5-Minute Refresher: Photosynthesis
Photosynthesis – Key Ideas

• Energy needed for life comes from the sun.
• Leaves capture the energy of sunlight.
• Photosynthesis uses sunlight, water, and carbon dioxide.
• Photosynthesis allows plants to store energy, form plant matter, release oxygen, and maintain plant activity.
• Plants do not take in food from their environment, but make their own.
• The mass for plants comes from the air (specifically from carbon dioxide).
• Seeds contain the food and energy needed to grow until plants can photosynthesize and make their own.
Photosynthesis and Earth – Key Ideas

• Plants take carbon dioxide out of the atmosphere.
• During climate change, the amount of carbon dioxide increases if Earth is warming up.
• “Carbon sequestration” is the process that captures and stores carbon dioxide over time.
• Plants sequester atmospheric carbon dioxide.
• Carbon sequestration could reduce greenhouse gas emissions from power plants.
Photosynthesis – Prior Knowledge

• Students will likely be familiar with different types of plants or food grown from plants.
• They may be familiar with the parts of a plant – flower, leaf, stem, and root.
• They may know plants make their own food.
Photosynthesis – Learning Objectives for Grades K-3

- Plants need water and light to grow.
- Plants need space to live and grow.
- Leaves use water, air, and sunlight to make food.
Photosynthesis – Learning Objectives for Grades 4-6

• Plants acquire their material for growth from air and water.
• Plants use energy from light to make sugars from carbon dioxide and water.
• Plants release oxygen during photosynthesis and either store sugars or use them immediately.
Photosynthesis – Common Misconceptions

- Plant mass comes from soil.
  - **Reality:** Plant mass comes from air, specifically carbon dioxide (plus a small amount from water). Plant mass was hypothesized to come from soil, and then water, but by following the reactions during photosynthesis was proven to come from carbon dioxide.

- Food enters through the roots of plants.
  - **Reality:** Roots absorb nutrients and water, but their leaves create food through the process of photosynthesis.
Photosynthesis – Additional Information

Plants do not need soil to grow. The mass from plants comes from the air, not the soil. To learn more about this, have students investigate hydroponic gardening:

http://www.siemensscienceday.com/activities/i_dont_need_you_soil.cfm