Activity Length: 30 minutes

Intended Learning Outcomes:
Students discover the adaptations that help common plants survive in the schoolyard.

Skills:
Observation, recording, comparing, teamwork

Lesson Objectives:
K standards
1.1 - Generating evidence: using the processes of scientific investigation (i.e. framing questions, designing investigations, conducting investigations, collecting data, drawing conclusions)
1.2 - Communicating science: communicating effectively using science language and reasoning
1.3 – Knowing in science: understand the nature of science
2.1 – Investigate non-living things
   3.2 – Describe parts of non-living things
4.1 – Investigate living things
4.2 – Describe the parts of living things

1st grade standards
1.1 - Generating evidence: using the processes of scientific investigation (i.e. framing questions, designing investigations, conducting investigations, collecting data, drawing conclusions)
1.2 - Communicating science: communicating effectively using science language and reasoning
1.3 – Knowing in science: understand the nature of science
2.1 – Investigate the natural world including rock, soil, and water
   3.2 – Analyze objects and record their properties
4.2 – Living things change and depend upon their environments to satisfy their basic needs

2nd grade standards
1.1 - Generating evidence: using the processes of scientific investigation (i.e. framing questions, designing investigations, conducting investigations, collecting data, drawing conclusions)
1.2 - Communicating science: communicating effectively using science language and reasoning
1.3 – Knowing in science: understand the nature of science
4.2 – Identify basic needs of living things (plants and animals) and their abilities to meet their needs
3rd grade standards
  2.1 – Classify living and nonliving things in an environment
  2.2 – Describe the interactions between living and nonliving things in a small environment

4th grade standards
  5.2 – Describe the common plants and animals found in Utah environments and how these organisms have adapted to the environment in which they live
  5.3 – Use a simple scheme to classify Utah plants and animals

5th grade standards
  5.2 – Describe how some characteristics could give a species a survival advantage in a particular environment

Materials Required:
  • Pencil, paper, and clipboard
  • Optional: plant identification book, hand lens or microscope, plant press

Background Information:
Just as animals have a variety of adaptations, so too do plants. Even plants common in our schoolyards have specialized adaptations that allow them to survive. Careful observation will help students discover the adaptations that help the plants they see every day move, survive winter,

Activity:
  • Brainstorm adaptations that different plants have (any examples are ok to get students' brains moving, such as Douglas fir trees' thick bark to protect against fire; prairie plants have deep roots to help them find water; cheatgrass seeds are pointy and stick to animals passing by that in turn drop seeds elsewhere; plants that have tiny hairs to keep them protected from cold, sun, and wind; plants with waxy exteriors to prevent moisture loss; etc.)
  • Set very clear boundaries for the outdoor space to be used (have students repeat or point to the areas that mark the boundary to ensure they know where they can and cannot go)
  • Have students pick an area within the boundaries and begin to observe the plants therein
  • Have students choose one plant they would like to study more in-depth
  • Students will observe their chosen plant and draw or describe the plant in detail in their notes
  • Students will brainstorm (alone or in small groups) what types of adaptations their chosen plant has to help it survive in the given environment
  • Back in the classroom, students can share what they discovered
Conclusion and Extensions:
*Note – if collecting plants, please ensure that students are collecting specimens that are either “down and dead” or that they are not clearing the area of the plant (it’s easy to think about picking 1-in-20 or about 5% of the plants)
• Ask students if they have seen their chosen plant (or a similar one) in a different type of environment. What adaptations help the plant live in such different environments?
• Have students devise a fictional plant that would be able to survive in a habitat of their choosing.
• Have students go to the same spots in different seasons to see how their plants change to survive the year.
• If school or local land management rules allow, students can gather a specimen of the plant they studied and preserve it in the plant press. Mounting the pressed specimens and covering them in contact paper or laminating them will allow the specimens to last for a long time, and you can start a classroom herbarium of local plant species from different areas and different seasons!
• Students can look for patterns (logarithmic spirals, lines, clustered circles, etc.) in the plants