) Writing
      i. Create a story or scenario that requires characters to use wait for and wait for x seconds. Write the scenario as a program, using words and pictures.
      ii. Shared writing – if a scenario occurs in the classroom in which students are impatient about needing to "wait for" an event they are excited about, write a class "program" together that uses "wait for" language and leave it visible in the classroom.