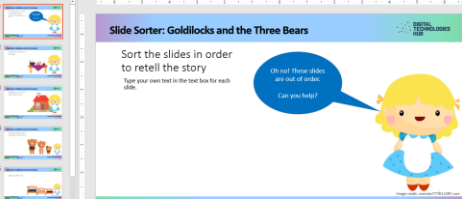

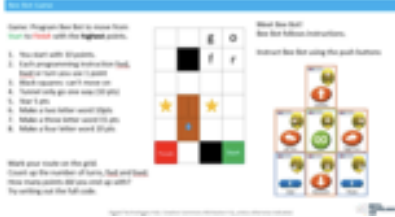




Assessment Webinar

October 31st 2018

Rebecca Vivian and Martin Richards

Image	Title and description	Comments
	<p>Fairytale Fun Teachers assess the student's demonstrated knowledge/skills using the checklist provided.</p>	<p>This checklist can be adapted and suited to F-2 Algorithms activities.</p> <p>When using a checklist, look at the achievement standards and content descriptors. Break down the key language and identify what knowledge and skills you would like students to demonstrate.</p>
	<p>Three little pigs Retell the story of the Three Little pigs using a light sensing robot such as Ozobot.</p>	<p>This task is suitable for formative or summative assessment purposes in which students explore algorithms with narratives or procedural text. Suitable for easy adaption with any narrative or procedural text or any kind of robotic device.</p> <p>In formative assessment do they create a working algorithm? Can students demonstrate how it works? Can they follow an algorithm correctly showing the pathway on the map? Looking at extended learning, do they code the steps "Fwd 6" rather than "fwd fwd fwd fwd fwd fwd"?</p>

 <p>Write a program that will solve this problem. You are given a grid with the following contents:</p> <ol style="list-style-type: none"> The start cell (S) The goal cell (G) Each empty cell contains a number (1-4) Each empty cell contains a direction (N, S, E, W) Each empty cell contains a number (1-4) Each empty cell contains a direction (N, S, E, W) Each empty cell contains a number (1-4) Each empty cell contains a direction (N, S, E, W) Each empty cell contains a number (1-4) Each empty cell contains a direction (N, S, E, W) <p>Write your code on the grid. Count up the number of cells, and then write down the number of cells and the direction of the path.</p>	<p>Sample assessment activities: Programming or Computational Thinking activities (plugged and unplugged activities).</p>	<p>Problem-based learning activities in which a process or procedure is required to solve the problem. EXAMPLE: Get from start to finish with aim of highest points score. Can be a game to land on squares and add points</p> <p>Questions for consideration: Can they explain their game and how to get from start to finish? How do they describe movement and directions? Do they use arrows or steps, right or left?</p>
	<p>Lunch box data Use this assessment task to explore data collection, analysis and presentation.</p>	<p>Years 3-4 Provides a checklist to assist with assessment.</p>
	<p>Pixels and binary digits Students are given a bitmap image made up of coloured pixels. They explain how the image is made up of binary digits that represent each pixel. Students represent 8 colours using binary digits. Teachers assess the student's demonstrated knowledge/skills using the checklist provided.</p>	<p>Years 5-6 and Years 7-8 (discover what they know) You could provide the assessment task regardless of students experience with 3-bit binary. Refer to this site to explore and have a play and come back to the assessment task https://studio.code.org/s/pixelation/stage/3/puzzle/1</p> <p>Yrs 7-8 would focus on more complex binary numbers and 24-bit colour (made up of 3 x 8 bit binary digits).</p>

SOLO taxonomy: Representing images using binary (5-6)

DIGITAL TECHNOLOGIES HUB

We are using an online tool that uses binary numbers to create pixels of different colours. We then design our own image.

LEVELS	One	Many	Relate	Extend
SKILLS VIEW	Identify isolated skills	Describe and combine several skills	Integrate skills	Evaluate skills
DECLARATIVE KNOWLEDGE Knowing who/when/how/where ...	I can IDENTIFY ... the use of 0 or 1 in representing the colour black and white.	I can DESCRIBE ... how to make an image made up of black and white pixels.	I can EXPLAIN my binary digit choices - when creating an image for a particular purpose such as an avatar for a game or logo for an organisation.	I can EVALUATE how effectively my image, which is made up of different coloured pixels, meets to functional requirements and intended purpose.
FUNCTIONING KNOWLEDGE Knowing how to ...	I can create a digital image made up of pixels.	I can create a grid made up of black and white pixels and vary the width and height.	I can independently and confidently create a grid with six functions by combining binary digits in RGB.	I can CONSIDER the effect on the size, comparing the image with one that has more pixels and a larger range of colours.
Success criteria	I can identify numbers on a grid as zero and ones which represent black (zero) and white (1).	I can create a grid using a red, green and blue colour combination (RGB) for example, (255,0,0) to make red or (255,255,255) to make grey.	I can independently and confidently create a grid with six functions by combining binary digits in RGB.	I can evaluate and act on feedback to improve the effectiveness of my programming choices in RGB.
Digital technologies	Computational thinking	Computational thinking	Computational thinking	Computational thinking
Ways of thinking				Design thinking

[PDF of solo taxonomy](#)

You can use the solo taxonomy to help differentiate the task and help students progress from one stage to the next. Customise to create your own rubrics with your students' input.

Try creating your own SOLO Taxonomy Rubric, based on the achievement standard text, on the HookED website! <http://pamhook.com/solo-apps/functioning-knowledge-rubric-generator/>



[BBC micro:bit project](#)

Students maintain a project log as evidence towards their work on creating a digital solution using the BBC: micro:bit. The teacher assesses the student's knowledge and skills using the student's project log, self-reflection and think aloud.

Years 5-6 (can be adapted and modified for Yrs 3-4 or Yrs 7-8)

Summative assessment

Collect four pieces of evidence to assess students on this task.

1. Design
 - o Students provide a document of their design that they created before implementing their digital solution.
2. Project log
 - o Students provide their completed project log and use it to discuss how they progressed on the project and how effectively they used their time.
3. Self-reflection
 - o Ask students to use the [Self-reflection](#) handout to self-assess themselves against the rubric supplied.
4. Think aloud
 - o Ask students to create a brief presentation 'think aloud' that explains how they designed and created their digital solution.

Name	1 point	2 points	3 points	4 points
	I copied an existing program and made some changes.	I referred to an existing program and remixed the code to create my own program.	I created my own program. When I got stuck I sought help.	I created my own program. When I got stuck I sought help. I also helped others when they got stuck.
	I have acknowledged the original creator and where I sourced the code.	I have acknowledged the original creator, where I sourced the code and described the changes I made.	I have described clearly the challenges I had and how I overcame them.	I have described clearly any challenges I had and how I overcame them.
	I recorded what I did each session.	I recorded what I did each session.	I have learned up to 5 new programming skills and identified these skills using the 'I can' statements.	I have learned or used more than 5 programming skills and identified these skills using the 'I can' statements.
	I have learned up to 2 new programming skills and identified these skills using the 'I can' statements.	I have learned up to 3 new programming skills and identified these skills using the 'I can' statements.		

Includes a rubric which can be modified. For example you could add programming focus such as have the students included user input, branching and repetition (and are able to explain these).

Purpose of assessment: To understand how different component make up a digital system. To use computational thinking to identify bugs in code and provide solutions to existing problems. To design, modify and evaluate algorithms in sequence that include iteration.

Knowledge and understanding of Digital Technologies		
Digital Systems Part A	Defining & Evaluating Coding Concepts Part B	Collecting, managing and analysing person reflections: EV3 Scrapbook Part C
<p>Explains how digital systems are connected by a range of components.</p> <ul style="list-style-type: none"> Explains how digital systems use a range of components, either wired or otherwise, to capture and transfer data. Recognises that components use a combination of wired and wireless setups to perform a task. Correctly classifies Parts of the EV3 and their correct uses for sensors and motors. Identifies and correctly labels all parts and components of a simple EV3 Robot design. Identifies and correctly labels all parts and components of a simple EV3 Robot design. 	<p>Implement digital solutions as simple visual programs involving branching, iteration (repetition), and user input.</p> <ul style="list-style-type: none"> Identifies iteration code and is able to explain the process of how it works to perform a task. Recognises and classifies existing code into categories of turns. Explains the different types of turns and their purposes. Correctly translates a two block code into an explanation of movement. Identifies variables of a single coding block. 	<p>Maintains a record of learning experiences and reflections throughout the duration of the unit.</p> <ul style="list-style-type: none"> Scrapbook consists of highly reflective entries created with a variety of digital work samples that showcases the student's learning throughout the unit. Scrapbook consists of reflective entries and work samples but both lack variety. Collects all work samples and has evidence of some brief reflective comments about learning experiences. Collects all work samples throughout the term in a digital scrapbook. Collects some work samples throughout the term in a digital scrapbook.
A	B	C
D	E	

[Whole school approach to coding](#) (check out this resource for whole school approach ideas)

[Year 5 EV3 robotics sample assessment](#)

Years 5-6
This assessment can be adapted for other robotics technology, not just Lego EV3.

EV3 Robotics project

Select tasks to make up the required 50 points.
You can choose any task and complete in any order.

<p>My robot Create a robot that moves. Demonstrate its functionality; it must go forwards and backwards and be able to turn left and right.</p> <p style="text-align: center;">10</p>	<p style="text-align: center;">15</p> <p>Driving Test Create an autonomous robot that follows a line. Drive three laps of a loop to pass the test. You must stay on course.</p>	<p>Design challenge Generate three different designs for a robot to carry a payload. Decide on the payload. Combine the best ideas from each design to create a final design. Devise a suitable way to test the success of your design.</p> <p style="text-align: center;">20</p>
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[SOLO Taxonomy robotics](#)
This can be used as a guide but depends on your project focus.

[Assessing students' work in robotics](#)
In this short video, Dr Ethan Danahy talks through his assessment approach for a unit where students design and create a robotic animal in teams. This could be useful for teachers who are seeking ideas for designing assessment around robotics projects, including assessment characteristics.

Years 7-8
Use a project based approach to assess students as they complete tasks that are self-chosen.
Create rubrics negotiated with students.

<p>Create a line following robot and explain how it works. Create a short 30 second video to demonstrate it working as you explain the sensors used and the code you used.</p> <p>20</p>	<p>Text-based code Create your code using a text-based programming language. Demonstrate how your robot works and explain your choice of code.</p> <p>20</p>	<p>Draw or write an algorithm to show the steps of how your robot will operate.</p> <p>10</p>		
<p>Coding Ninja Help another group to create their code. Gain a ninja token from that group.</p> <p>10</p>	<p>20 L</p> <p>Driving Test Drive your car around a circuit and demonstrate how your robot avoids obstacles.</p>	<p>20 L</p> <p>Driving Test Park your autonomous robot. Choose a parallel park, angle parking or 90° parking.</p>		
<p>10 Group reflection Complete a group reflection.</p>	<p>5</p>	<p>Design feedback Give helpful design feedback to another group.</p>	<p>ScratchJr: Assessment ScratchJr Assessments is a resource to assess students' understanding of the programming blocks in the ScratchJr iPad app.</p>	<p>Years F-4 Assess students' understanding of programming concepts using block puzzles.</p> <p>For consideration: Can students identify the correct output? Extension: Can students create their own algorithm puzzles for peers?</p>



Digital Systems: Assessment checklist 

This assessment checklist provides a guide to record student's demonstrated skills and knowledge.

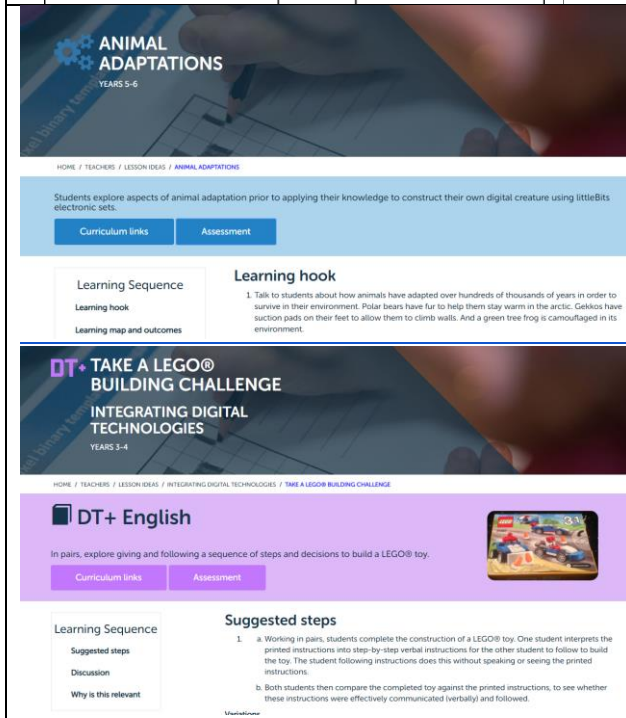
Year 5-6	Name: _____	
Digital systems	Date ___ / ___ / ___	
Demonstrated knowledge/skills	Yes/No or progressing	Comments
<p>The student creates a concept map or mind map that includes the fundamentals of digital system components such as:</p> <ul style="list-style-type: none"> - input devices eg keyboard, mouse and microphone - output devices eg monitor, speakers, printer - hardware (all the physical components) and software (programs that instruct computer) look for day-to-day software students are familiar with and use - connections via cables, Wi-Fi or Bluetooth - types of digital systems eg desktop computer, laptop/Chromebook, tablet, smartphone, server (file storage) 		

Digital Systems

Students create a concept map or mind map that demonstrates what they know about digital systems, how different components are connected and the role they play, using the school network as an example.

Years 5-6

Concept mapping could be used for a variety of topics. This could even be undertaken at the beginning of a unit of instruction and at the end to compare student changes in learning.



ANIMAL ADAPTATIONS
YEARS 5-6

HOME / TEACHERS / LESSON IDEAS / ANIMAL ADAPTATIONS

Students explore aspects of animal adaptation prior to applying their knowledge to construct their own digital creature using littleBits electronic sets.

[Curriculum links](#) [Assessment](#)

Learning Sequence

Learning hook

Learning map and outcomes

Learning hook

1. Talk to students about how animals have adapted over hundreds of thousands of years in order to survive in their environments. Polar bears have fur to help them stay warm in the arctic. Geckos have suction pads on their feet to allow them to climb walls. And a green tree frog is camouflaged in its environment.

TAKE A LEGO® BUILDING CHALLENGE
INTEGRATING DIGITAL TECHNOLOGIES
YEARS 3-4

HOME / TEACHERS / LESSON IDEAS / INTEGRATING DIGITAL TECHNOLOGIES / TAKE A LEGO® BUILDING CHALLENGE

DT+ English

In pairs, explore giving and following a sequence of steps and decisions to build a LEGO® toy.

[Curriculum links](#) [Assessment](#)

Learning Sequence

Suggested steps

1. a. Working in pairs, students complete the construction of a LEGO® toy. One student interprets the printed instructions into step-by-step verbal instructions for the other student to follow to build the toy. The student following instructions does this without speaking or seeing the printed instructions.

b. Both students then compare the completed toy against the printed instructions, to see whether these instructions were effectively communicated (verbally) and followed.

Search lesson ideas

All DT Hub lesson ideas have assessment advice
Click on the “Assessment” button.