

Lesson 2 - Plant Adaptations  
Standards:

**Science (NGSS - Next Generation Science Standards):**

1. **K-PS3-1 (Energy)** – Students will understand how plants in the Rockaways adapt to challenges like sunlight and lack of water. This connects to the idea of plants needing resources like light and water to survive, and adaptations help them to use these resources more effectively.
2. **1-LS1-1 (Structure and Function)** – The lesson explains the function of plant structures (like strong roots or water-saving mechanisms) and how these help the plants adapt to environmental challenges, aligning with understanding how plant structures relate to their survival.
3. **2-LS4-1 (Biological Evolution: Unity and Diversity)** – This standard emphasizes how organisms change over time to survive in different environments. The lesson on adaptations shows how plants in harsh conditions evolve specific characteristics to overcome challenges, aligning with the concept of biological adaptation.
4. **3-LS4-3 (Adaptation)** – The lesson directly covers how plants adapt to challenges like wind, sun, and saltwater, which is the core concept of this standard. The lesson involves students learning how plants' structures or behaviors help them thrive in specific environments, like the dunes.
5. **5-ESS3-1 (Earth and Human Activity)** – The lesson explores how plants help stabilize dunes and ecosystems. Understanding the importance of these adaptations links to environmental science and the human role in protecting ecosystems.

**Language Arts (Common Core State Standards - CCSS for ELA):**

1. **CCSS.ELA-LITERACY.SL.K.1, SL.1.1, SL.2.1** – These standards involve engaging in discussions about plants and adaptations. Students will brainstorm ideas about the Rockaways and share their knowledge and thoughts in class discussions, developing their speaking and listening skills.
2. **CCSS.ELA-LITERACY.SL.4.1, SL.5.1** – Students will be expected to contribute to a discussion about the environmental challenges faced by dune plants and the specific adaptations plants use to survive. This promotes collaboration and clear communication.
3. **CCSS.ELA-LITERACY.RI.K-5.4** – The students will identify key details and vocabulary related to adaptations, plant challenges, and environmental factors, improving their ability to comprehend and explain informational texts.
4. **CCSS.ELA-LITERACY.W.K-5.8** – This standard requires students to gather information from sources to answer questions. They will be using the lesson content and games to make informed guesses about plant adaptations, connecting new information with prior knowledge.

**Mathematics (CCSS for Math):**

1. **CCSS.MATH.CONTENT.K.MD.A.1** – This standard involves describing and comparing measurable attributes, such as the relative size of seeds or plant features, which can be discussed in the context of adaptations (e.g., the strength of a plant's roots or the size of a leaf).
2. **CCSS.MATH.CONTENT.3.MD.B.4** – While the lesson does not directly focus on data collection, students may visually compare aspects of different plants and their adaptations, helping to build skills in organizing and interpreting information.

### **Social Emotional Learning (SEL):**

- **Self-awareness and self-management:** As students reflect on how plants use "superpowers" (adaptations) to survive, they can also reflect on their own strengths and strategies for overcoming challenges in their lives, linking personal growth to the lesson.
- **Social awareness:** The lesson encourages understanding how plants are important to the environment and others (animals, humans), which builds empathy and awareness of the interconnectedness of living things.
- **Responsible decision-making:** By exploring how plants adapt to protect themselves and the environment, students can discuss the importance of protecting natural resources and ecosystems, supporting responsible choices.

### **Key Concepts Addressed in the Standards:**

- **Adaptations:** The lesson emphasizes how plants have specialized structures or behaviors that help them survive in difficult conditions, such as strong roots to anchor in sand or water-conserving features for dry environments.
- **Environmental Challenges:** Harsh sunlight, strong winds, salty seawater, and shifting sand are examples of challenges that plants face, making them perfect candidates for learning about resilience and survival strategies.
- **Dune Ecosystems:** The importance of dune plants in maintaining the stability of ecosystems is a central theme of the lesson, tying into broader environmental science and sustainability concepts.