**GRADE 3 GROWTH AND CHANGES IN PLANTS Lesson Plans**

Coding: ScratchJr, DASH

Ontario Science Curriculum Expectations: Grade 3 **UNDERSTANDING LIFE SYSTEMS: GROWTH AND CHANGES IN PLANTS** (Overall Expectations)

2.investigate similarities and differences in the characteristics of various plants, and ways in which the characteristics of plants relate to the environment in which they grow;

3.demonstrate an understanding that plants grow and change and have distinct characteristics.

Grade 3 (Specific Expectations) **Developing Investigation and Communication Skills**

2.2 observe and compare the parts of a variety of plants (e.g., roots of grass, carrot, dandelion; stem of cactus, carnation, tree; leaves of geranium, spider plant, pine tree)

2.4 investigate ways in which a variety of plants adapt and/or react to their environment, including changes in their environment, using a variety of methods (e.g., read a variety of non-fiction texts; interview plant experts; view DVDs or CD-ROMs)

2.5 use scientific inquiry/experimentation skills (see page 12), and knowledge acquired from previous investigations, to investigate a variety of ways in which plants meet their basic needs

2.6 use appropriate science and technology vocabulary, including stem, leaf, root, pistil, stamen, flower, adaptation, and germination, in oral and written communication

2.7 use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes (e.g., make illustrated entries in a personal science journal to describe plant characteristics and adaptations to harsh environments)

**Lesson Ideas for Individual or Small Group Task using DASH**

1.Each student or small group of students research a plant and its parts.

2.Using a planning sheet they sketch the various parts and draft a script to record for each part.

3.Create their artwork for each part.

4.Lay out the stage artwork on a large mat (plastic sheet or piece of butcher block/mural paper) and code Dash to go to each part and wait.

4.Practice & record on DASH the scripted information. Code DASH to “say” the information at each part.

**Hints:** Stage artwork can be laid on the classroom or hallway floor. We suggest a mat so that the artwork can be secured to it and the starting point marked off. The location of each piece of artwork will “fit” the coding each time. If the coding time and presentation time is continued over several days you avoid the problem of recoding to fit the new positions of the art.

DASH moves in increments of 10 cm. Adding the task of having your students measure and cut the artwork paper to fit within spaces of 10 cm increments is a natural way to add mathematics to this project. As well having the students “grid off” their large paper or the floor as the last video shows adds to the learning within this task. A word of warning thought, the first time students measure off the grid it won’t be a pretty sight but we are amazed at how adept our students are now that we give them this task to do with their coding projects. If you add this measurement task to the Life Cycle Project here are the expectations you will meet:

**Math specific expectations (M: *Attributes, Units, and Measurement Sense* & GSS: *Location & Movement)***

– estimate and measure length, height, and distance, using standard units (i.e., centimetre, metre);

– draw items using a ruler, given specific lengths in centimetres (***Sample problem:*** Draw a pencil that is 5 cm long)… (Our ***Sample Problem***: Draw lines on a grid that are 10 cm apart when making a grid for DASH robot to move around a Science Parts of Plants project)

– describe movement from one location to another using a grid map (e.g., to get from the swings to the sandbox, move three squares to the right and two squares down)… (Our example, to code from illustration of plant roots to plant stem code DASH to move 3 squares to the right and 2 squares down)

Here is an example of a similar type of project but for frog life cycle rather than parts of a plant: <https://www.youtube.com/watch?v=EADIWFaxsH4> Frog Life Cycle (5:10)

Example of Task Card for Individual or Small Group Task using ScratchJr …

**Plant Parts Project with ScratchJr**

1.Decide if you are going to work with a partner or by yourself.

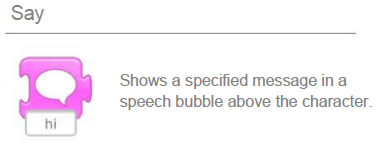
2.Decide which plant you want to study. Go to the Class library & the Internet sites and find information about your plant. Fill in the information sheet using bullets points.

3.Draw on paper each plant part. Use almost all the space for your work ***but*** leave a space empty for you to add labels. Colour your work.

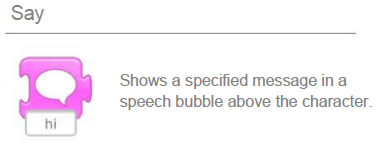
4.Use ScratchJr camera and take a photo of each part. Make each photo a background.

5.Use  to add title and labels.

6.Code a sprite to move to each flower part. Stop at each part and either …

a.type in the information about that flower part using  or

b.record the information about that flower part using

 or

c.use both blocks!

Move to the next background using 