

Dash (and Dot) go to the Zoo

Year level band: F-2

Description:

In this lesson, students will apply visual programming skills and their understanding of logical sequencing to navigate Dash and feature Dot through key events in a narrative/recount that they have created. They explore the “sound” functions in the MakeWonder App and create their own sounds. Students work collaboratively in teams to create their own stories. This lesson has been presented using the context of zoo animals, but could easily be replaced by native animals found in particular locations, sea creatures, pets, etc. The lesson links with English text production, providing an opportunity for students to retell a story they have heard, create their own imaginative narrative or to recount a visit to the zoo. The lesson can be adapted to suit your goal.

Resources:

- Dash and Dot Robots
- One iPad or tablet per group with the Make Wonder Blockly App Downloaded (<https://home.makewonder.com/apps/blockly>)
- A storybook relating to animals or zoo animals
- Template/paper to record a narrative/recount sequence on
- Coloured pencils, paper, card (crafts optional, if wanting to build 3D models)
- Optional: cards with animal words printed (e.g. end of lesson) or animal pictures

Prior Student Learning: Students will have already been introduced to the Dash Robot and have had an opportunity to play. They will have had some experience of exploring the drag and drop features of the Blockly app and these concepts and are now provided with an opportunity to implement what they have learned. Please note that pre-literate students in early years may need support in using the Blockly app. We recommend familiarisation with words used in the app and experience in using the app prior to this activity. Keep to simple instructions in Foundation, building towards more complex algorithms toward Year 2. For pre-literate, the teacher could have pre-printed cards with the instructions that students find and match or students walk through the design and implementation of their algorithm with the teacher or an older buddy class.



Australian Curriculum Digital Technologies alignment summary

Learning in Digital Technologies ... focuses on developing foundational skills in computational thinking and an awareness of personal experiences using digital systems.



By the end of Year 2, students will have had opportunities to create a range of digital solutions through guided play and integrated learning, such as using robotic toys to navigate a map with software applications.

Students use the concept of abstraction when defining problems, to identify the most important information, such as the significant steps involved in making a sandwich. They begin to develop their design skills by conceptualising algorithms as a sequence of steps for carrying out instructions, such as identifying steps in a process or controlling robotic devices.

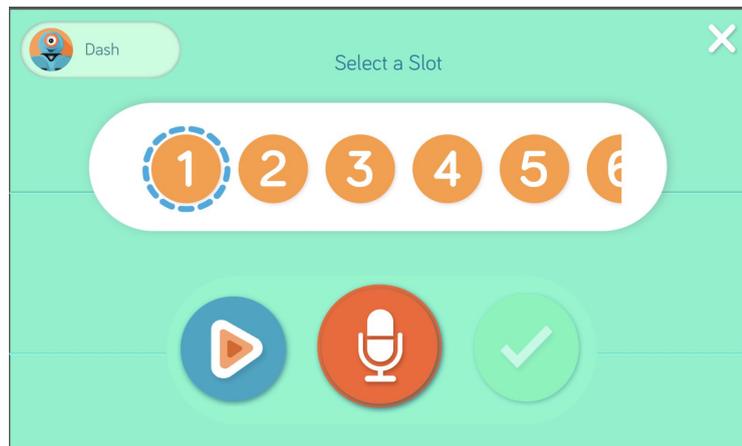
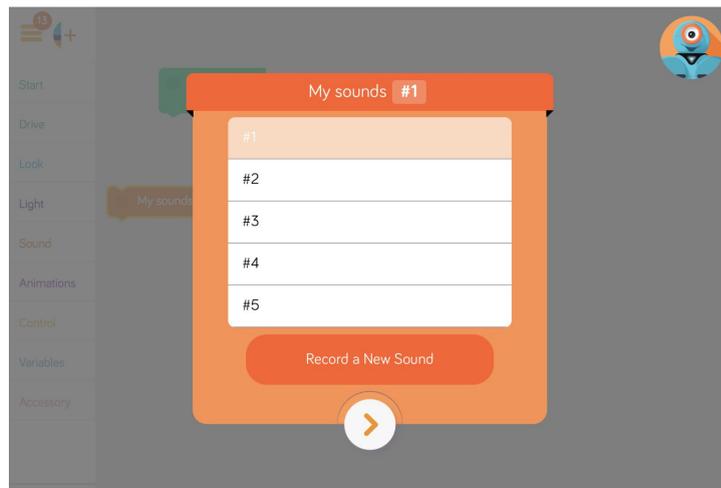
Year	Content Descriptions
F-2	<p>Digital Technologies</p> <p>Follow, describe and represent a sequence of steps and decisions (algorithms) needed to solve simple problems (ACTDIP004)</p>
F-1	<p>English</p> <p>(Foundation) Create short texts to explore, record and report ideas and events using familiar words and beginning writing knowledge (ACELY1651)</p> <p>(Year 1) Create short imaginative and informative texts that show emerging use of appropriate text structure, sentence-level grammar, word choice, spelling, punctuation and appropriate multimodal elements, for example illustrations and diagrams (ACELY1661)</p> <p>(Year 2) Create short imaginative, informative and persuasive texts using growing knowledge of text structures and language features for familiar and some less familiar audiences, selecting print and multimodal elements appropriate to the audience and purpose (ACELY1671)</p>

Element	Summary of tasks
Learning hook	<p>Ask the students: <i>Who has been to the zoo? What might you see at the zoo?</i></p> <p>The teacher reads a book related to zoos or animals.</p> <p>The teacher either calls out or has pre-printed cards with the following animals as text or images (<i>note: these are the sounds available as pre-recorded in the Dash App to be explored</i>): Horse, Cat, Dog, Dinosaur, Lion, Goat, Crocodile, Elephant.</p> <p>The teacher reads out or asks students to tell the name of the animal on the card, asking: What sound does it make? Students make the sounds. The teacher asks students if they would find the animal in a zoo?</p> <p>The class then brainstorm on the whiteboard additional animals you would find in a zoo.</p>



<p>Achievement Standards</p>	<p>Digital Technologies (F-2):</p> <p>Students design solutions to simple problems using a sequence of steps and decisions.</p> <p>English</p> <p>Foundation: They retell events and experiences with peers and known adults. When writing, students use familiar words and phrases and images to convey ideas.</p> <p>Year 1: They create texts that show understanding of the connection between writing, speech and images. They create short texts for a small range of purposes.</p> <p>Year 2: Students create texts, drawing on their own experiences, their imagination and information they have learnt.</p>
<p>Learning Map (Sequence)</p>	<ul style="list-style-type: none"> ● Students listen to a story about animals or the zoo. ● Students recall animals they would find at a zoo. ● Students explore the different sound Dash and Dot can make. ● Students learn to create their own sounds for Dash and Dot. ● Students create a narrative/recount for Dash and Dot's trip to the zoo that includes a minimum of four animals. ● Students showcase their story.
<p>Learning input</p>	<p>The teacher demonstrates:</p> <p>how to create code to get Dash to play a sound using the App.</p> <p>how to create code to also make Dot play a sound.</p> <div data-bbox="512 1249 815 1496" data-label="Image"> <p>The image shows three Scratch code blocks stacked vertically. The top block is a green 'When Start' block. The middle block is an orange 'Animal' block with 'Dot' and 'Cat' selected. The bottom block is an orange 'Animal' block with 'Dash' and 'Horse' selected.</p> </div> <p>The teacher then demonstrates how to create code to record a new sound on the App.</p>





Learning construction

Activity 1: Students learn to play and record sounds for Dash and Dot

Students form small groups with one Dash between each group.

The teacher demonstrates how to connect the Dash Robot to the iPad/tablet and the students follow. Students work in groups together to take turns practising how to play the various sounds on Dash and Dot, as well as by recording new sounds.

Before moving on, students can achieve:

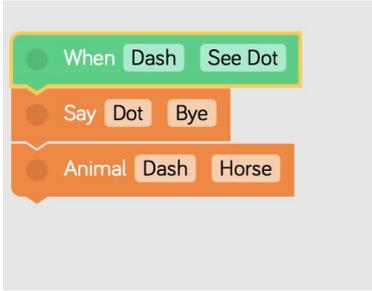
- I can get Dash to play an animal sound
- I can get Dot to play an animal sound
- I can record my own animal sound
- I can get Dash or Dot to play my recorded animal sound

Activity 2: Students create a narrative/recount for Dash and Dot to follow

Note: Robots are put to the side for the moment (or the following could be in a new lesson on a new day). Students are to focus firstly on designing their narrative and their algorithm for Dash to follow.

Students work in teams to design a story using a simple narrative template provided by the teacher or on a piece of paper or their workbooks. On their narrative template, they identify four animals Dash visits at the Zoo.



	<p>Once the teacher has viewed their narrative sequence, the students receive four cards to draw the four animals they would like to use in their story. They write a line or two of text that tells a story of Dash moving around the zoo and what Dash sees.</p> <p>Students place these on a mat or in an allocated space in their classroom to begin designing the movements of Dash between the animals. They begin to plan the algorithm for Dash to move, from one animal to the next in the correct sequence from their narrative. The algorithm design should include:</p> <ul style="list-style-type: none"> • Dash’s movement in the correct sequence (forward, left, right, etc). • The number of estimated movement counts (Forward 20, Forward 50) • The sound to be played at each stop and by who (Dash/Dot). • Any additional actions Dash/Dot will make (sensors, lights, etc). <p>Activity 3: Students implement their story as code on the Blockly app and test and debug</p> <p>The students implement their algorithm into the App using the Blockly App. They test and refine algorithms until they have Dash move in the correct sequence to visit the animals around their Zoo.</p> <p>If time permits, the students could create additional Zoo features (trees, buildings, etc) for Dash to navigate around. If students have completed the basic routine, can students incorporate additional Dash programming features (such as the use of sensors, lights) into their zoo story and algorithm design.</p> <p>Extension: Incorporating Dash & Dot Interactions</p> <p>A further extension could be to use Dot, not as an isolated part of the story but as interacting with Dash!</p> <p>Dot sends out a signal just like a remote control sends out a signal to turn on your TV. The signal is an infrared signal that turns on and off in a pattern that tells Dash that it’s Dot. You can program Dash to watch for Dot’s signals. Using the following:</p>  <p>In this lesson context, Dot could be placed in a location within the zoo and when Dash sees Dot, an interaction occurs.</p>
Learning demo	Students video record (or present live) their Dash zoo stories to show the class, their families (or another class)! Students introduce their story and narrate the story as Dash moves through the zoo.



Learning reflection	<p>After each group presents, ask groups to provide feedback on each other's stories. What did they like? Would you find the animals in a zoo? Did it have relevant sounds?</p> <p>After their presentation, ask students to share:</p> <ul style="list-style-type: none"> • A challenge they had when they were creating their stories and how they overcame it as a team. • Something they learned by creating their story.
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Assessment:

Formative Assessment:

- Collect student videos of their stories for review.
- Collect their storyboards/design documents.
- Perform student interviews individually or with teams. Ask students to explain their code, what they intend to do (and how they will do it using code) and to reflect on any challenges they may have come across and how they solved them.

I can	name animals you would find at the zoo.	
I can	make Dash play a sound with the app.	
I can	make Dot play a sound with the app.	
I can	create my own sound in the Make Wonder app.	
I can	program Dash to move from one part of the story to the next using code.	
I can	get Dash and Dot to talk to one another.	
I can	debug my code.	



	Quantity of knowledge			Quality of understanding	
Criteria	Pre-structural	Uni-structural	Multi-structural	Relational	Extended abstract
Students design solutions to simple problems using a sequence of steps and decisions.	Unable to design an algorithm for Dash to go between events in a narrative/ recount.	Can design an algorithm for Dash to go between events in a narrative/ recount with assistance.	Can design an algorithm for Dash to go between events in a narrative/ recount without assistance. With support can identify and solve mistakes in their algorithm. Can explain some parts of their algorithm design with teacher prompts.	Can design an algorithm for Dash to go between events in a narrative/ recount with. Includes Dot in the algorithm design (without interacting with Dash). Can explain and justify their algorithm design.	Can design an algorithm for Dash to go between events in a narrative/ recount with. Creates a design whereby Dash and Dot interact with one another. Can explain and justify when and where they use decisions and how they can extend their algorithm.
Students implement solutions to simple problems using a sequence of steps and decisions.	Unable to implement an algorithm for Dash to go between events in a narrative/ recount.	Can implement an algorithm for Dash to go between events in a narrative/ recount with assistance.	Can implement an algorithm for Dash to go between events in a narrative/ recount without assistance.. Can reflect on the success of their algorithm with teacher prompts.	Can implement an algorithm for Dash to go between events in a narrative/ recount with. Can reflect on the success of their algorithm on their own and justify reasons.	Can implement an algorithm for Dash to go between events in a narrative/ recount with. Can reflect on the success of their algorithm and explain how they can improve their algorithm.
Can create a narrative/ recount	Cannot create a narrative/ recount.	Can create a sequence of events for a narrative/ recount with assistance.	Can create a sequence of unrelated events for a narrative/ recount without assistance. The narrative/ recount features a minimum of four simple events. The narrative/ recount includes a simple sentence	Can create a sequence of related events for a narrative/ recount. The narrative/ recount features four detailed events. The narrative/ recount includes a	Can create a sequence of inter-related events for a narrative/ recount. The narrative/ recount features more than four events and interactions between characters.



			for each event with familiar words.	detailed sentence for each event with familiar words.	The narrative/ recount includes a detailed sentence for each event with new words.
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CSER Professional Learning:

This lesson plan corresponds to professional learning in the following CSER Digital Technologies MOOCs:

F-6 Digital Technologies: Foundations

- Unit 7: Algorithms and Programming
- Unit 8: Visual Programming

F-6 Digital Technologies: Extended

- Unit 2: Algorithms & Programming

See: <http://csermoocs.adelaide.edu.au/moocs>

Further Resources:

Lesson adapted from Make Wonder website:

<https://education.makewonder.com/curriculum>

More ideas in the Dash and Dot Magazines of 2015

<https://www.makewonder.com/magazine/>



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Horse	Cat
Dog	Dinosaur
Lion	Goat
Crocodile	Elephant

