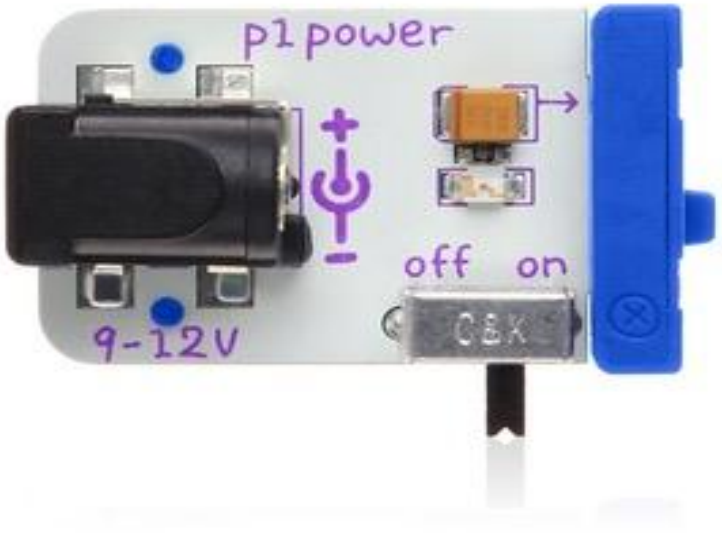
THEME: Sensors in Our Environment	**AGE GROUP:** Kindergarten One/Two
Lesson Title: Things that Use Sensors with Little Bits	
NEL Learning Areas: - Discovery of the World (DOW) - Social & Emotional Development (SED) **PRAISE Learning Dispositions Focus:** ☐ Perseverance ☒ Reflectiveness ☐ Appreciation ☐ Inventiveness ☐ Sense of Wonder and Curiosity ☒ Engagement	
PlayMaker Learning Cycle Phase	☐ Awareness ☒ Exploration ☒ Acquisition ☐ Application
Targeted Process Skills	☒ Observing ☐ Predicting ☐ Recording ☐ Experimenting ☐ Comparing ☐ Classifying ☒ Communicating
Objectives	Children will be able to: 1) demonstrate their observation skills by tinkering with the Little Bit technology toy and verbalizing their observations to teachers and peers (DOW) 2) demonstrate their recording skills by writing down their ideas and thoughts about their selected Little Bits craft model (DOW) 3) have the opportunity to work and play cooperatively in a group and be friendly and helpful to each other (SED)
Materials	▪ Sets of Little Bits Technology Toy and picture cards of individual Little Bits parts (Appendix A) ▪ Recording Activity Sheets (Appendix B) ▪ Questions on Differentiated Instructions (Appendix C) ▪ A video on Little Bits light door sensor, retrieved from https://www.youtube.com/watch?v=QsgO7yyhDd8 and an actual sample ▪ Torch lights ▪ Boxes of various sizes ▪ Child-sized scissors, pencils, erasers, etc. ▪ A variety of decoration materials: Coloured ice-cream sticks, rubber bands, LEGO blocks, paper plates, coloured construction papers, pipe cleaners, recycled CDs, toilet roll cardboard tubes, etc.

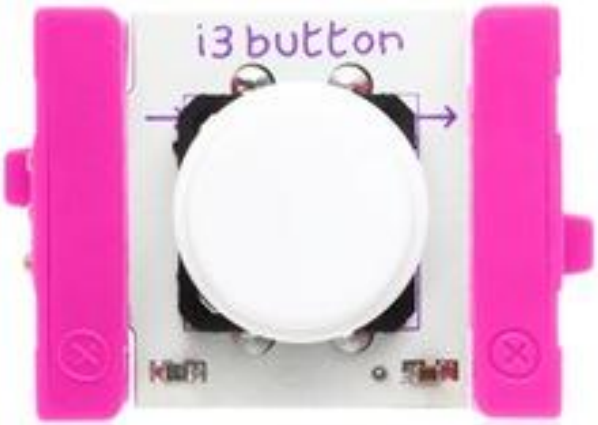
	▪ A variety of adhesive materials: White craft glue, Blu-Tack, scotch tape, masking tape, etc.
	PROCEDURE
Tuning-in (Large group – 10 mins)	1. Teacher will recapitulate and continue exploring on the content theme of 'Sensors in Our Environment' and the lesson content for the prior week that involves children's planning of 'Things that Use Sensors' as well as the Little Bits technology toy with the picture cards (Appendix A). 2. Teacher will show children the video of the Little Bits door sensor as well as show them the demo sample and encourage children to use their observation skills and communicate them aloud. 3. Teacher to ask: <u>Questions</u> • What do you see in the video? What kind of Little Bits parts can you identify? • What makes the buzzer go off? • What are the things in our environment that has sensors? • [Pertaining to previous question] What are the sensors in those objects used for?
Main (In small groups of 4 to 5 – 40 mins)	1. Teacher will invite children to work in groups of 4 or 5 and distribute one set of Little Bits for children to interact, observe and manipulate to use their communication skills to discuss on one invention they would like to create that requires sensors and how they will use Little Bits to integrate into the craft model (some examples can be a burglar alarm system, etc.). 2. Teacher will distribute 1 activity sheet (Appendix B) to each group and invite the children to record by drawing their inventions and the entire Little Bits circuit parts to be used in their craft model. 3. Teacher will ask: <u>Questions [Differentiated instructions] Appendix C</u> • What is your group's invention? What will you name it? • What Little Bits parts will go into your circuit for your invention? 4. Children will start the creation of their craft model using the materials and Little Bits parts after they have completed their recording on the activity sheet (Appendix B). Teacher will facilitate the process by moving around the groups, looking at their recording sheets and giving appropriate scaffolding when needed.

	5. Children will have access to the variety of decoration and adhesive materials listed in 'Materials'. 6. Teacher will ask: <u>Questions</u> • How will your invention look like? What will your group be using to create your invention? • What Little Bits parts will you be using to integrate into your invention? Why are you using these parts? 7. Teacher will encourage children to be friendly and help each other in their small groups and praise them when these behaviours have been observed. 8. Teacher will move around the different groups and provide appropriate scaffolding and assistance when needed. If children meets with difficulty with Little Bits, teacher will encourage children to problem solve by using other Little Bits parts and communicating with their peers instead of providing them the answers. Children will modify their recording sheets when needed to ensure Little Bits circuits will work in the end.
Closure (Large group – 10 mins)	1. Teacher will invite all the children to gather as a class and invite each small group to present their completed Little Bits invention and recording sheet to the class. 2. Teacher will ask: <u>Questions</u> • What is your invention? What is it used for? Why did your group invent this? How did your group make the invention? • Who is the invention made for? Where in the environment can you find such an item that needs sensors? • What Little Bits parts did you use in your circuit? • What problems did your group meet? How did you solve the problems?
Evaluation	**to be completed after lesson is implemented*

Blue Bits are Power Bits.

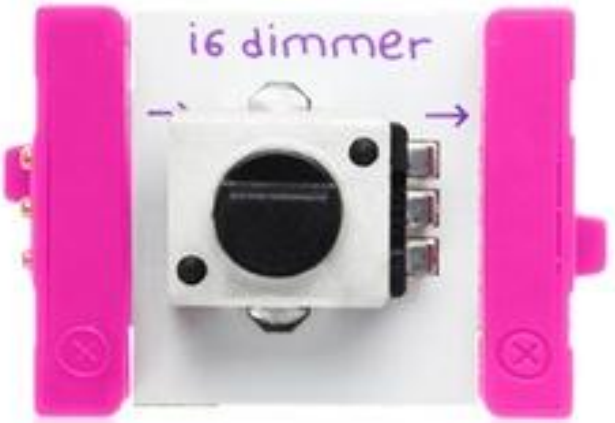


Pink Bits are Input Bits.



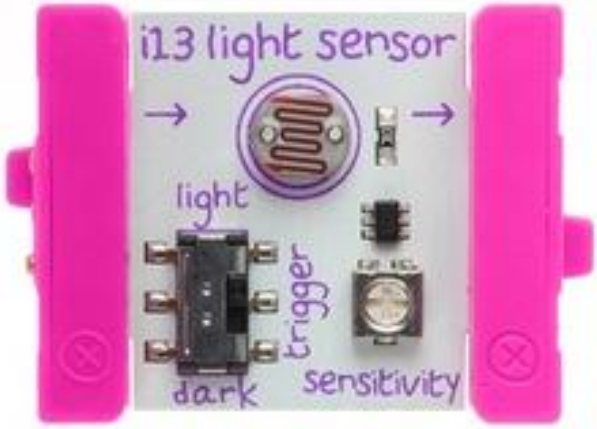
This is a Button Bit.

Pink Bits are Input Bits.



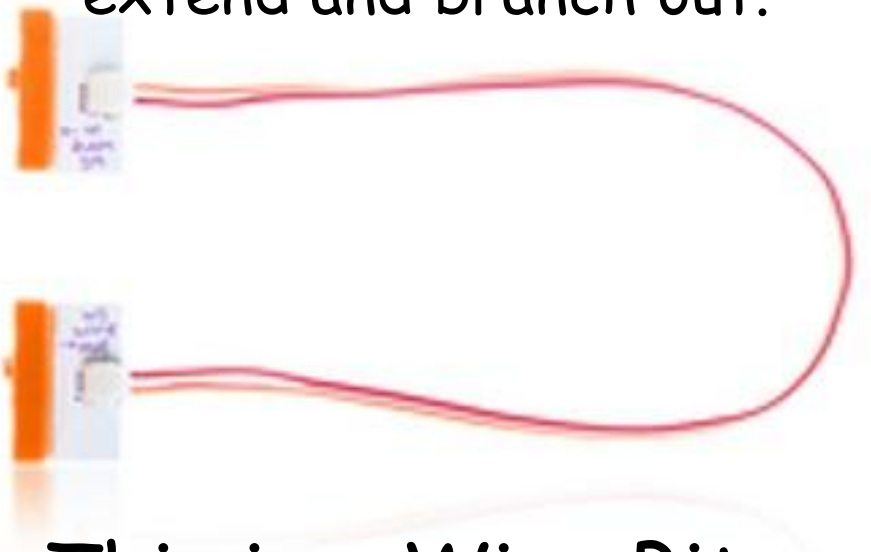
This is a Dimmer Bit.

Pink Bits are Input Bits.

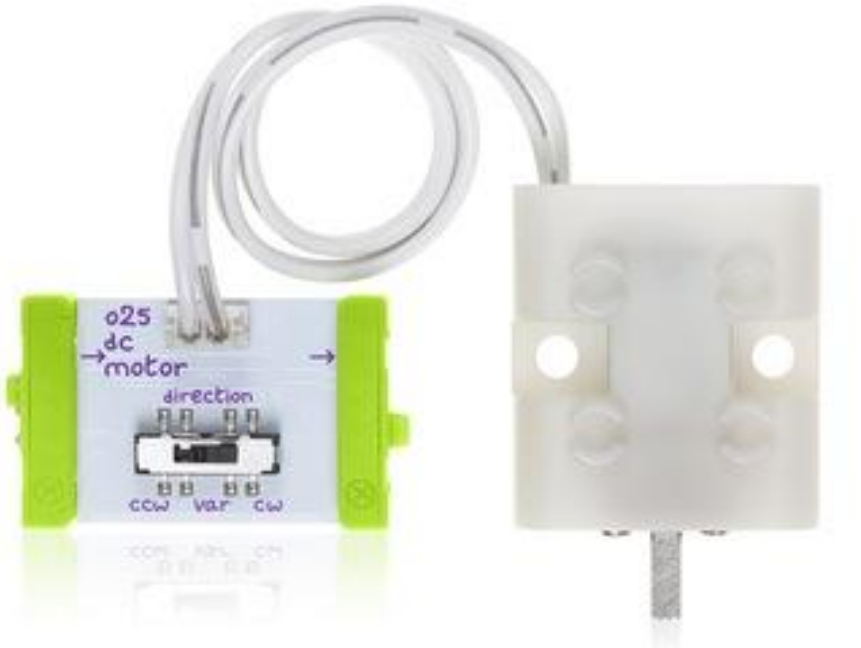


This is a Light Sensor Bit.

Orange Bits are Wires that help us extend and branch out.

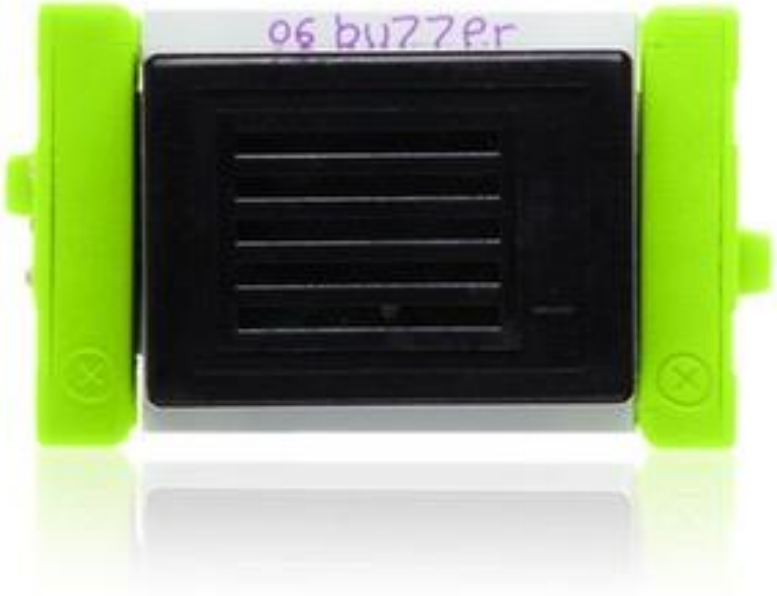


This is a Wire Bit.

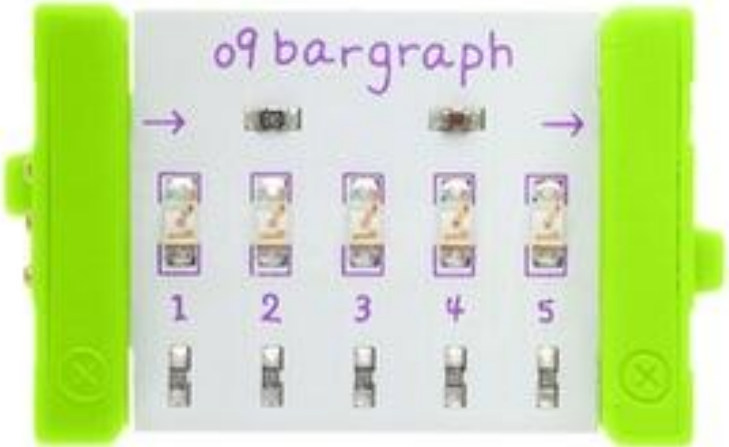


Green Bits are Outputs. This is a DC Motor.

Green Bits are Outputs. This is a Buzzer.

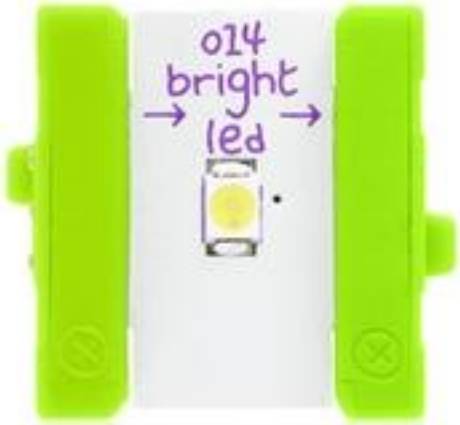


Green Bits are Outputs.



This is a Bargraph.

Green Bits are Outputs.



This is a Bright LED.

Our Little Bits Circuit - Things Using Sensors

Names: _____

Draw the Little Bits circuit for your group's craft model in the box below. Name and label the Little Bits parts.

APPENDIX C: DIFFERENTIATED INSTRUCTION IN THINGS THAT USE SENSORS WITH LITTLE BITS QUESTIONING TECHNIQUES

Level	Level Indicates…	Guidelines for the Questions…
1	Questions for Describing	*What is your group's invention? What will you name it?* *Which Little Bits part will you need to power up your circuit?* *Which Little Bits part will you need to connect the battery and switch to other parts?* *Which Little Bits part produces light/sound?* *Which Little Bits part can listen to sounds (senses sound) or looks out for light (senses light)?* *List down the Little Bits parts that you could use for your circuit.* *Looking at the circuit you have made, what would you name it?* *What is your invention's purpose?*
2	Questions for Comparing and Associating	*When would you use the light sensor?* *Why should this sensor be located here before this part?* *What would happen if you put this Little Bits part before the sensor?* *What is different about your invention when we compare it to something that professionals make outside?*
3	Questions for Associating, Analyzing and Applying	*How would this circuit you have created be the same as something that is sold outside?* *Think of a product that is sold outside, how would you design it in such a way that you cannot see the circuit?* *If you could make it differently, what are some parts that you would change?* *If you could simplify your circuit to make it shorter but still serve it's purpose, how would you do it?*