# BUG HOTEL

**Summary:** Students will explore creative ways to build and fill a “bug hotel,” helping them view these creatures positively and with respect while learning about their habitats and needs. Students will explore the outdoors while gathering recycled and natural materials, and will check back on the bug hotel regularly for observation.

**Standards Covered:**

1. 1.LS.1: Living things have basic needs, which are met by obtaining materials from the physical environment.
2. 1.LS.2: Living things survive only in environments that meet their needs.
3. 1.PS.1: Properties of objects and materials can change.

**Time Frame:** 1 hour (varies after construction)

**Ages:** PreK, Kindergarten, 1st Grade

**Season:** Spring, Summer, Fall

**Suggested read-aloud:** Before or after the lesson, incorporate a children’s book about bugs. We recommend:

Hank’s Big Day by Evan Kuhlman


**Materials:**

- A main “hotel” structure --personalize it according to your space and materials! Utilize old containers that otherwise would be thrown away like gallon jugs or old planters and pots Other ideas include an old bookshelf, a storage box tipped on its side, a pallet box, or a teepee made of sticks tied together. (Depending on your basic shape, stapling plastic mesh or planks to the back of an open object will help keep things from falling out)
- “Food” for the bugs—think nectar rich flowers, native plants, wildflowers, wood chips, straw, old vegetables, seeds, etc.
- Shelter, bedding, and hiding places for the bugs—hollow pieces of bamboo, grasses, moss, dry leaves, logs, pebbles, twigs, feather, gravel, pinecones, bark, cardboard toilet paper rolls and even shredded paper.

**Procedure:**

1. Identify and prepare what will be the base part of your “hotel.”
2. Talk to students about the kinds of creatures that are likely to be living in your school garden and why they are important. Discuss what they might eat and what sort of places they might sleep or play in and why.

3. Have students assist in filling the structure with food for the bugs to eat as well as places for them to hide, play, sleep, etc. Remember that the focus of this project is reusing natural materials and incorporating imagination! Materials should be natural materials found and collected inside and outside of the school that do not cost anything.
4. Remember that unorganized is best. Large piles of leaves are beneficial to bugs and insects for shelter, places do not necessarily need to neat and tidy. Leave plenty of randomly placed open spaces/holes for the bugs to potentially inhabit or play in.


5. Ask students to imagine they're a beetle or a bee and about what they'd use to create their cozy bedroom.
6. Check on the "bug hotel" regularly, having students talk about and/or record changes they see. What do the bugs like? What do they not like? Which bugs have "moved in"? Refresh or replace the "food" and "bedding" accordingly.

**Dig Deeper**

This project can be modified by instead building a "Bird Café." Follow the same model, using local flowers and seeds specific to native birds in your area as food. Place or hang your bird café where it can be viewed through a classroom window if possible.

# BASIC PLANT NEEDS

**Summary:** Students will learn about the basic needs of a plant for successful growth by regular observation of a seed sprouting in the classroom.

**Standards Areas Covered:**

1. 1.PS.1: Properties of objects and materials can change.
2. 1.LS.2: Living things survive only in environments that meet their needs.
3. 1.LS.1: Living things have basic needs, which are met by obtaining materials from the physical environment.
4. 1. ESS.2: Water on Earth is present in many forms.
5. ESS.1: The sun is the principal source of energy

**Time Frame:** 30 minutes (plus grow time)

**Ages:** Pre-K-2nd (vocabulary will change with age groups, lesson can be modified for older grades.)

**Season:** Any

**Materials Needed:**

- Easily sprouting seeds like lima bean or grass.
- Potting soil = one pot (to observe together as a class)
- Water

**Procedure:**

1. Begin the lesson with a story or this song explaining basic plant needs: https://www.youtube.com/watch?v=TJ2oohzjL9M
2. Discuss and share what students may already know about what a plant needs to survive. Connect the needs to animals or humans, how are they similar/different? Optional: use a matching worksheet similar to the “Plant Life Cycle” below.
3. Grow a simple plant in the classroom to use as an observation center for a few weeks (we recommend a bean plant). Have students record growth progress throughout the next couple weeks.
4. The focus of this lesson is what student reiterate through their data sheets and all understand that plants need the same basic elements- soil, water, oxygen, and sunlight.

**Dig Deeper**

Consider growing several plants with different growing elements for comparison purposes—what happens when you eliminate water? Will the plant grow without light? Will orange juice feed the plant well?

# PUMPKIN SCIENCE

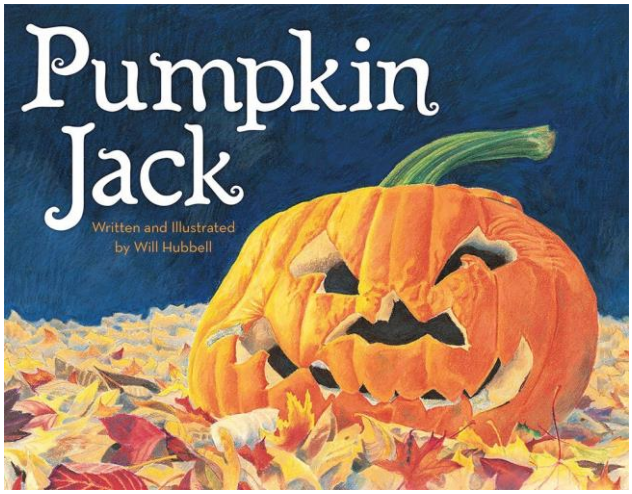
**Summary:** By rotating through 3 stations consisting of various experiments with actual pumpkins, students will experience the growing process of pumpkins from the inside out.

**Standards Covered:**

1. 1.LS.1: Living things have basic needs, which are met by obtaining materials from the physical environment.
2. 1.PS.1: Properties of objects and materials can change.
3. 1.LS.2: Living things survive only in environments that meet their needs.

**Time Frame:** 1 hour
**Ages:** PreK-3rd grade
**Season:** Late Summer-January (or whenever pumpkins are available)
**Materials Needed:**

- Pumpkin Science Worksheets (below) on clipboards (optional)
- Writing utensils, markers or crayons
- Measuring cubes
- Full sized pumpkins for dissection and several small pumpkins for students to individually observe (optional)
- Pumpkin carving knife, spoons
- Bowls for seeds and pumpkin flesh
- Towels (in case of splashing, or mess)
- Rubbermaid tub for similar container, filled with water



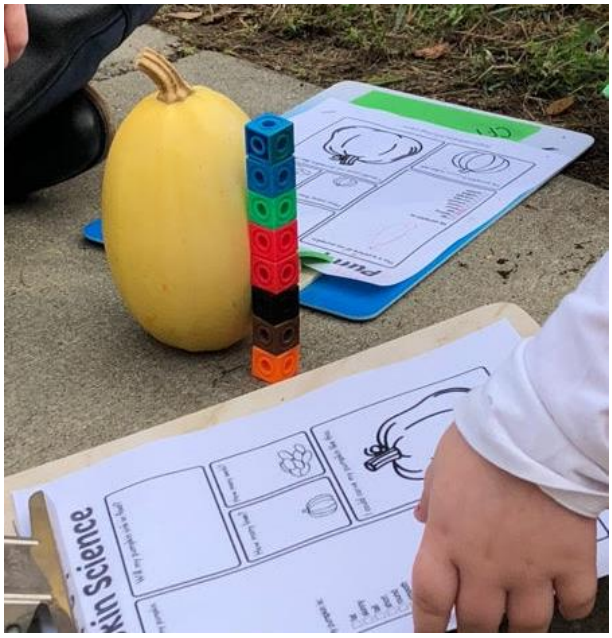

**Suggested read-aloud:**
Before or after the lesson, incorporate a children's book about pumpkins and/or their life cycle. We recommend: Pumpkin Jack by Will Hubbell

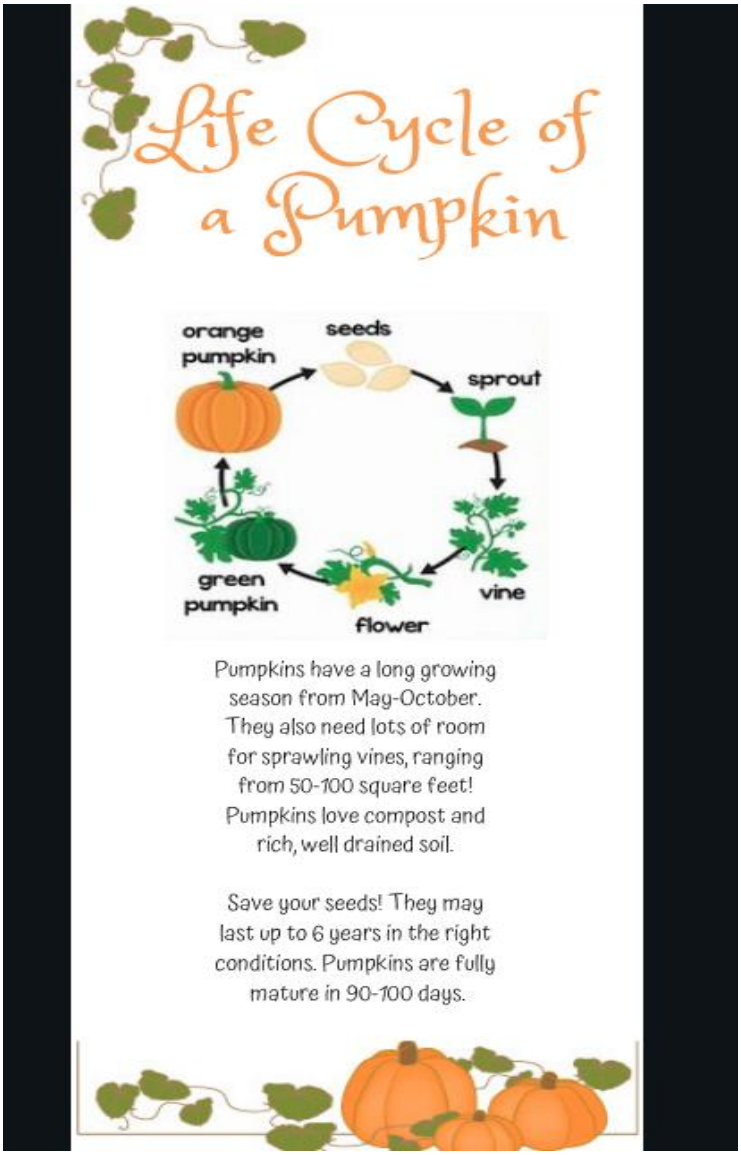
**Procedure:**

1. Pre-prep the pumpkin for dissection by cutting circularly around the stem so it can be easily removed. Keep this "lid" on to still be able to show to the students where the stem is. Keep "guts" so the children can touch and observe the flesh and pulp of the pumpkin.

2. Discuss what students know about pumpkins and their traits. Review the life cycle of a pumpkin (facts below).

3. Give each student a clipboard with the “Pumpkin Science” worksheet and a writing utensil. Divide students into 3 groups to rotate between the stations, filling out the worksheet as they go. The 3 stations are: Pumpkin Dissection, Pumpkin Floating, and Pumpkin Observation.
    a. **Pumpkin Dissection**- Make sure there is adequate adult supervision at the station at all times and make rules clear before beginning. Designate separate bowls for seeds and flesh. Students will explore what is inside a pumpkin, pulling out its “guts” and separating seeds from pulp. They will count the seeds as well as help rinse and dry them, saving them for planting or prepping them to be roasted as a classroom snack (recipe: https://www.foodnetwork.com/recipes/food-network-kitchen/pumpkin-seeds-recipe-2105941).
    b. **Pumpkin Floating**- This stage is best if done outdoors, since students have a tendency to splash water with the dropping of their pumpkin. Before dropping the pumpkin in the water, ask the student if they think it will sink or float. Explain this is a “hypothesis” and the act of placing the pumpkin in the water is an “experiment”.
    c. **Pumpkin Observation**- Measuring cubes and art materials (crayons and/or markers) will be at this station. Students will draw a picture of their pumpkin and share descriptive words. Students will guess how many cubes tall and wide their pumpkin is and test out their guesses by measuring.






**Dig Deeper**

Consider a “Pumpkin Planting” station as a 4th station during this lesson if done in late Spring or early Summer (seeds will have to be previously purchased, the fresh seeds from the dissection stage cannot be used until they’re properly dried out).

Since the growing season for pumpkins is so long, the same class that plants the seeds may not be able to share in the harvest due to the tradition school year Aug-May. (Pumpkins are typically planted in May and are ready to harvest in October). However, if possible, invite the class from the previous year to experience the final harvest in late Fall.

# Pumpkin Science

This is a picture of my pumpkin.

My pumpkin is:

- ☐ fat
- ☐ skinny
- ☐ tall
- ☐ short
- ☐ round
- ☐ smooth
- ☐ bumpy
- ☐ orange
- ☐ yellow
- ☐ green

Will my pumpkin sink or float?

How many lines?

How many seeds?

I could carve my pumpkin like this:

My pumpkin is _____ cubes tall.