Science STEM

Pumpkin Jack

Grade Level
PreK-8

Length of Lesson
45 minutes + ongoing investigation

Objective
By the end of this lesson, students will better understand a pumpkin life cycle and how they return nutrients to the soil.

Materials
- Pumpkin Jack book
- Small pie pumpkin
- Large plastic or glass container with a tight-fitting lid
- Potting soil
- Clear packing tape
- Exacto knife
- Pumpkin carving materials
- Water

Standards
Common Core
2.RL.2.1; 2.RL.2.2.; W.2.8 / W.3.8; SL.2.1 / SL.3.1; W.2.2 / W.3.2

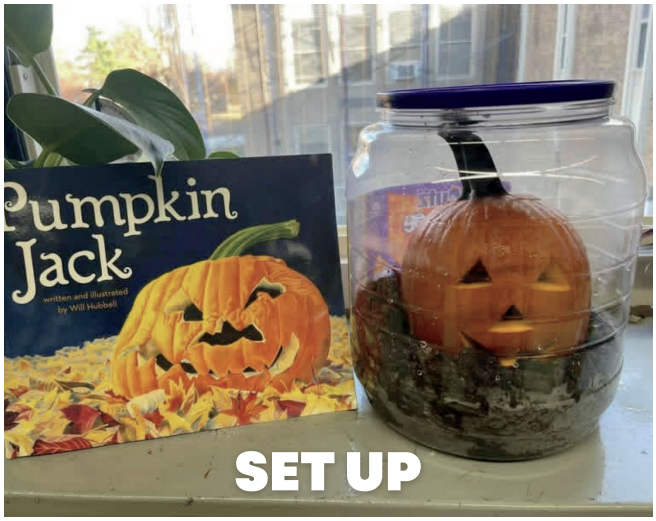
NGSS
2-LS2-1; 3-LS1-1; 3-LS4-4; 5-LS2-1

Lesson Summary
Students will explore the life cycle of a pumpkin from seed to mature plant and back to the soil. Students create a decomposition experiment, make observations, and discover how pumpkins can return nutrients and organic matter to the soil.

Suggested Sequence of Events:

1. Set Up: Take the large plastic container and cut a hole large enough to fit your small pumpkin through. Save that piece. Add several inches of planting soil to the bottom of the container and spritz with water until damp. Do not saturate the soil.
2. Read through the IAITC Pumpkin Ag Mag and/or IAITC Soil Ag Mag for background information regarding plant lifecycles and soil health. Interactive online versions can be found on our website.
3. Read *Pumpkin Jack* by Will Hubbell
4. Complete the activity in the following procedures.
   - Using the information learned in Pumpkin Jack, introduce the students to the Pumpkin Jack activity.
   - Have students pick a design and carve the pumpkin before sealing it in the container.
   - Place the pumpkin in the container and replace the top of the container. (You may need to use packaging tape to fasten it in place)
   - **Make Predictions:** Have students predict what will happen to the pumpkin over the next several weeks. Students can draw or write what they think the pumpkin will look like.
   - Place the container and pumpkin in a warm place in the classroom.
   - **Observe and Record:** Have students observe the pumpkin regularly without opening the container. Students can record changes in the pumpkin's color, size, shape, and texture.
     - Talk with students about how decomposers, such as fungi and bacteria, break down the pumpkin. Explain that decomposition returns organic material to the soil.
     - Once the pumpkin has decomposed, cover the remaining pumpkin material and seeds with soil. Keep the soil damp and continue observing. If conditions are right, students may see new seedlings emerge.
   - **Whole class discussion and reflection:** Discuss how decomposition and new growth connect to the pumpkin life cycle. Have students explain how one pumpkin can eventually lead to new pumpkin plants.

TEACHER RESOURCES



Extension Ideas:

- Read “Lily’s Surprise Pumpkins” by Beth Charles
- Read “Pumpkin Smash” by Michelle Schaub
- Research where pumpkins are grown in Illinois and across the United States.
- Learn more about Morton, Illinois, known as the Pumpkin Capital of the World.
- Research how pumpkins are used for food, decoration, and processing.
- Investigate the role of bees and other pollinators in pumpkin production.
- Invite a local pumpkin farmer to speak with the class about growing and harvesting pumpkins.
- Have students compare a pumpkin's life cycle with the life cycle of another Illinois crop.
- Research what happens to other agricultural crops when they decompose.
- Have students keep a pumpkin observation journal and create a timeline showing its changes.
- Discuss how composting can return organic material to the soil.
- Visit a pumpkin patch or local farm to learn more about pumpkin production.
- Have students use an AITC scientific inquiry worksheet to investigate: What conditions might change how quickly a pumpkin decomposes?
- Go to agintheclassroom.org to contact your County Ag Literacy Coordinator for free classroom sets of our Ag Mags!

Teacher Safety Note: An adult should prepare the container and handle any cutting tools. Students should not open, touch, or smell the decomposing pumpkin. Once decomposition is complete, the teacher should handle the material and seeds as appropriate.