Vine

Life Science | Lesson Guide

Kindergarten

Photo Description

This image shows a green vine plant growing on a wooden fence. The vine has long, smooth pods hanging down and big heart-shaped leaves. You can see the vine is climbing up and over the fence, reaching toward the sun and sky.

Scientific Phenomena

Anchoring Phenomenon: Why do plants grow upward and wrap around things?

Plants are living things that grow toward light and sometimes climb on structures for support. This vine is demonstrating phototropism—the plant's natural tendency to grow toward sunlight. Additionally, the vine exhibits thigmotropism (growth in response to touch), as the tendrils and stems wind around the fence for structural support. The plant's growth is driven by a combination of seeking light energy for photosynthesis and finding stable support to reach higher toward sunlight sources.

Core Science Concepts

1. Plants are living things that grow – This vine is alive and growing larger over time. It needs sunlight, water, and soil nutrients to survive and develop.

2. Plants grow toward light – The vines reach upward and sprawl across the fence because they are seeking sunlight. This helps them make food through photosynthesis.

3. Plants use structures to climb and adapt – Vines have tendrils and flexible stems that wrap around supports (like fences). This helps them grow tall without having thick, woody stems like trees.

4. Living things change their environment – As the vine grows, it covers the fence and creates shade. It also provides shelter and food for small animals and insects.

Pedagogical Tip:

For Kindergarteners, avoid the technical terms "phototropism" and "thigmotropism" in direct instruction. Instead, use concrete language: "Plants reach toward the sun" and "Plants hold onto things to help them grow tall." Use hand motions to show vines wrapping and reaching—kinesthetic learning is powerful at this age.

UDL Suggestions:

Accessibility: Provide multiple means of engagement by offering tactile exploration (feel real vines or rope), visual observation (photos and the actual plant), and verbal description. Students with visual impairments can feel textured leaves and stems. English Language Learners benefit from picture cards showing vine growth stages paired with simple captions.

Discussion Questions

1. What do you think this vine needs to stay alive and healthy? (Bloom's: Remember | DOK: 1)

2. Why do you think the vine is growing upward on the fence instead of staying on the ground? (Bloom's: Analyze | DOK: 2)

3. If we moved this fence to a shady spot with no sun, what do you predict would happen to the vine over time? (Bloom's: Evaluate | DOK: 3)

4. How do you think the vine helps other living things, like bugs or birds? (Bloom's: Understand | DOK: 2)

Extension Activities

1. Observe a Climbing Plant (Hands-On Exploration)
Bring a potted vine or climbing plant into the classroom (such as a Pothos or Philodendron). Have students observe its leaves, count how many tendrils they can see, and gently feel the texture. Over 2-3 weeks, let students draw pictures of the plant weekly to track how it grows. Tape it next to a sunny window and watch where it reaches.

2. Build a Vine Climbing Path (Engineering Activity)
Provide students with string, yarn, or pipe cleaners. Set up a "fence" using a small cardboard box or wooden frame. Have students wrap and weave their string around the structure to mimic how vines climb. Ask, "What helps your vine stay attached?" This builds understanding of plant structures while practicing fine motor skills.

3. Read and Dramatize Plant Growth (Language + Science Integration)
Read a simple plant growth book aloud, then have students act out being seeds, sprouting, growing leaves, and reaching toward the sun. Use scarves or ribbons as "vines" that students can twirl and wrap around each other, dramatizing how vines climb. This combines movement, imagination, and science learning.

NGSS Connections

Performance Expectation:
K-LS1-1: Use observations to describe patterns of what plants and animals (including humans) need to survive.

Disciplinary Core Ideas:
- K-LS1.A – All organisms have basic needs such as water, materials to make structures, and energy
- K-ESS2.E – Plants depend on water and light to grow
- K-LS1.C – Many characteristics of an organism are inherited from parents, and some are learned or influenced by the environment

Crosscutting Concepts:
- Patterns – Observe that plants grow in predictable patterns toward light and upward
- Structure and Function – The vine's flexible stem and tendrils help it climb and grow

Science Vocabulary

* Vine: A plant with a long, thin stem that grows along the ground or climbs up things like fences or trees.

* Leaf (leaves): The green parts of a plant that catch sunlight and help the plant make food.

* Grow: To become bigger and taller over time; what living things do when they get food, water, and sunlight.

* Sunlight: Bright light and warmth that comes from the sun; plants need it to live and make food.

* Tendril: A thin, curly part of a vine that wraps around things to help the plant climb.

External Resources

Children's Books:
- The Tiny Seed by Eric Carle – A wonderful story about a seed's journey and growth toward the sun
- From Seed to Plant by Gail Gibbons – Simple, illustrated non-fiction about how plants grow
- What Do Roots Do? by Kathleen V. Kudlinski – Explores what plants need and how they grow

YouTube Videos:
- "Plant Growth Time Lapse" (National Geographic Kids) – Shows a vine growing and climbing over several days compressed into seconds. Visually engaging for Kindergarteners.
  https://www.youtube.com/watch?v=xwKY8qIrn1k (or search "National Geographic Kids plant growth")

- "How Plants Grow" (Crash Course Kids) – A simple, animated explanation of what plants need to grow, with clear visuals and a friendly narrator.
  https://www.youtube.com/watch?v=xwKY8qIrn1k (search "Crash Course Kids how plants grow")