Plant Lesson: Experiment

Water and Plants Unit Plan, Lesson 2 of 3

Created By	Grades	Subjects	Duration
Emily Townsend	K, 1st, 2nd	Science	≅ 115 minutes (experimenting over weeks)

Lesson Overview

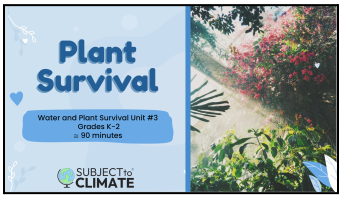
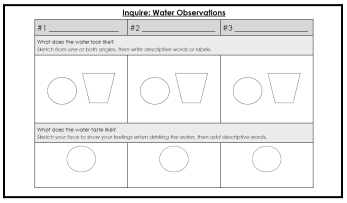
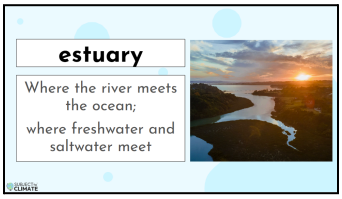
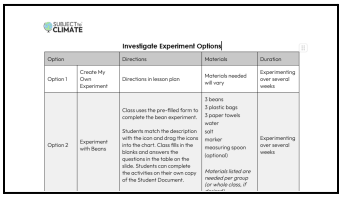
Essential Questions	• How do plants survive? • How do scientists answer questions? • How do scientists communicate?
Learning Outcomes	Students will be able to: • make observations. • use data to answer scientific questions. • communicate what I learn in my experiment.
Summary	In this lesson, students design and execute an experiment to learn about what plants need to survive and communicate their findings to others. **Inquire**: Students observe the differences between freshwater, brackish water, and saltwater in order to make predictions about what plants need to survive. **Investigate**: Students design and carry out an experiment to test their predictions about what type of water is best for some plants. **Inspire**: Students communicate what they learned in an original song.

Instructions

Inquire **≅ 15 minutes**	• Teacher distributes small cups to students. Teacher gives students a sip of clean fresh water. Students write *freshwater* next to #1 on the Inquire: Water Observations section of the Student Document. • Students record observations about the water on their Student Document. • Teacher gives students a sip of brackish water (about 35 grams or 6 teaspoons of salt per liter of water). Students write *brackish water* next to #2. • Students record observations about the water. • Teacher gives students a sip of saltwater (about 10 grams or 2 teaspoons of salt per liter of water). Teacher can choose to give students a cotton swab to dip in the salty water and place on their tongues. Students write *saltwater* next to #3 on the recording sheet. • Students complete the worksheet by recording observations about the water, comparing and contrasting and making predictions.
Investigate **≅ 70 minutes** *(if experimenting in class, this time*	• Students watch Sesame Street: Bouncing Balls (K) or A Study in Stream Ecology (1-2) and use the accompanying questions in the Teacher Slideshow to learn about what scientists do to answer questions. • Students look at a plant and brainstorm a list of what it needs to survive in the Teacher

spans over several days)	Slideshow. ○ Option 1: Teacher records the answers. ○ Option 2: Students drag and drop the things a plant needs using the interactive slide. • Students think about their activity in the Inquire section and share their predictions about what type of water plants need. Teacher asks students to think about the following variables of temperature, salinity, level of cleanliness and amount. • Students create, conduct and assess an experiment to text their predictions. ○ Students discuss what steps the class should take to answer the question. ○ Teacher uses the icons to categorize the steps and type students' ideas on the slide. ○ Students may use the Student Document to follow along. ○ Several alternatives for experimenting are described in the Teacher Document that provide students with experience experimenting, but are more guided and may require less time and resources. Choose the best option for your class. • Students carry out the experiment over the course of several weeks and record their data. • Students examine data from their experiment.
Inspire **≅30 minutes**	• Students reflect on what they learned that plants need, based on the lesson and experiment. • Students connect the learning to previous lessons and learn that the water in the ocean is rising, which affects the estuaries and plants that need brackish or freshwater to survive. See prompts and visuals in the Teacher Slideshow. • Students reflect on how this makes them feel and how to manage their feelings. • Students learn about how people communicate through oral tradition and singing. • Students connect this to how scientists communicate by listening to a song by Green Ninja and note important aspects of writing a song (ie, telling a story, rhyming, chorus). • Students write a song to share what they learned in their experiment, using a template from the Student Document or their own method. This can be completed whole group or in partners. • Students share their song(s) with the class and the community.

Accompanying Materials

Teacher Slideshow 	Student Document 
Vocabulary Cards 	Teacher Document 

Teaching Tips

Suggestions	• Students engage in many of the Next Generation Science Standards Science and Engineering Practices. • Students have the opportunity to develop and execute an experiment. • Students use both sketching and writing as observational tools. • This lesson can be taught over several days. Teach the Inquire section and the beginning of the Investigate section on Day 1, introduce the experiment and set it up on Day 2, experiment over several weeks, and then finish the Inspire section.

Prerequisites	• This is lesson 2 of 3 in our K-2nd grade Water and Plants Unit Plan.
	• You will need the following materials for activity in the Inquire section:
	  ○ 1-liter pitcher of plain water
	  ○ 1-liter pitcher of water with about 2 teaspoons of salt dissolved
	  ○ 1-liter pitcher of water with about 6 teaspoons of salt dissolved
	  ○ A small cup for each student
	• See the Teacher Document for any materials needed for the Investigate section.

Differentiation	• You can choose the scientist video in the Investigate section that is the best fit for your students. Options include Sesame Street: Bouncing Balls or A Study in Stream Ecology. The Teacher Slideshow includes slides with questions specific to each video. • The Investigate section offers several options for experimentation. Each option will provide students with the understanding needed to complete subsequent lessons. Teacher selects one of the three experiment options for students to complete. See Teacher Document for more information. • Students can use the template to write a song or create their own using the Student Document.

Learning Standards

Primary Standards
Next Generation Science Standards (NGSS)
2-LS2-1. Plan and conduct an investigation to determine if plants need sunlight and water to grow.
K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.
Supporting Standards
Common Core English Language Arts Standards (CCSS.ELA)
ELA-LITERACY.RI.K.3 With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.
ELA-LITERACY.RI.1.3 Describe the connection between two individuals, events, ideas, or pieces of information in a text.

ELA-LITERACY.RI.2.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.
CCSS.ELA-LITERACY.W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).
CCSS.ELA-LITERACY.W.1.2 Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.
CCSS.ELA-LITERACY.W.2.2 Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.