

Kindergarten Science Lessons



Kindergarten

TEACHER SCIENCE LESSON & RESOURCE GUIDE

Cache County School District

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CORE STANDARDS OF THE COURSE

Standard 1

The Processes of Science, Communication of Science, and the Nature of Science. Students will be able to apply scientific processes, communicate scientific ideas effectively, and understand the nature of science.

Objective 1

Generating Evidence: Using the processes of scientific investigation (i.e. framing questions, designing investigations, conducting investigations, collecting data, drawing conclusions)

- a. Framing questions: Observe using senses, create a hypothesis, and focus a question that can lead to an investigation.
- b. Designing investigations: Consider reasons that support ideas, identify ways to gather information that could test ideas, design fair tests, share designs with peers for input and refinement.
- c. Conducting investigations: Observe, manipulate, measure, describe.
- d. Collecting data: Deciding what data to collect and how to organize, record, and manipulate the data.
- e. Drawing conclusions: Analyzing data, making conclusions connected to the data or the evidence gathered, identifying limitations or conclusions, identifying future questions to investigate.

Objective 2

Communicating Science: Communicating effectively using science language and reasoning

- a. Developing social interaction skills with peers.
- b. Sharing ideas with peers.
- c. Connecting ideas with reasons (evidence).
- d. Using multiple methods of communicating reasons/evidence (verbal, charts, graphs).

Objective 3

Knowing in Science: Understanding the nature of science

- a. Ideas are supported by reasons.
- b. There are limits to ideas in science (i.e. what can be observed, measured, and verified).
- c. Differences in conclusions are best settled through additional observations and investigations.
- d. Communication of ideas in science is important for helping to check the reasons for ideas.

Standard 2

Earth and Space Science. Students will gain an understanding of Earth and Space Science through the study of earth materials, celestial movement, and weather.

Objective 1

Investigate non-living things.

[Supplemental Materials](#) (pdf)

- a. Observe and record that big rocks break down into small rocks, e.g., boulders, rocks, pebbles, sand.

- b. Demonstrate how water and wind move nonliving things.
- c. Sort, group, and classify Earth materials, e.g., hard, smooth, rough, shiny, flat.

Objective 2

Observe and describe changes in day and night.

[Supplemental Materials](#) (pdf)

- a. Compare and contrast light and dark in a day/night cycle and identify the changes as a pattern.
- b. Investigate, interpret, and explain to others that the sun provides heat and light to Earth.
- c. Examine what happens when you block the sun's light. Explore shadows and temperature changes.

Objective 3

Compare changes in weather over time.

[Supplemental Materials](#) (pdf)

- a. Observe and record that weather changes occur from day-to-day and weather patterns occur from season to season.
- b. Communicate ways weather can affect individuals.
- c. Describe, predict, and discuss daily weather conditions and how predicting the weather can improve our lives.

Standard 3

Physical Science. Students will gain an understanding of Physical Science through the study of the forces of motion and the properties of materials.

Objective 1

Identify how non-living things move.

[Supplemental Materials](#) (pdf)

- a. Observe and record how objects move in different ways, e.g., fast, slow, zigzag, round and round, up and down, straight line, back and forth, slide, roll, bounce, spin, swing, float, and glide.
- b. Compare and contrast how physical properties of objects affect their movement, e.g., hard, soft, feathered, round, square, cone, geometric shapes.

Objective 2

Describe parts of non-living things.

[Supplemental Materials](#) (pdf)

- a. Describe how parts are used to build things and how things can be taken apart.
- b. Explain why things may not work the same if some of the parts are missing.

Standard 4

Life Science. Students will gain an understanding of Life Science through the study of changes in organisms over time and the nature of living things.

Objective 1

Investigate living things.

Supplemental Materials (pdf)

- a. Construct questions, give reasons, and share findings about all living things.
- b. Compare and contrast young plants and animals with their parents.
- c. Describe some changes in plants and animals that are so slow or so fast that they are hard to see (e.g., seasonal change, “fast” blooming flower, slow growth, hatching egg).

Objective 2

Describe the parts of living things.

Supplemental Materials (pdf)

- a. Differentiate between the five senses and related body parts.
- b. Identify major parts of plants, e.g., roots, stem, leaf, flower, trunk, branches.
- c. Compare the parts of different animals, e.g., skin, fur, feathers, scales; hand, wing, flipper, fin.





Summary:

Through a visual presentation, the students will learn the different sources of freshwater, and the relative ratios of these water sources on the earth.

Time Frame: 1 class period that runs 15 minutes

Main Curriculum Tie:

Science - Kindergarten

Standard 1 Objective 1

Generating Evidence: Using the processes of scientific investigation (i.e. framing questions, designing investigations, conducting investigations, collecting data, drawing conclusions)

Materials:

- Map of world or globe
- 5-gallon water container
- Measuring cups
- Eye dropper
- 5 gallons of water
- Small, clear container
- [Water distribution worksheet](#) (pdf)

Attachments

- [water-distribution.pdf](#)

Background for Teachers:

Approximately 75% of the earth is covered with water. Sources of water are oceans, icecaps and glaciers, groundwater, freshwater lakes, inland seas and salt lakes, the atmosphere, and rivers. Although the earth appears to have a plentiful supply of water, it is important to realize that fresh water is a limited resource. See the table below for the percentage of each water source in relation to the total amount, and the appropriate measurement for each source.

Not all of the freshwater is available for humans to use. Water in the atmosphere and in the icecaps and glaciers is not available for humans to use. We also cannot access all the groundwater. Therefore, only the water in rivers, freshwater lakes and a portion of groundwater can be used by humans. The percentage of usable freshwater is reduced by pollution and contamination. Therefore, the actual amount of water that is useable by humans is very small (approximately .00003 %).

Water Source	% of the Total Amount	Measurement
Oceans	97.2%	All water left in bucket
Icecaps/Glaciers	2.0%	1 Cup
Groundwater	0.62%	1/3 Cup
Freshwater Lakes	0.009%	1/8 teaspoon
Inland Seas/Salt Lake	0.008%	1/8 teaspoon
Atmosphere	0.001%	One drop
Rivers	0.0001%	One flick

Attachments

- [glossary.pdf](#)
- [discussion.pdf](#)
Discussion Questions

Instructional Procedures:

PROCEDURE:

1. Show students the globe or map of the world and ask them what the blue represents (water). Ask them what percentage is covered by water (75%). Ask the students if all the water is available for humans to use.
2. Show the students the 5 gallons of water in the container. Explain that the 5 gallons represents all the water on the earth.
3. Ask the students to think about the different places we find water. In what area do we find the majority of the water on earth (oceans). Tell them that because the majority of the water is in the ocean, we will leave that water in the bucket. We will be taking out all the water that is from a source other than the ocean.
4. Ask students to name sources of water. As they give you answers, remove the correct amount of water for the area (refer to chart in the background section), and place it into the clear container.
5. After you have removed all the different water sources (other than oceans), ask the students if all the water you have removed is usable by humans.
6. Discuss the sources, and put the water back into the bucket with the ocean water if it is not usable by humans (icecaps/glaciers, some of the groundwater, inland seas/salt lakes and the atmosphere). Show the students the small amount of water that is left for humans to use.

WRAP-UP:

Review the sources of freshwater on the earth, and how little water is available for human use. Discuss ways students can conserve water in their homes, schools, and communities.

- Don't leave the water running while brushing your teeth.
- Limit your showers to 10 minutes or less.
- Look around your house for leaky faucets and ask your parents to fix them.
- Keep a pitcher of water in the refrigerator so you don't have to run the faucet and wait for the water to cool.
- Clean your sidewalks with a broom, not a hose.
- Wash your car or dog on the lawn instead of the driveway, this way your lawn gets watered too.
- Only wash full loads of dishes and laundry.

- Discuss ways students can help reduce pollution to the already small amount of water available to humans.
- Don't use excessive amounts of fertilizers or pesticides around your house. They can wash into the storm drains and end up in a stream.
- Never put something down a storm drain that may hurt a fish.
- Don't be a litterbug. Always dispose of trash in a proper container, not in the water.
- Make sure that your family car doesn't leak oil or antifreeze. This can wash into the water and be dangerous for fish, birds, even cats and dogs.
- Walk only on existing trails when near the water to help reduce erosion.

Extensions:

- Hand out copies of the worksheet to have students fill in the percentage they think is in each location before going through it as a class. They can work in groups or individually.
- Ask the students if we can make more water. Discuss the water cycle (this can lead into the Incredible Journey lesson).
- Talk about how pollutants or contaminants would affect our water supply (this can lead into the [Water Quality and Aquatic Macroinvertebrates lesson](#)).

Activities:

These activities can be used to enhance or reinforce concepts and vocabulary words learned in the preceding lessons.

- [Drip's Journey](#) (pdf)
- [Word Search](#) (pdf)
- [Song](#) (pdf)
- [Crossword](#) (pdf)

Bibliography:

This lesson plan was developed by the Utah State University Water Quality Extension.

*Adapted from the "Drop in a Bucket" lesson found in Project WET (www.projectwet.org).

Author:

[Utah LessonPlans](#)



Summary:

By watching a presentation where one of their classmates is dressed up in a bug costume, students learn what adaptations macroinvertebrates have in order to live in an aquatic environment.

Time Frame: 1 class period that runs 15 minutes

Main Curriculum Tie:

Science - Kindergarten

Standard 1 Objective 1

Generating Evidence: Using the processes of scientific investigation (i.e. framing questions, designing investigations, conducting investigations, collecting data, drawing conclusions)

Standard 1 Objective 2

Communicating Science: Communicating effectively using science language and reasoning

Standard 1 Objective 3

Knowing in Science: Understanding the nature of science

Materials:

Items contained in the “Items Representing Adaptations for Build A Bug” column in [Appendix C](#) (pdf). Use your imagination! Bright colors and silly items work well.

Background for Teachers:

PURPOSE:

To introduce students to aquatic macroinvertebrates and their unique adaptations.

BACKGROUND:

The small animals that live in water are called aquatic macroinvertebrates. These macroinvertebrates include many types of insects as well as other animals such as worms, mollusks, and crustaceans.

Most aquatic macroinvertebrates make their home in rocks, leaves, and the sediment of streambeds. These organisms have many special adaptations that allow them to live in demanding environments. Macroinvertebrates that live in riffles and fast-moving water may have features that help them hold on to rocky or hard substrates such as hooked feet or suction cups; or flat, streamlined bodies that can handle high water velocity. Macroinvertebrates that house themselves deep in muddy substrates may have different sets of adaptations for low oxygen environments, such as air tubes or oxygen trapping red hemoglobin in their tissue. See the "Adaptations" column in [Appendix C](#) (pdf) for more examples.

Attachments

- [appendix-c.pdf](#)
- [discussion.pdf](#)
Discussion Questions
- [glossary.pdf](#)
- [introduction.pdf](#)

Instructional Procedures:

PROCEDURE:

1. Ask the students to brainstorm different adaptations a bug would need to live in an aquatic environment. (For younger students you may want to start with what an adaptation is.)
2. As students give you ideas, show pictures of invertebrates with these adaptations (see [Appendix B](#) (pdf)).
3. Choose a volunteer from the class. Explain that you will be preparing the student to live as an aquatic macroinvertebrate.
4. Ask the students to recall adaptations the volunteer needs in order to live in water.
5. As students give you ideas, dress the volunteer in the items from the table in [Appendix C](#) (pdf) that represent the adaptations.

NOTE: An individual macroinvertebrate may not have all of the adaptations listed on the table. Your volunteer "bug" will have features found on many different types of macroinvertebrates.

6. Discuss the adaptations as you go along. Why would a macroinvertebrate need them? How do they help the macroinvertebrate survive?
7. A good way to end this activity is with a photo. "Does our volunteer need anything else? I think he/she needs his/her picture taken!"

OPTIONAL ART ACTIVITY:

You can enhance this lesson with the following art activity (use the materials listed in the table in Appendix C).

1. Tell your students that they will be making an aquatic macroinvertebrate of their own.
2. Show the students the materials listed in the adaptations table of Appendix C, (or substitute other materials to represent adaptations as you see fit).
3. Ask them to recall adaptations they saw during the lesson and show them what materials might represent that adaptation (a feather might represent gills, bendaroos might represent legs and/or tails, etc.).
4. Have students use the materials to create their own macroinvertebrate
5. Have each student share his or her macroinvertebrate with the class and explain the adaptations.



Attachments

- [appendix-b.pdf](#)
- [build-bug.jpg](#)

Extensions:

This lesson can be followed with Macroinvertebrate Simon Says to teach about specific feeding adaptations. You can also follow this lesson with Macroinvertebrate Mix and Match to teach the three parts of a bug.

Bibliography:

This lesson plan was developed by the Utah State University Water Quality Extension.

Author:

[Utah LessonPlans](#)

**Summary:**

Students use a balance and make predictions about heavier and lighter objects. Students also use a graduated cylinder and compare how the same volume of water looks to be a different amount when poured into different sized containers. Data recording could be done in a large group setting with an adult facilitator or with helpers at each station.

Time Frame: 1 class period that runs 45 minutes

Main Curriculum Tie:

Science - Kindergarten

Standard 1 Objective 1

Generating Evidence: Using the processes of scientific investigation (i.e. framing questions, designing investigations, conducting investigations, collecting data, drawing conclusions)

Materials:

- One balance per group of students. 1 g mass cubes from enasco.com TB16755M Set of 500 for \$12.50.
- Assorted objects to measure mass. About 15 – 20 objects per group and it is easiest to make them all the same objects for each group.
- One 100 ml graduated cylinder per student, if possible. If not, students can share them in groups. These can be purchased in plastic from many different vendors. Carolina.com 721613 \$1.90 each.
- 500 ml Wash bottles, one per student, if possible. If not, students can share them in groups. Carolina.com 716594. \$4.45 each. May be cheaper from other vendors.
- 6-10 different plastic containers per group. Make them different sizes in height and width.
- 1 bucket per group to put the waste water in.

Attachments

- [exploringsciencetoolsdatasheet.pdf](#)
Exploring Science Tools Data Sheet

Background for Teachers:

Students need to become comfortable using science tools. In this lab, a balance, wash bottle (squeezable bottle with a straw) and graduated cylinder will be introduced. Students will make many different predictions during the lab. It is critical that students learn at the earliest age that making predictions is not a right and wrong process and incorrect answers are acceptable. This needs to be reinforced constantly

Intended Learning Outcomes:

1. Framing questions. Conducting investigations. Collecting data. Drawing conclusions.
2. Developing social interaction skills with peers. Sharing ideas with peers. Connecting ideas with reasons.
3. Ideas are supported by reasons. Communication of ideas in science is important for helping to check the reasons for ideas.

Instructional Procedures:

Pre-lab Discussion:

Ask the students if they are scientists. Tell them they are and scientists need to learn how to use science tools. Show them the balance and graduated cylinder and go over the names with them. Talk to students about what a prediction is and that there are no wrong predictions in science.

Instructional Procedures:

Using a balance: This activity is done at each table as a group.

1. Show the students a balance and have them predict how it works.
2. Have students take turns picking up two objects and testing them in their hands. They should predict which is heavier and then try it out on the balance. Be sure that students are put at ease when their predictions are incorrect.
3. After a couple of turns at this, have the students as a group, measure the mass of an object using the balance and gram cubes.

Using a Graduated Cylinder:

1. Discuss the purpose of measuring liquids in a science lab.
2. Ask the students to measure different amounts of water in units of 10. Students can use a wash bottle to fill the graduated cylinder to the designated amounts.
3. After they measure, they can transfer the liquid to different size containers and observe that the same amount of liquid looks different in different shaped containers. Have them predict what will happen as they transfer the liquids from container to container.
4. Students can empty their container of water into a bucket and then measure a new volume and pour it into a different container.

Bibliography:

Rio Tinto Hands-on Science Curriculum Team

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Summary:

Students will evaluate the quality of a “water sample” (using a bag of skittles to represent pollution and pictures of aquatic macroinvertebrates to represent invertebrates found in their sample), graph their results, and form a hypothesis about the land use near the location their “water sample” was collected.

Time Frame: 1 class period that runs 30 minutes

Main Curriculum Tie:

Science - Kindergarten

Standard 1 Objective 1

Generating Evidence: Using the processes of scientific investigation (i.e. framing questions, designing investigations, conducting investigations, collecting data, drawing conclusions)

Standard 1 Objective 2

Communicating Science: Communicating effectively using science language and reasoning

Standard 1 Objective 3

Knowing in Science: Understanding the nature of science

Materials:

- Candy (skittles)
- Plastic sandwich bags
- Graph paper (graphs can be found in [Appendix D](#) (pdf))
- Colored pencils
- Pollutant labels (see [Appendix D](#) (pdf))
- Macroinvertebrate pictures (see [Appendix D](#) (pdf))

Attachments

- [appendix-d.pdf](#)

Background for Teachers:

PURPOSE:

To describe and identify the link between land use activities within a watershed and water quality. Students will also understand the link between aquatic macroinvertebrates and water pollution.

BACKGROUND:

A watershed is an area of land from which all the water drains to the same location such as a stream, pond, lake, river, wetland, or estuary. A watershed can be large, like the Colorado River drainage basin, or very small, such as all the water that drains to a small farm pond. Large watersheds are often called basins and contain many small watersheds.

Watersheds can transport non-point source pollution. Non-point source pollution is associated with rainfall and snowmelt runoff moving over and through the ground, carrying natural and human made pollutants into water sources. Examples of non-point source pollutants are fertilizers, pesticides, sediment, gas, and oil. Pollutants accumulate in watersheds as a result of various human driven and natural events. These pollutants, while sometimes inevitable, drastically alter the state of the ecosystem. If we can determine the type of pollutant and its cause, then we can classify the source of the pollutant and take preventative measures to reduce any further contaminants. Below are some examples of land use and their potential problems:

NOTE: These problems only occur because of a lack of proper management.

Land Use	Activities	Potential Pollution Problems
Agriculture	tillage, cultivation, pest control, fertilization, animal waste	sediment, nitrate, ammonia, phosphate, pesticides, bacteria
Construction	land clearing and grading	sediment
Forestry	timber harvesting, road construction, fire control, weed control	sediment, pesticides
Land Disposal	septic system	bacteria, nitrate, phosphate
Surface Mining	dirt, gravel, and mineral excavation	sediment, heavy metals, acid drainage, nutrient
Urban Storm Runoff	lack of automobile maintenance, lawn and garden care, painting	oil, gas, antifreeze, nutrients, pesticides, paints

Aquatic macroinvertebrates can indicate the level of water quality. Stoneflies, mayflies, and caddisflies (called indicator species) are not well adapted to living in water with high levels of pollution. They are pollution intolerant. Often, when these species are limited or absent in a river or stream where they typically should be found, that can be indicative of poor water quality. Aquatic macroinvertebrates can be classified by their level of tolerance to pollution.

Sensitive or Intolerant Species:

Organisms easily killed, impaired, or driven off by bad water quality; includes many types of stonefly, dobsonfly, and mayfly nymphs, caddisfly larvae, and water pennies.

Somewhat Tolerant Species:

Organisms with the ability to live under varying conditions may be found in good or poor quality water; includes amphipods, scuds, beetle and crane fly larvae, crayfish, and dragonfly nymphs.

Tolerant Species:

Organisms capable of withstanding poor water quality; includes most leeches, aquatic worms, midge larvae, and sow bugs.

Attachments

- [introduction.pdf](#)
- [glossary.pdf](#)
- [discussion.pdf](#)

Instructional Procedures:

PROCEDURE:

1. Before the lesson, divide the candy up into the sandwich bags so that each student or group of students has two “water samples”. Make sure each set is the same: one with fewer pollutants and one with more pollutants.
2. Tell the students you have taken two macroinvertebrate samples from similar streams (or one taken years previous in the same location) and show them pictures of the aquatic macroinvertebrates from each sample. One sample should have pollution intolerant invertebrates; the second sample should have more tolerant invertebrates). Show them the pictures and ask them why they think the insects are different in each sample.

3. Tell the students that you also have a water sample that may help them decide why the bugs are different. Pass out the bags of skittles to each student or group of students.
4. Ask the class to define the word pollutant. Tell them that each color of skittles represents a different kind of pollutant. You can use the visual aids provided in Appendix D to hang up in the classroom.

PURPLE = Sediment
RED = Pesticides
GREEN = Fertilizers
YELLOW = Oil and Gas
ORANGE = Toxic Waste

5. Discuss each of these pollutants with the students. Ask them where they come from, what they are used for, how they can be beneficial, and how they may be harmful. Refer back to the Land Use Chart, in the Background for Teachers, for more information. Discuss what "land use" means, and what kind of land uses may produce the different kinds of pollution.
6. Distribute the graph paper to each student or group. Tell the students that they will be completing a bar graph to show the number of pollutants found in their "water sample". Show them the sample graph provided. Have the students label the x-axis with the pollutant types and the y-axis with the amount of pollutants.
7. Tell the students to separate and count the number of each pollutant and graph them on the paper. Remind the students that they cannot eat the skittles until they are finished with their graph!
8. Go over the graphs as a class by creating a master graph in front of the classroom. Talk about what land use activities may be happening near the high pollution sample. Refer to the land use chart.
9. Review the pictures and ask students again why they believe the macroinvertebrates are different in each sample.
10. Discuss ways students can help reduce water pollution.
 - Don't use excessive amounts of fertilizers or pesticides around your house. They can wash into the storm drains and end up in a stream.
 - Never put anything but water down a storm drain.
 - Don't be a litterbug. Always dispose of trash in a proper container, not in the water.
 - Make sure that your family car doesn't leak oil or antifreeze. This can wash into the water and be dangerous for fish, birds, even cats and dogs.
 - Walk only on existing trails when near the water to help reduce erosion.

NOTE: Be sure the students understand that the factors (materials) we consider non-point source pollutants only become a problem when they are used incorrectly. For example, oil and gas become a problem when they are leaking onto the ground and washing into a water body. Fertilizers and pesticides become a problem when too many are applied and they run off into a water body.

Extensions:

- Make each sample different to compare different land uses (see land use table in [Appendix E](#) (pdf)).
- Talk about how pollutants or contaminants affect our water supply.
- Discuss the adaptations of different aquatic macroinvertebrates and why some are more tolerant to pollution.
- Talk about how pollutants or contaminants might affect the food chain.
- Prepare the second group of macroinvertebrates with fewer bugs or no bugs rather than just different bugs
- For older students, have them do research on different pollutants and macroinvertebrates at the library or on the internet to help them determine the water quality of their sample. They can also research what other factors might affect there being no pollution in the water.
- See Stream Side Science manual for more lesson ideas on watersheds and water quality.

Attachments

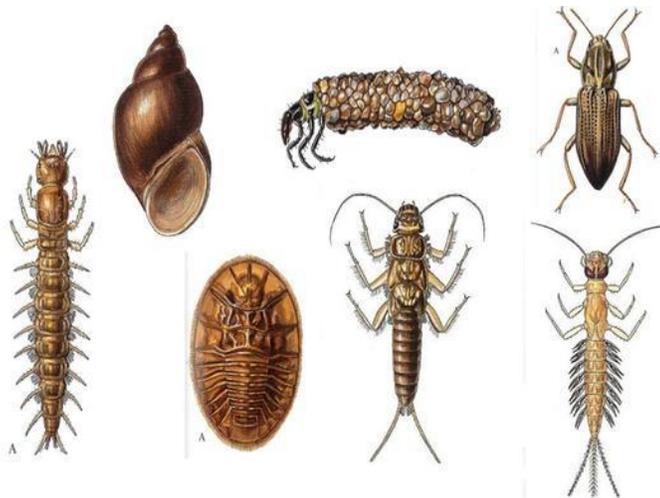
- [appendix-e.pdf](#)

Bibliography:

This lesson plan was developed by the Utah State University Water Quality Extension.

Author:

[Utah LessonPlans](#)



Summary:

Students will learn about water quality indicators through the use of candy representing a “macroinvertebrate sample.” Sorting the candy and evaluating what is found will tell the students about the quality of the water.

Time Frame: 1 class period that runs 45 minutes

Main Curriculum Tie:

Science - Kindergarten

Standard 1 Objective 1

Generating Evidence: Using the processes of scientific investigation (i.e. framing questions, designing investigations, conducting investigations, collecting data, drawing conclusions)

Standard 1 Objective 2

Communicating Science: Communicating effectively using science language and reasoning

Standard 1 Objective 3

Knowing in Science: Understanding the nature of science

Materials:

- Small coated candies (i.e. Skittles or M&M's)
- Small plastic bags (1 per group of students)
- Graph paper (See [Appendix D](#) (pdf))
- Colored pencils
- Pictures of macroinvertebrates (see [Appendix D](#) (pdf))

Attachments

- [appendix-d.pdf](#)

Background for Teachers:

PURPOSE:

To describe and identify the quality of a stream site by analyzing the aquatic macroinvertebrates that live there.

BACKGROUND:

Sometimes it is easy to tell if a stream is polluted. Strange colors and dead fish are often indicators of poor water quality, but biologists need to know about water quality problems long before they reach this point. Some of their most effective partners in detecting declining trends in water quality are aquatic macroinvertebrates because they respond rapidly to changes in water quality.

To evaluate the health and productivity of a stream, biologists look at the types of macroinvertebrate species who live there. Different species have different tolerance levels to pollution. If many pollution-intolerant organisms, such as stonefly or caddisfly nymphs, are present, the water quality is probably good. Although the presence of certain species indicates good water quality, the absence of these species does not necessarily indicate bad water quality. Other factors besides pollution may account for their absence.

Sensitive or Intolerant Species:

Organisms easily killed, impaired, or driven off by bad water quality; includes many types of stonefly, dobsonfly, and mayfly nymphs and caddisfly larvae.

Somewhat Tolerant Species:

Organisms with the ability to live under varying conditions may be found in good or poor quality water; includes amphipods, scuds, beetle and crane fly larvae, crayfish, and dragonfly nymphs.

Tolerant Species:

Organisms capable of withstanding poor water quality; includes most leeches, aquatic worms, midge larvae, and sow bugs.

Attachments

- [introduction.pdf](#)
- [glossary.pdf](#)
- [discussion.pdf](#)
Discussion Questions

Instructional Procedures:

PROCEDURE:

1. Divide the candy into the bags. You may have one bag per student, or one bag per group of students. You should have about 30 pieces of candy per bag. Each bag represents aquatic macroinvertebrates collected from a study site.
2. Have the class assign an aquatic macroinvertebrate to each color of candy (or do this beforehand if you have visual displays). For example, red = stonefly nymphs, yellow = crane fly larvae, green = leeches. See chart below for an example.
3. Distribute graph paper to each student (or group). Have students set up a bar graph for the aquatic macroinvertebrate sample. Label the x-axis with the names of the candy colors that correlate to the macroinvertebrates. Label the y-axis with the number of macroinvertebrates. You can also make copies of the graph below to hand out to the students.
4. Give each student or group a bag of candy. Have the students separate and count the number of candies they have in each color group and graph them on the paper. Use the colored pencils or crayons to fill in the bars. Have the students try to determine the quality of the water in their sample.

COLOR	MACROINVERTEBRATE (and tolerance to pollution)
Red	Stonefly Nymph (Intolerant)
Orange	Caddisfly Larva (Intolerant)
Dark Brown	Beetle (Somewhat Tolerant)
Blue	Crane fly Larva (Somewhat Tolerant)
Yellow	Midge Larva (Tolerant)

Green	Leech (Tolerant)
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Extensions:

Discuss how each sample site is different. While some sites may indicate poor water quality there may be other factors involved. Have the students hypothesize possible pollutants? Follow this lesson with Pollution Graphing and Macroinvertebrate Research

For older students, have them do research at the library or on the internet on different pollutants and macroinvertebrates to help them determine the water quality of their sample. They can also research what other factors might lead to no pollution in the water.

Bibliography:

This lesson plan was developed by the Utah State University Water Quality Extension.

* This activity is adapted from Activity S-2: Use Your Head, Protect Your Watershed! By Dr. Kitt Farrell – Poe, with information also taken from the Utah Stream Team Manual by USU Extension.

Author:

[Utah LessonPlans](#)



Summary:

Students will collect live macroinvertebrates from a river or stream. They will then classify and count the invertebrates and use that data to determine the EPT index.

Time Frame: 1 class period that runs 30 minutes

Main Curriculum Tie:

Science - Kindergarten

Standard 1 Objective 1

Generating Evidence: Using the processes of scientific investigation (i.e. framing questions, designing investigations, conducting investigations, collecting data, drawing conclusions)

Standard 1 Objective 2

Communicating Science: Communicating effectively using science language and reasoning

Materials:

- Kick nets* (see [Appendix G](#) (pdf) for instructions on building your own kicknet)
- Plastic tubs (1 per 5 students)*
- Large transfer pipettes (1 per student)*
- Plastic petri dishes (1 per student)*
- Magnifying glasses (1 per student)*
- Dichotomous keys Buckets (2) Waders

* Available for loan at USU Water Quality Extension or through your local Extension office. Please contact USU Water Quality Extension for details 435-797-2580 or <http://extension.usu.edu/waterquality>

Attachments

- [appendix-g.pdf](#)

Background for Teachers:

PURPOSE:

To introduce students to living aquatic macroinvertebrates in a field setting.

BACKGROUND:

Many macroinvertebrates make their homes in riffles and pools of gravel-bed streams. By turning over stones and examining the underside, you may find aquatic macroinvertebrates. Aquatic macroinvertebrates are often used as an indicator of water quality. The orders of Ephemeroptera (mayflies), Plecoptera (stoneflies), and Tricoptera (caddisflies) are generally sensitive to pollution. Water Quality Biologists use these three orders to calculate an EPT index to determine the quality of a water body. If we find families from these three orders of invertebrates living in a stream or river the water is most likely not impacted from pollution. However, it is important to remember that the absence of these families does not always mean the quality is poor. There could be other reasons these families are not present (please see Appendix F – Discussion Questions for more information).

Attachments

- [introduction.pdf](#)
- [glossary.pdf](#)
- [discussion.pdf](#)

Instructional Procedures:

PROCEDURE:

1. Choose your sample site. Be sure to take into account the safety of your students (see [safety tips](#) (pdf) on page #4).
2. Explain to your students how to collect a macroinvertebrate sample.
 - a. One student will wade into the stream and place the net so the mouth of the net is perpendicular to and facing the flow of water.
 - b. Another student will stand upstream from the net and disturb the stream bottom with his/her feet and hands.
 - c. Students can carefully pick up and rub stones directly in front of the net to remove attached animals. The stream bottom materials and organisms will be carried into the net by the current.
 - d. Tell the students to continue this process until they see no more organisms being washed into the net.
3. Have the students hold the sample over a plastic tub, and use a bucket of stream water to wash the organisms into the tub.
4. Have students sort and identify the macroinvertebrates using the transfer pipettes, magnifying glasses, petri dishes, and dichotomous keys. List the number of different families on the table below and calculate an EPT index.
A different “family” refers to animals that are related (e.g., all mayflies) but have enough different physical characteristics that they can easily be divided into separate groups. (See dichotomous key).
5. Discuss the different invertebrates the students found and what types of land uses might be impacting the site (see Background from “Water Pollution Graphing” lesson).

Aquatic Invertebrate Group (Orders)	Number of different found
Mayflies (Order Ephemeroptera)	
Stoneflies (Order Plecoptera)	
Caddisflies (Order Tricoptera)	
TOTAL	

Total “families” equals EPT Value:

> 10 Not affected (excellent water quality)
6-10 Slightly affected (good water quality)
2-5 Moderately affected (fair water quality)
<2 Severely affected (poor water quality)

NOTE: A low EPT value does not always mean poor water quality. Factors other than pollution, such as physical characteristics of the stream or river, may cause the absence of some invertebrates.

Extensions:

Have students rate the quality of the water using the EPT Value found above (or Water Quality Rating Index found in the Utah Stream Team Manual) found above. Have students sample other sites along the same stream or from two different types of water bodies (stream and lake) for comparison. Discuss what is different or similar between sites. You can also keep a yearly record and have students compare their sites over time.

Bibliography:

This lesson plan was developed by the Utah State University Water Quality Extension.

Author:

[Utah LessonPlans](#)

S1O1-MACROINVERTEBRATE SIMON SAYS-BUGS DON'T BUG ME



Summary:

After a short introduction to macroinvertebrate feeding habits, students will play a Simon Says game.

Time Frame: 1 class period that runs 30 minutes

Main Curriculum Tie:

Science - Kindergarten

Standard 1 Objective 1

Generating Evidence: Using the processes of scientific investigation (i.e. framing questions, designing investigations, conducting investigations, collecting data, drawing conclusions)

Materials:

None needed; however, pictures of the macroinvertebrates can be helpful (see Appendix B or <http://www.extension.usu.edu/waterquality>).

Attachments

- [appendix-b.pdf](#)

Background for Teachers:

PURPOSE:

To introduce students to the feeding adaptations found in aquatic macroinvertebrates.

BACKGROUND:

The macroinvertebrates we will cover can be classified into four groups, called functional feeding groups, depending on their feeding habits. They are shredders, collectors, scrapers (or grazers), and predators.

Shredders are those organisms that chew on intact or large pieces of material. Leaves, needles, flowers, and twigs that fall from trees and shrubs on the shore into the water are the most common food for shredders.

Collectors acquire and ingest very small particles of organic matter. They eat the organic matter suspended in the water by catching it with net-like features or other adaptations. Often they eat fine organic matter that has fallen out of suspension onto the streambed (substrate).

Scrapers (also called grazers) remove and eat the algae growing on rocks in shallow water.

Predators are organisms that prey on other organisms. They have special mouthparts called mandibles which they use to pierce prey and hold it while they eat.

Attachments

- [introduction.pdf](#)
- [glossary.pdf](#)
- [discussion.pdf](#)
Discussion Questions

Instructional Procedures:

PROCEDURE:

1. Divide the students into six groups: Dragonflies, Craneflies, Blackflies, Mayflies, Stoneflies, and Caddisflies.
2. Explain the different feeding habits of each group, and assign them an action.
 - a. DRAGONFLIES are predators. They have long mouthparts that extend and unfold to catch prey. For their action, have the students put their hands to their mouths with their elbows tucked down in front of them. To mimic eating, have the students straighten their elbows and make an upward scooping action. Students can also hold hands out with one up high and one down low and clap them together in a large “chomping” motion.
 - b. CRANEFLIES are collectors. They wiggle around until they find a place to feed. The action should be a wiggly walk.
 - c. BLACKFLIES are also collectors, but they collect with a large net-like feature on their head, which they use to gather food. They can lower it down to their mouths to eat. The action should be placing your hands above your head, and lowering them down to your mouth.
 - d. STONEFLIES are shredders. They wait for leaves or other debris to fall into the water and then they tear off small pieces to eat. The action should be similar to tearing up a piece of paper.
 - e. CADDISFLIES AND MAYFLIES are scrapers. They scrape algae off rocks and sticks. This action should be similar to scratching someone’s back.
3. After groups have learned their actions, have them act out their part at the same time for one minute.
4. Then test the students on all of the feeding habits by playing “Simon Says” with the actions. (Example: Simon says act like a blackfly. Everyone should have their hands above their head.)

Extensions:

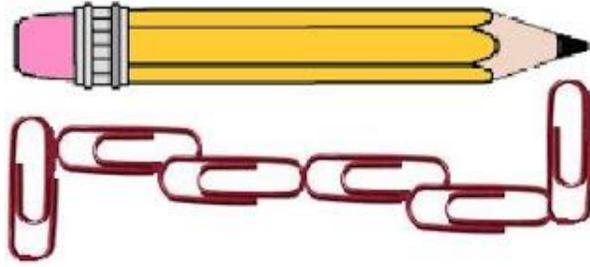
Now that students have been introduced to aquatic macroinvertebrates, follow this lesson with Macroinvertebrate Mix and Match to introduce their body parts and life cycles.

Bibliography:

This lesson plan was developed by the Utah State University Water Quality Extension.

Author:

[Utah LessonPlans](#)

**Summary:**

Students will measure objects using everyday household items: paper clips, toothpicks, Popsicle sticks, and more. They will work on choosing the right measuring tool for the size of the object, not mixing tools while measuring an object, and starting to measure at the end of an object not in the middle.

Time Frame: 1 class period that runs 45 minutes

Main Curriculum Tie:

Science - Kindergarten

Standard 1 Objective 1

Generating Evidence: Using the processes of scientific investigation (i.e. framing questions, designing investigations, conducting investigations, collecting data, drawing conclusions)

Materials:

- Have 5 containers of different measuring tools for each table. Some examples are: paper clips, tooth picks, Popsicle sticks, pennies, gram cubes, washers, and cotton swabs. Any items can be used, just be sure you have an assortment of lengths in your tools.
- At each table have about 15 assorted objects for the kids to measure; some can be round, square, rectangular or irregularly shaped.

Attachments

- [nonstandardmeasurementdatasheet.pdf](#)
Non-Standard Measurement Data Sheet

Background for Teachers:

Measuring is an important science skill. Before students use a ruler they can measure with everyday objects. A student can measure a book and find it to be 15 paper clips long. As they measure a book with paperclips they will use three rules for measuring: place the first tool at the end of the object, each tool must touch end to end in a straight line, and they can only use one tool at a time to measure an object. Students will be measuring without having to understand the markings on a ruler.

Intended Learning Outcomes:

1. Conducting investigations. Collecting data. Drawing conclusions.
2. Sharing ideas with peers. Using multiple methods of communicating reasons/evidence.
3. Differences in conclusions are best settled through additional observations and investigations.

Instructional Procedures:**Pre-lab discussion:**

Show students several of the measuring tools and an object to measure. Act out the three rules and see if students can discover the rules with you. Mix measuring tools for one object and students will decide that doesn't make sense. Start measuring in the middle of an object and students will understand that you won't measure an entire object if that is done. Use a tool that is too long or too short to measure an object and students will suggest that a different tool be used.

Instructional Procedures:

1. Show the students the measuring tools at their table. Some students may not know all their names so be sure and go over them.
2. Hand each student a container of a measuring tool and an object to measure.
3. Students should follow the measuring rules explained and then report to the adult at the table how long their object is. Be sure students give their unit after the number. For example, "this wooden block is 10 pennies long".



4. Students should describe the length of their object to the nearest unit. They can use words such as: almost, between, close to or about. If students understand the concept of 'a half' let them use that as well.
5. After students complete each object have them choose another object and measuring tool. Help them choose the best measuring tool for the job. If it is a large object use a large measuring instrument and vice versa.
6. Towards the end of the activity, have students predict the length of an object using one of the tools. See how close they come to their prediction.
7. When students get done measuring the objects at their table they can also measure objects around the classroom and even measure the other students in their group by measuring them on the floor.

Assessment Plan:

Attachments

- [nonstandard measurement.jpg](#)

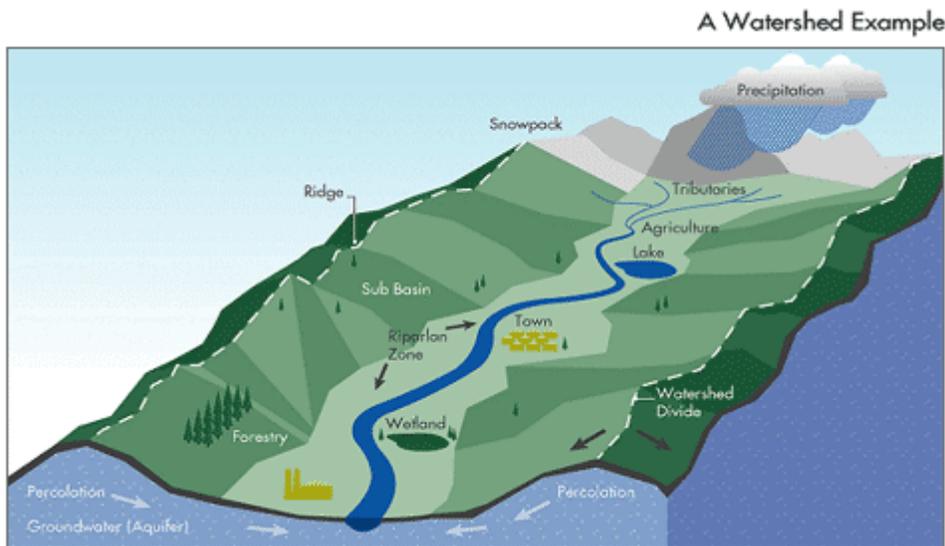
Bibliography:

Rio Tinto Hands-on Science Curriculum Team

- Ms. Rae Louie – Administrator, Principal Beacon Heights Elementary
- Emily Mortensen – Grant writer, teacher outreach, 2nd grade teacher at Beacon Heights Elementary
- Ruth Li – Curriculum design, K-6 Science Educator at Indian Hills Elementary
- Deirdre Straight – Curriculum development, K-6 Science Educator at Beacon Heights Elementary
- Tim Rausch – Website development, Library Media at Beacon Heights Elementary

Author:

[Utah LessonPlans](#)



Summary:

Students will evaluate the quality of a “water sample” (a bag of skittles), graph their results, and form a hypothesis about the land use near the location their “sample” was collected.

Time Frame: 1 class period that runs 45 minutes

Main Curriculum Tie:

Science - Kindergarten

Standard 1 Objective 1

Generating Evidence: Using the processes of scientific investigation (i.e. framing questions, designing investigations, conducting investigations, collecting data, drawing conclusions)

Standard 1 Objective 2

Communicating Science: Communicating effectively using science language and reasoning

Standard 1 Objective 3

Knowing in Science: Understanding the nature of science

Materials:

- Candy (skittles)
- Plastic sandwich bags
- Graph paper (see Appendix D)
- Colored pencils or crayons
- Pollutant labels (see Appendix D)
- Pictures of land uses (see Appendix D)

Background for Teachers:

PURPOSE:

To describe and identify the link between land use activities within a watershed and water quality.

BACKGROUND:

A watershed is an area of land from which all the water drains to the same location, such as a stream, pond, lake, river, wetland, or estuary (see figure below). A watershed can be large, like the Colorado River drainage basin, or very small, such as all the water that drains to a small farm pond. Large watersheds are often called basins and contain many small watersheds.



Watersheds can transport non-point source pollution. Non-point source pollution is associated with rainfall and snowmelt moving over or through the ground, carrying natural and human made pollutants into water sources. Examples of non-point source pollutants are fertilizers, pesticides, sediment, gas, and oil. Pollutants accumulate in watersheds as a result of various human and natural activities. These pollutants, while sometimes inevitable, drastically alter the state of the ecosystem. If we can determine the type of pollutant and its cause, then we can classify the source of the pollutant and take preventative measures to reduce any further contamination.

The table below outlines some examples of land uses and their potential problems.

See [Appendix D](#) (pdf) for pictures of land use activities.

Land Use	Activities	Potential Pollution Problems
Agriculture	tillage, cultivation, pest control, fertilization, animal waste	sediment, nitrate, ammonia, phosphate, pesticides, bacteria
Construction	land clearing and grading	sediment
Forestry	timber harvesting, road construction, fire control, weed control	sediment, pesticides, gas and oil
Land Disposal	septic system, land fills	bacteria, nitrate, phosphate, gas and oil, toxic waste, hazardous materials
Recreation	ATV's, boating, hiking, camping, fishing	sediment, gas and oil, garbage
Roads	clearing trees, soil compaction, dirt excavation	sediment, gas and oil
Surface Mining	dirt, gravel, and mineral excavation	sediment, heavy metals, acid drainage, nutrient
Urban Storm Runoff	lack of automobile maintenance, lawn and garden care, painting	oil, gas, antifreeze, nutrients, pesticides, paints

NOTE: Proper management can reduce the effect of the potential problems.

Attachments

- [appendix-d.pdf](#)
- [watershed.jpg](#)
- [glossary.pdf](#)
- [introduction.pdf](#)
- [discussion.pdf](#)
Discussion Questions

Instructional Procedures:

PROCEDURE:

1. Divide the candy into the sandwich bags (you may want to manipulate the bags so that the assortment of candy represents a particular land use area by adding more of a certain type of pollutant, rather than relying on a random mix). You may either have one bag per student or one bag per group of students. You should have about 30 pieces of candy per bag. Each bag represents a water sample from a watershed.
2. Ask the class to define the word pollutant. Tell them that each color of skittles represents a different kind of pollutant. You can use the visual aids provided in Appendix D to hang up in the classroom.

PURPLE = Sediment
RED = Pesticides
GREEN = Fertilizers
YELLOW = Oil and Gas
ORANGE = Toxic Waste

Discuss each of these pollutants with the students. Ask them where they come from, what they are used for, how they can be beneficial, and how they may be harmful. Refer to the Land Use Chart on the previous page for more information. Discuss what land-use means, and what kind of land use may cause the different kinds of pollution.

3. Distribute the graph paper to each student or group. Tell the students that they will be drawing a bar graph to show the number of pollutants found in their “water sample.” Show them the sample graph provided. Have the students label the x-axis with the pollutant types and the y-axis with the amount of pollutants.
4. Give each group a “water sample.” Tell the students to separate and count the number of each pollutant and graph them on the paper. Remind the students that they cannot eat the skittles until they are finished with their graph!
5. Ask the students to try and determine what land use activities are occurring in their watershed according to the “water sample.” For example, a water sample from an area with a lot of agricultural use may have more sediment, fertilizer, and pesticides. Refer to the Land Use Chart on the previous page for more information.
6. Discuss how each water sample is different. While some samples might contain an abundance of one type of pollution, almost all types of pollutants can be found in every sample (even if they are small amounts). Discuss strategies to reduce pollution. How can the students do this on a large scale (in their community) or small scale (in their own home)?

In the community:

- Encourage friends and neighbors to recycle
- Plan a science fair project about water quality and reducing pollution
- Talk to friends and neighbors about what they have learned
- Pick up trash in your neighborhood

In the home

- Encourage parents to fix leaky cars
- Talk to parents about using less fertilizers and pesticides
- Recycle items at home

- Do not dump oil, gas, or other pollutants in the storm drains

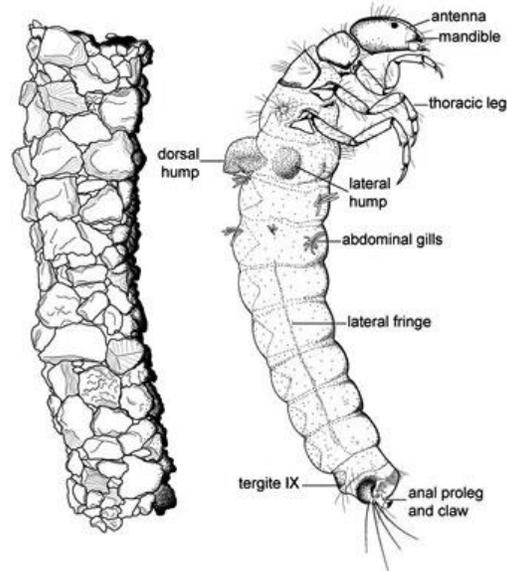
NOTE: Be sure the students understand that the factors (materials) we consider non-point source pollutants only become a problem when they are used incorrectly. For example, oil and gas become a problem when they are leaking onto the ground and washing into a water body. Fertilizers and pesticides become a problem when too many are applied and they run off into a water body.

Bibliography:

This lesson plan was developed by the Utah State University Water Quality Extension.

Author:

[Utah LessonPlans](#)



Summary:

The class will learn about the head, thorax and abdomen of insects by mixing and matching pictures of bugs. They will also match the larva/nymph stage of each species to the adult.

Time Frame: 1 class period that runs 30 minutes

Main Curriculum Tie:

Science - Kindergarten

Standard 1 Objective 2

Communicating Science: Communicating effectively using science language and reasoning

Standard 1 Objective 3

Knowing in Science: Understanding the nature of science

Materials:

Macroinvertebrate posters (available on loan or for sale through USU Water Quality Extension 435-797-2580, see [Appendix G](#) (pdf) for price list). You can also use your own pictures of macroinvertebrate adults and larvae. Cut the pictures of larvae into three sections (head, thorax and abdomen; use whole pictures of adults).

Attachments

- [appendix-g.pdf](#)

Background for Teachers:

PURPOSE:

To introduce students to aquatic macroinvertebrates (primarily insects) and the major segments (the head, thorax and abdomen) and the differences between larval, nymph and adult stages.

BACKGROUND:

Macroinvertebrates have three body segments--the head, thorax and abdomen. The head contains the head and antennae. The midsection of the body is called the thorax. It bears the jointed legs and wings. The lower section of the body is the abdomen.

All aquatic macroinvertebrates start life as eggs. Some animals, such as water boatmen (Hemiptera) and leeches, do not change much as they grow – like humans, they get bigger but look basically the same. Some insects, however, change (metamorphose) quite dramatically as they grow. After hatching, the insect may go through several stages before reaching adulthood. Depending on the species, it may go through a larval stage, a nymph stage, or both.

Larva do not show wing buds and usually look quite different than adults.

Black Fly Larvae



Black Fly Adult



Nymphs usually resemble adults, but are smaller and have no wings.

Stonefly Adult



Attachments

- [introduction.pdf](#)
- [glossary.pdf](#)
- [discussion.pdf](#)
Discussion Questions
- [stonefly.jpg](#)
- [stonefly-adult.jpg](#)
- [black-fly.jpg](#)
- [black-fly-adult.gif](#)

Instructional Procedures:

PROCEDURE:

1. Ask the students if they know what the words “aquatic macroinvertebrate” mean. Break down the different words... Aquatic = water, Macro = big enough to see with the naked eye, Invertebrate = no backbone.
2. Ask the students if they can name the three segments of an aquatic macroinvertebrate. You can have a volunteer show where the segments would be on a human.
3. Show the students pictures of larvae and nymphs you have cut into three segments. Ask them to repeat what the three segments are (head, thorax, and abdomen).
4. Tell the students the larvae and nymphs in the pictures live in water. Ask them how they can tell the difference between larvae, nymphs, and adults (the adults have wings).
5. Talk about the differences between larval and nymph stages of macroinvertebrates and adults. Reaffirm to the students that the pictures on the posters (or the whole pictures) are the adults, and the pictures cut into three segments are the larvae or nymphs.
6. Explain to the students that they will each receive one segment of a bug. Their first task is to mingle with each other and match their entire macroinvertebrate. The person with the abdomen needs to find a matching head and thorax, etc.
7. Pass out the pictures which are cut into three pieces. Each student should get one segment, unless there are extra, and then some students will get more than one.
8. After they have found the entire macroinvertebrate picture, they need to find the poster of the adult it matches.
9. Once they have matched all the pictures, have them sit down. Review all of the posters to make sure they are correct and discuss the information and facts about each macroinvertebrate in the posters

Extensions:

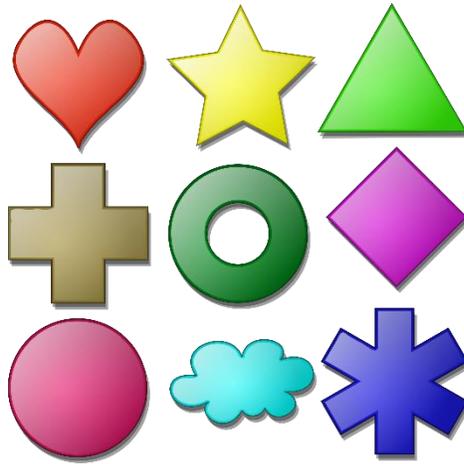
Now that the students know about macroinvertebrates, their adaptations, feeding habits, and body parts; follow with Macroinvertebrate Graphing or Macroinvertebrate Investigation.

Bibliography:

This lesson plan was developed by the Utah State University Water Quality Extension.

Author:

[Utah LessonPlans](#)



Summary:

Students will spend several days observing differences, grouping differences, and noticing different attributes of similar items.

Time Frame: NA

Main Curriculum Tie:

Science - Kindergarten

Standard 2 Objective 1

Investigate non-living things.

[Supplemental Materials](#) (pdf)

Materials:

- Book: *3 Little Firefighters*
- One copy of the [firefighter](#) (pdf) printed on white cardstock for each student
- Three copies of the same [firefighter](#) (pdf) , but printed on 11"x17" paper
- One large bowl of assorted buttons per table or group of students

Books:

- *Sorting*, by Henry Pluckrose, Children's Press, Chicago, ISBN 0-516-45458-7
- *Shapes, Shapes, Shapes*, by Tana Hoban, Mulberry Books, ISBN-13: 978-0-688-14700-2
- *A Pair of Socks*, by Stuart J. Murphy, Scholastic Inc., ISBN 0-590-06259-X

Attachments

- [firefighter.pdf](#)

Web Sites

- [Heidi Songs](#)
- [Jack Hartmann](#)

Background for Teachers:

Kindergarten students are just beginning to notice the patterns and organizations of things around them. In this lesson, and the activities in "Additional Practice," students will spend several days observing differences, grouping differences, and noticing different attributes of similar items.

This lesson introduces grouping attributes of more than two items, with a brief introduction involving grouping two objects. Students may need to have more experience grouping two attributes before being introduced to this concept.

This lesson and activities are specifically written to allow free exploration of items, and then introduce students to grouping methods according to attributes. It would be contradictory to always tell the students how to sort. A large part of mastery is their ability to notice the attributes independently.

Instructional Procedures:

Invitation to Learn:

Launch (Introduction): (20 minutes)

Students will be seated on the carpet. Have two large circles made of black yarn. Instruct the students that you are going to put some of the things you have into the circle, and they need to explain what your rule is.

1. Put one square shape in one circle and a round shape in another circle. Ask, "What's my rule?"
2. Continue in this pattern until all students see that all squares are in one circle, and all round shapes are in another circle.
3. Continue in this fashion, you can do color, lines, circles, etc. The concept is to briefly introduce how you can sort by similar attributes.

Read the book *3 Little Firefighters* by Stuart J. Murphy. As you read, stop and discuss the attributes of each of the ways the firefighters are sorting the buttons. After reading the book, discuss how the firefighters sorted their buttons (color, shape, and size).

1. For this activity, students will need to sit at the carpet in a small circle.
2. Have students sit around you and dump a large container of buttons in front of you.
3. Put three copies of the firemen (see attached blackline) on the floor in front of you.
4. Sort the buttons onto the firemen by size, shape, number of holes in the buttons, etc. Students should see through your modeling and example that there are many different attributes and ways to group the buttons.
5. Have students come up with alternate ways to sort the buttons on the firemen.

Explore (Individual and Small Group work): (10 minutes)

1. Students will go back to their tables, and each student will have a fireman and a bowl of buttons to share.
2. Students will then sort the buttons on the firemen according to some common attribute. The student should be able to sort in several different ways. After each sort, the student needs to show and explain to the other students at the table how he/she chose to sort the buttons.

Discuss (Whole Group discussion): (5 minutes)

1. Gather students back together at the carpet.
2. Discuss how they were able to sort the buttons on the fireman by many different attributes.
3. As children tell you about the attributes, draw them on the whiteboard so those visual and language learners have additional learning resources.

Solidify (Closure): (5 minutes)

1. Use questioning to solidify learning.
2. Is there more than one way to group the buttons?
3. Are the buttons different?
4. Are there things that are the same about each button?

Practice (Review): (5 minutes)

1. Have students look at the buttons they have on their clothes today.

2. Quickly sort students into groups consisting of students with buttons that have two button holes, four button holes, and "other."

Additional Lesson Activities:

Sorting Buttons in Different Ways:

Model making a large circle with black yarn. Each group can take up to four pieces of yarn and make a circle at their table with each piece of yarn. Students can then sort buttons into the various circles and identify to the teacher and each other their reasoning and justification.

ABC Sorts:

This is a perfect time for language integration. Sort letters into similar attributes. You can do the following letter sorts: Consonants/vowels, uppercase/lowercase, straight lines/slanted lines, tails/no tails, tunnels/no tunnels, dots/no dots, tall/short, long stick/short stick, circle/no circle.

Game: "What's the Same?"

Make copies of each of the sock pages on red, green, yellow and blue cardstock. Cut into cards. Note: you can make several sets so each table can have its own attribute set. Lay out any 12 sock cards on the ground (make sure you have a variety of colors). The students are gathered around in a circle. Say, "Find one thing that is the same." Students will look at the cards, and identify one attribute that is the same on two cards. When they find the attribute, they slap their hands on the carpet and say, "Same!" After all students have found a set with similar attributes, students will be allowed to explain to the class what they found. You can continue this game for several days, adding to the number of attributes (two, three, etc.) they should find between the cards. After the students understand the rules independently, this is a good, fast finisher and center game.

Sorting Socks:

Students should sort [socks](#) (pdf) into different categories as designated by their chosen attribute. They may choose dots, stripes, zigzags, color, etc. The students should be able to identify what common attribute they used to link the socks together. For independent practice, you could hang a string with small clothespins on it. Students could hang the socks onto the clothesline by their chosen attribute.

Household Sort:

Copy the [house](#) (pdf) onto 11"x17" white cardstock. Make a set of the [household cards](#) (pdf) on 8_"x11" white cardstock and cut the pictures into cards.

Students will sort the household items according to what room they belong in. (Note that some students will put things in different rooms than others because of how their own household sorts them.) Make connections with students about how a grocery and department store is organized.

Sorting Common Classmate Attributes:

- Make three large arrows on red, white and blue 11"x17" paper
- Each student needs a red, a white and a blue unifix cube.
- Place the arrows pointing in different directions in front of the children on the floor. (Note: There must be enough space at the end of the arrows for a group of children to come and sit.)

Students will sit at the carpet with their unifix cubes in hand. Call one student up, identify whether that student has a pull-on shirt, a shirt with buttons, or neither one of those attributes. Identify what each area represents (the white area is for pull-on shirts, the red area is for button shirts, and the blue area is for "other" types of clothes). As each student stands, the other students will identify by showing the correct color of unifix cube where that student should go. (You may need to keep reminding them which category the different colors represent.) Quickly regroup the students in this manner until your class is sorted. You can do this with different attributes such as hair color, hair length, types of shoes, and elastic waistbands or zippers.

Beastly Bug Attribute Game

Write each of the following attribute headings on a separate index card: one eye, two eyes, three eyes, one leg, two legs, three legs, one tooth, two teeth, three teeth, one lock of hair, two locks of hair, three locks of hair, one leg, two legs, three legs, red, blue, yellow, green.

For each bug page (pdf), make a red, blue, yellow, and green copy on cardstock and cut the bugs into separate cards.

Before you play the Game:

Have students sort the bugs informally at their tables by color and attribute. They may make circles with black yarn to help organize their sorts. Different attributes included are a combination of any of the following: Bugs with one eye, two eyes, or three eyes. Bugs with one leg, two legs, or three legs. Bugs with one tooth, two teeth, three teeth. Bugs with one lock of hair, two locks of hair, or three locks of hair.

Whole Class Connection: Find the Beastly Bug

This activity is done best at the carpet, where you can easily check students' cards and their peers can also check each other's cards. Pass out bugs to each student (all bugs must be passed out). Have students carefully look at the cards. (Most students will at least have two cards; accelerated learners may have three.)

Put your attribute index card headings in piles according to eyes, legs, teeth, hair, and color.

To find the Beastly Bug:

1. Pick a card from the "eye" heading. "This Beastly Bug has" (whatever is written on the attribute card – maybe two eyes).
2. Students look at their card. If their bug has one or three eyes, they don't have the Beastly Bug card. They turn their cards over. They aren't the Beastly Bug.
3. Next pick a card from the teeth heading. "This Beastly Bug has" (whatever is written on the attribute card – maybe three teeth). If you have one or two teeth – you aren't the Beastly Bug!
4. Remind students about attributes, "So we know our Beastly Bug has two eyes and three teeth!"
5. Continue through the headings (you must do eyes, legs, teeth, hair and color). Do the color very last. The one with this attribute card is the Beastly Bug.
6. As you go through the attribute headings, make sure you refer to the heading cards so they can see the attributes you are looking for.

Attachments

- [socks.pdf](#)
- [bug.pdf](#)
- [house.pdf](#)
- [house-cards.pdf](#)

Extensions:

- Advance learners can explore with graphic organizers. They can sort on Venn diagrams, t-charts, and pie organizers
- For ELL students and those requiring adaptations, you could model individually and use explicit teacher talk as you think aloud.
- For language integration, use the book to discuss the concept of first, next, and last. In text, connections can be made with the letter "f."

Family Connections:

Assignments to do with parents

1. Possible sorts and groupings at home: silverware, groceries, socks, books, toys. Students should see how a house is organized and grouped by attributes of things.

2. When shopping, notice how the grocery store or department store is grouped and organized.
3. Look at tools in a garage. How are they organized?

Assessment Plan:

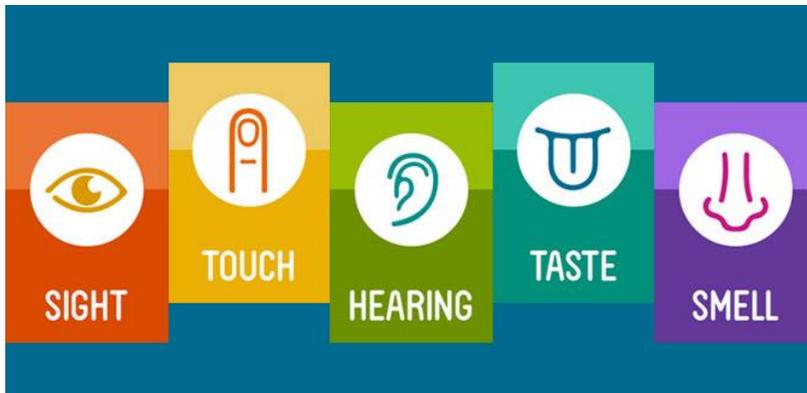
- Informally observe students as they sort the buttons on their firemen. Are they grouping similar characteristics together?
- To formally assess students, make a copy of the [button blackline](#) (pdf) and have students color the buttons. Students will cut the shapes out and glue the shapes onto separate 8 1/2"x11" paper by size, buttonhole number, etc.
- Pre-assess students before the lesson by showing two squares and two circles to the class. Discuss how they are different and how they are the same. Have students explain how they could group them according to their differences. Observe carefully to see if students understand the concept of "different."

Attachments

- [buttons.pdf](#)

Author:

PENNY MCENTIRE



Summary:

Students move through stations studying the sense of taste, hearing, smell, and touch. Students are blindfolded and try and solve a smell mystery. Students reach under a blanket and try to identify objects through their use of touch. For taste, students try all four tastes of salt, sour, sweet and bitter. Finally, they use their sense of hearing to solve a hearing matching game.

Time Frame: 1 class period that runs 45 minutes

Main Curriculum Tie:

Science - Kindergarten

Standard 4 Objective 2

Describe the parts of living things.

[Supplemental Materials](#) (pdf)

Materials:

Look through what you have in your home before you buy materials. Many items from home could be used for the smell and hearing station that you shouldn't need to purchase separate items.

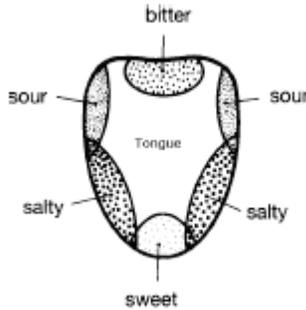
- Smell station: Use 5 blindfolds, bandannas work great or cut up old sheets that you may already have. Small storage containers of foods such as: popcorn, dill pickle juice, root beer, oranges, cinnamon, lemon juice, bananas
- Taste station: **** Check student allergies and leave it up to students to decide what they want to taste.** Make solutions of salt in water, sugar in water, lemon juice, tonic water for bitter taste; small pieces of dill pickles for sour, mini pretzels for salty, small pieces of green apples for bitter and candy corn or some other candy for sweet.
- Hearing station: Use plastic Easter eggs to make a sound matching game. Find 10 objects such as: cotton balls, rice, pennies, nuts, cheerios etc. These items can each be placed in two Easter eggs. Give each Easter egg a number and place the matches on an answer key.
- Touch station: Large cookie sheet with a towel to cover it. Place about 20 objects that students can recognize by touch alone. Some examples are: toothbrush, toy car, bouncy ball, penny, pencil, cotton ball, etc. They should differ in size and texture so students can discuss these attributes as they guess what they are touching.

Attachments

- [sensesstudentsheet.pdf](#)
Student worksheet

Background for Teachers:

- Taste – Saliva in our mouth breaks down food. We taste food through about 10,000 taste buds on our tongues. Taste buds sense salt, sweet, sour and bitter. Nerves then send these messages to your brain to tell you what flavor you are tasting.



- We smell through special cells in our nose. These cells recognize specific smells and allow our brain to recognize foods based on their smell alone.
- We hear through vibrations felt on tiny cells in our inner ear.
- Our sense of touch is felt everywhere we have skin. There are special nerve endings that sense cold, heat and pain as well as other sensations.

Attachments

- [senses_diagrams.pdf](#)

Intended Learning Outcomes:

1. Framing questions. Conducting investigations. Drawing conclusions.
2. Sharing ideas with peers. Connecting ideas with reasons.
3. Differences in conclusions are best settled through additional observations and investigations.

Instructional Procedures:

Pre-lab discussion: Show the students a single serving bag of fruit snacks. Rustle the bag to demonstrate our sense of hearing. Look at the colors of the bag for our sense of sight. Hand each child a fruit snack. Have them smell it for the sense of smell, notice that it is squishy with their sense of touch and eat it for the sense of taste!

Instructional Procedures:

1. **Sense of smell** -- Help the students put on blindfolds. Hold the various containers up to their noses one at a time. See if they can identify the smell. Have all the students wait until everyone has smelled the food before they say the name out loud. Have them describe whether they like or don't like the smell. Repeat for all the smells. Discuss that our sense of smell comes through our nose.
2. **Sense of taste**-- Have students either taste the liquids on cotton swabs or take actual bites of the foods. See if they can predict and identify them as either salty, sweet, sour or bitter. If students don't want to taste a food, do not push it. If they need to, have them get drinks of water between some of the foods.
3. **Sense of touch** – Have students put their hands under the towel on the table and try and identify different objects they are touching. They should each take turns and guess what the object is and then pull it out from under the towel to see whether they were correct. Have them describe the texture of the objects, e.g., rough, smooth, flat, wrinkly etc. Explain that our sense of touch comes through our skin.
4. **Sense of hearing** -- Start with one student and have them pick up two eggs from the basket. They should see if they sound the same. If not, have them hold onto one egg and pull out the other eggs one at a time until they get a match. Put that match aside and let the next student find a match. See if they can guess what is inside the eggs making the sounds. When they're done, tell them what is in the eggs. Explain that our sense of hearing comes through our ears.

Assessment Plan:

Attachments

- [tongue.png](#)

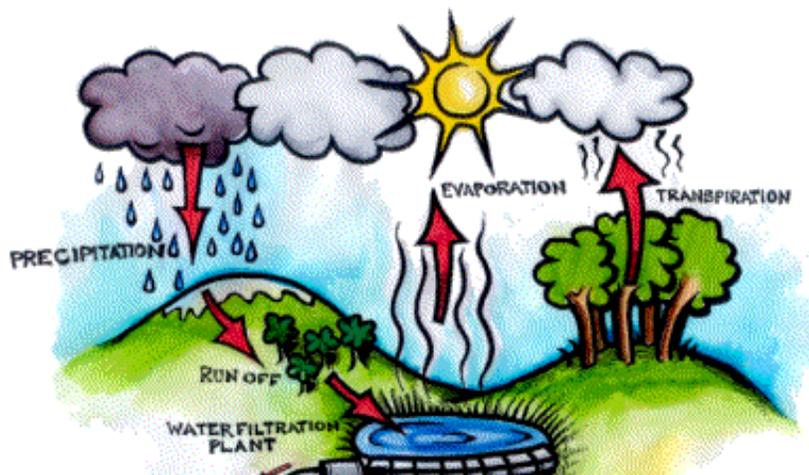
Bibliography:

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Author:

[Utah LessonPlans](#)



WATER CYCLE

Summary:

Students become water molecules as they simulate the movement of water through the water cycle.

Time Frame: 1 class period that runs 45 minutes

Main Curriculum Tie:

Science - Kindergarten

Standard 1 Objective 2

Communicating Science: Communicating effectively using science language and reasoning

Standard 1 Objective 3

Knowing in Science: Understanding the nature of science

Materials:

- 7 large pieces of paper labeled with each [station name](#) (pdf)
- Marking pens
- 7 boxes, about 6 inches on each side (Boxes are used to make dice for the game. Gift boxes used for coffee mugs are a good size or inquire at your local mailing outlet). There will be one die [or box] per station of the water cycle. [Labels](#) (pdf) for the dice. These labels represent the options for pathways that water can follow.
- Copies of [student worksheet](#) (pdf)
- A bell, whistle, buzzer, or some sound maker.

Attachments

- [incredible-journey.pdf](#)
- [dice-labels.pdf](#)
- [station-name.pdf](#)

Background for Teachers:

While water does circulate from one point or state to another in the water cycle, the paths it can take are variable.

Heat energy directly influences the rate of motion of water molecules. When the motion of the molecule increases because of an increase in heat energy, water will change from solid to liquid to gas. With each change in state, physical movement from one location to another usually follows. Glaciers melt to pools which overflow to streams, where water may evaporate into the atmosphere.

Gravity further influences the ability of water to travel over, under, and above the surface of the earth. Water as a solid, liquid or gas has mass and is subject to gravitational force. Snow on mountaintops melts and descends through watersheds to the oceans of the world.

One of the most visible states in which water moves is the liquid form. Water is seen flowing in streams and rivers and tumbling in ocean waves. Water travels slowly underground, seeping and filtering through particles of soil and pores within rocks.

Although unseen, water's most dramatic movements take place during its gaseous phase. Water is constantly evaporating, changing from a liquid to a gas. Evaporation occurs when water from the ground or bodies of water move into the atmosphere. Plants give off water vapor through transpiration. The combination of evaporation and transpiration is referred to as evapotranspiration. As a vapor, water can travel through the atmosphere over the earth's surface. In fact, water vapor surrounds us all the time. Where it condenses and returns to earth depends upon loss of heat energy, gravity, and the structure of the earth's surface.

Water condensation can be seen as dew on plants or water droplets on the outside of a glass of cold water. In clouds, water molecules collect on tiny dust particles. Eventually, the water droplets become too heavy and gravity pulls the water to the earth.

Living organisms also help move water. Humans and other animals carry water within their bodies, transporting it from one location to another. Water is either directly consumed by animals or is removed from foods during digestion. Water is excreted as a liquid or leaves as a gas, usually through respiration. When water is present on the skin of an animal (for example, as perspiration), evaporation may occur.

Attachments

- [glossary.pdf](#)
- [discussion.pdf](#)
Discussion Questions

Instructional Procedures:

CONNECTIONS TO “DROP IN A BUCKET”:

Ask students to recall where water is located on the earth (oceans, rivers, ground, etc.). Ask if they recall where the most water is located (Oceans). Ask students if they know how water moves from one location to the next. Tell them this lesson will discuss how water moves between each location.

PROCEDURE:

1. Place the station labels around the room in different locations.
2. Ask students to identify the different places water can go as it moves through and around the earth. Write their responses on the board.
3. Tell students that they are going to become water molecules moving through the water cycle.
4. Categorize the places water can move through into seven stations: Mountain, Groundwater, Stream, Ocean, Animal, Cloud, and Plant.
5. Assign an even number of students to each station. (The cloud station can have an uneven number.) Have students identify the different places water can go from their station in the water cycle. Discuss the conditions that cause the water to move. Explain that water movement depends on energy from the sun, electromagnetic energy, and gravity. Sometimes water will not go anywhere. After students have come up with lists, have each group share their work. The die for each station can be

handed to that group and they can check to see if they covered all the places water can go. The die labels provide an explanation of water movements from each station.

6. Students should discuss the form in which water moves from one location to another. Most of the movement from one station to another will take place when water is in its liquid form. However, any time water moves to the clouds, it is in the form of water vapor, with molecules moving rapidly and apart from each other.
7. Tell the students they will be demonstrating water's movement from one location to another. When they move as liquid water, they will move in pairs, representing many water molecules together in a water drop. When they move to the clouds (evaporate), they will separate from their partners and move alone as individual water molecules. When water rains from the clouds (condenses), the students will grab a partner and move to the next location.
8. In this game, a roll of the die determines where water will go. Students line up behind the die at their station. (At the cloud station they will line up in single file; at the rest of the stations they should line up in pairs.) Students roll the die and go to the location indicated by the label facing up. If they roll stay, they move to the back of the line. When students arrive at the next station, they get in line. When they reach the front of the line, they roll the die and move to the next station (or proceed to the back of the line if they roll stay). In the clouds, students roll the die individually, but if they leave the clouds they grab a partner (the person immediately behind them) and move to the next station; the partner does not roll the die.
9. Students should keep track of their movements. This can be done using the Incredible Journey Worksheet. Having them keep a journal or notepad to record each move they make, including stays, can also do it. (See extensions for other ideas) Another approach is to have half the class play the game while the other half watches. Onlookers can be assigned to track the movements of their classmates. In the next round the onlookers will play the game, and the other half of the class can record their movements).
10. Tell students the game will begin and end with the sound of a bell (or buzzer or whistle). Begin the game! (Approximately 10 minutes for a class of 25 students is sufficient for students to understand the concepts of the water cycle)

WRAP UP:

Ask students about their journey. Did anyone get frustrated because they spent most of their time at one or two stations? Do you think that water molecules often get trapped in one location (oceans or atmosphere)? Discuss the water cycle with students and help them understand that it is not a well-defined cycle, but a series of pathways. Water does not always complete the full cycle, but can follow a multitude of pathways.

Extensions:

- Remind students about how pollutants or contaminants would affect our water supply and ask students how they think pollution affects the water cycle. Does pollution travel through the water cycle? Is there any point where pollution would be deposited or left behind?
- Discuss with students how water becomes polluted and is cleaned as it travels through the water cycle.
- Have the students make bracelets as they travel through the water cycle. Fill seven small containers with beads (one container for each station). Each station should have a specific color of bead. Give the students thread or a cord long enough for a bracelet and have them collect one bead every time they visit a station.
- Have students use their bracelets or travel records to write a story about their journey through the water cycle. If a water molecule could think and talk, how would it tell its story?

Activities:

These activities can be used to enhance or reinforce concepts and vocabulary words learned in the preceding lessons.

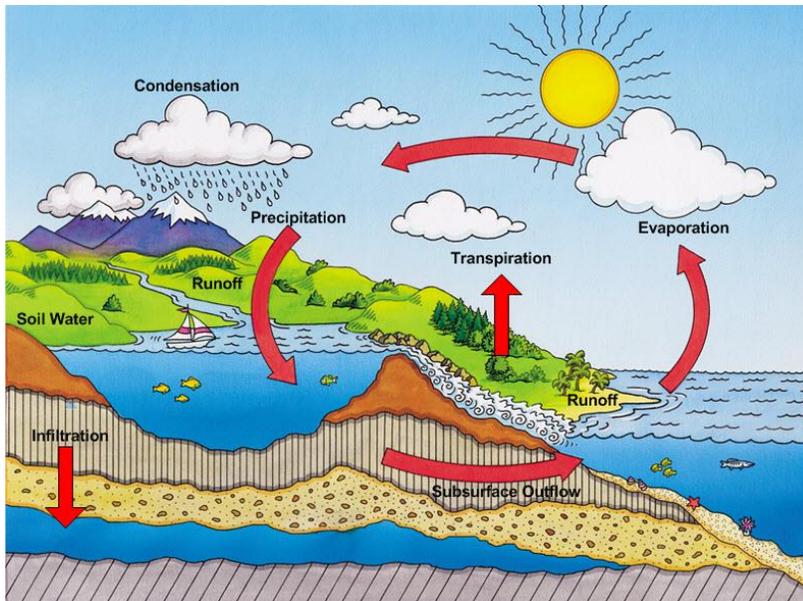
- [Drip's Journey](#) (pdf)
- [Word Search](#) (pdf)
- [Song](#) (pdf)
- [Crossword](#) (pdf)

Bibliography:

This lesson plan was developed by the Utah State University Water Quality Extension.

Author:

[Utah LessonPlans](#)



Summary:

Students will learn the different parts of the water cycle by acting them out. They will play a game similar to charades.

Time Frame: 1 class period that runs 15 minutes

Main Curriculum Tie:

Science - Kindergarten

Standard 1 Objective 2

Communicating Science: Communicating effectively using science language and reasoning

Materials:

“[Note cards](#)” (pdf). Copy and cut out cards so that there are enough cards for each student in the class to have one.

Attachments

- [note-cards.pdf](#)

Background for Teachers:

Water does not disappear with our use of it in irrigation, manufacturing, or consumption. The water we have now is the water we had at the beginning of time. Water forms, dissipates, and forms again in a cycle called the hydrologic or water cycle.

The water cycle is a gigantic circulation system operating in the atmosphere and on the earth’s lands and oceans. Being a cycle, there is no beginning or ending, but for illustration, let’s begin with the waters of the ocean, which cover about three fourths of the earth.

Water from the surface of the ocean **EVAPORATES**, while water given off by plants **TRANSPIRATES**. This combined water is referred to as **EVAPOTRANSPIRATION**. Here the water enters into the atmosphere and in turn cools and **CONDENSES** into clouds, and falls back to the earth’s surface as **PRECIPITATION**.

Precipitation that falls as rain, hail, dew, snow, or sleet is important to all living things. After wetting the foliage and the ground, some of the precipitation **RUNS OFF** into streams and other waterways. This is the water that often causes erosion and is the main contributor to floods. Not all of the precipitation runs off. Some of it pools and becomes available for evaporation. Some of it slowly **PERCOLATES** or **INFILTRATES** (soaks in) through the ground. Some of it resurfaces at springs, while some seeps to maintain and replenish streams during dry periods. Streams eventually lead back to the oceans, where the water is again evaporated into the atmosphere.

Attachments

- [glossary.pdf](#)
- [discussion.pdf](#)
Discussion Questions

Instructional Procedures:

PROCEDURE:

1. Explain to the students that they are going to “act out” or pantomime the water cycle.
2. Have the students blindly pick a note card.
3. Have the students begin to act out the word on their card. Without talking to anyone, they are to group themselves with students they think have the same card (they will know this by watching the actions of the rest of the group). When everyone has found a group, have the students sit down.
4. One at a time, have the groups stand and show the rest of the class their action. Have the other students guess what their word was.
5. Have the students in each group choose a leader. The leader from each group will then dramatize the entire water cycle. Suggestions: 1) the water cycle is not linear, so the students should not be standing in a line, 2) the water cycle is not two dimensional, encourage up and down variations, and 3) there is no proper beginning or ending – it’s a cycle.

WRAP-UP:

Discuss the water cycle with the students. Ask them how they chose the action for each part of the water cycle. Were some actions easier to figure out than others? Did all the people in the individual groups have the same actions? Remind the students of this activity at a later time. Can they still remember the water cycle?

Extensions:

Have each group draw their water cycle element on a large sheet of butcher paper. Fill in the cycle with homes, schools, mountains, highways, industries, construction sites, etc., and discuss how each area affects the water cycle.

Activities:

These activities can be used to enhance or reinforce concepts and vocabulary words learned in the preceding lessons.

- [Drip's Journey](#) (pdf)
- [Word Search](#) (pdf)
- [Song](#) (pdf)
- [Crossword](#) (pdf)

Attachments

- [song.pdf](#)
- [crossword.pdf](#)
- [word-search.pdf](#)
- [drip-journey.pdf](#)

Bibliography:

This lesson plan was developed by the Utah State University Water Quality Extension.

Author:

[Utah LessonPlans](#)

**Summary:**

Students will review the water cycle through a relay race vocabulary game.

Time Frame: 1 class period that runs 15 minutes

Main Curriculum Tie:

Science - Kindergarten

Standard 1 Objective 2

Communicating Science: Communicating effectively using science language and reasoning

Materials:

- 1 tray (or more) of cubed ice (or marbles) per team
- 1 set of vocabulary words per team with tape or Velcro on the back (bold words in background section)
- [1 set of riddle cards](#) (pdf)
- 1 spoon with tape (or Velcro) on the bottom (per team)
- 1 bucket
- large poster of the water cycle with Velcro on the areas corresponding to the vocabulary words

Attachments

- [riddle-cards.pdf](#)

Background for Teachers:

Water doesn't disappear with our use of it for irrigation, manufacturing, and other sources of consumption. The water we have today is the same water we had at the beginning of time. Water forms, dissipates, and forms again in a cycle called the hydrologic or water cycle.

The water cycle is a gigantic circulation system operating in the atmosphere and on the earth's lands and oceans. Being a cycle, there is no beginning or ending, but for illustration, let's begin with waters of the oceans which cover about three-fourths of the earth.

Water from the surface of the ocean **EVAPORATES** into the atmosphere. The evaporation from the ground and bodies of water combined with the **TRANSPIRATION** of plants is **EVAPOTRANSPIRATION**. That moisture is lifted, eventually is **CONDENSED**, and falls back to the earth's surface as **PRECIPITATION**.

Precipitation that falls as rain, hail, sleet, or snow is important to people and agriculture. After wetting the plants and the ground, some of the precipitation **RUNS OFF** into **STREAMS** and other waterways. This is the water that often causes erosion and is the main contributor to floods. Not all of the precipitation runs off. Some soaks into the ground and is available for evaporation. Some of it **PERCOLATES** (or **INFILTRATES**) through the ground and resurfaces at springs. Some seeps to maintain and replenish streams during dry periods. The streams eventually lead back to oceans, where the water is again evaporated into the atmosphere.

Attachments

- [glossary.pdf](#)
- [discussion.pdf](#)
Discussion Questions

Instructional Procedures:

PROCEDURE:

4. Review the water cycle, paying particular attention to the following vocabulary words: evaporation, transpiration, condensation, cloud, precipitation, river, percolation (or infiltration), groundwater, evapotranspiration, and water cycle.
5. Divide the class into teams of about nine students. Show the class a water cycle poster, pointing out that there are areas for a word to tape onto the poster. Explain that they will identify the areas with the missing words in the course of the water cycle relay race.
6. Have each group form a single file line. Pass the spoon and tray of ice cubes (or marbles) to each team and have them place these at the end of the line. As part of the relay, each team will place an ice cube on the spoon and pass both from the back of the line to the front of the line.
7. Give each team a set of the nine vocabulary words written on slips of paper. Have the teams attach a piece of tape to each slip of paper. Ask the teams to discuss the words, review their meanings and decide where they are located on the water cycle poster.
8. Before beginning the race, review the rules for the relay: 1) No one may touch the ice cube after it has been placed on the spoon until it reaches the bucket. 2) If the ice cube falls off the spoon, the back person must put another ice cube on the spoon and the process starts again.
9. Read a water cycle riddle to the class. The students must quietly decide among their team which word best fits the riddle. The last person in line tapes the vocabulary word to the bottom of the spoon and places the ice cube in the spoon. He or she then passes the spoon and ice cube to the person in front of him or her, and so on to the front of the line. The person at the head of the line walks quickly to the poster (at the front of the room) with the spoon and ice cube, places the ice cube in the bucket under the water cycle poster, takes the word from the spoon, tapes it to the poster, and returns to the end of the line. The first group to put its word on the poster receives points. The race continues with another riddle until all the riddles have been read.
10. Invite the students to help decide how points should be awarded and keep track of the scores. Ask them to decide the number of points to be given to the team that finished first, the team(s) that select(s) the correct vocabulary word, and the team(s) the correctly place(s) the word on the poster.
11. The team with the most points wins.

Extensions:

Discuss with the students what would happen if pollutants were introduced into the water cycle.

Activities:

These activities can be used to enhance or reinforce concepts and vocabulary words learned in the preceding lessons.

- [Drip's Journey](#) (pdf)
- [Word Search](#) (pdf)
- [Song](#) (pdf)
- [Crossword](#) (pdf)

Bibliography:

This lesson plan was developed by the Utah State University Water Quality Extension.

*Adapted from activity I-3 Water Cycle Relay Race in the manual Water Conservation and Non-point Source Pollution by Dr. Kitt Farrell-Poe.

Author:

[Utah LessonPlans](#)



Summary:

This is a Unit. Do each activity on separate days. Students observe the changes in our environment during the spring. They use their sense of touch, sight, hearing and smell to investigate their surroundings. Students discuss how a shadow forms, how large rocks become smaller rocks, and finally learn the different parts of a plant. Consider using non-fiction books read outside; Look What I did with a Leaf? by Morteza E. Sohi and Red Leaf Yellow Leaf and Leaf Man by Lois Ehlert

Time Frame: 1 class period that runs 30 minutes

Main Curriculum Tie:

Science - Kindergarten

Standard 2 Objective 1

Investigate non-living things.

Standard 2 Objective 2

Observe and describe changes in day and night.

Standard 2 Objective 3

Compare changes in weather over time.

Standard 4 Objective 2

Describe the parts of living things.

[Supplemental Materials](#) (pdf)

Materials:

Attachments

- [springwalkobservations.pdf](#)
Students are asked to either draw or write about three signs of spring they saw on their nature walk.

Intended Learning Outcomes:

1. Framing questions. Conducting investigations. Collecting data. Drawing conclusions.
2. Developing social interaction skills with peers. Sharing ideas with peers. Connecting ideas with reasons.
3. Ideas are supported by reasons. Communication of ideas in science is important for helping to check the reasons for ideas.

Instructional Procedures:

Pre-lab discussion: Show the students a picture of a tulip (or whatever spring flower they will find outside) and tell them they are going on a tulip hunt. Ask them if they see tulips all summer long or in just a special season. Take them outside and begin the spring nature walk.

Instructional Procedures: Take the students outside for this activity.

1. Group the students sitting down outside. Ask the students what season it is and what they would expect to see the plants, trees and animals doing in this season. Have them close their eyes and use their sense of smell, feeling, and hearing to identify signs of spring. Discuss the smell of flowers and plants, the feeling of sun on their faces, and if they hear any insects or birds.
2. Find an area with buds on trees. Discuss how flowers on trees form before the leaves on the trees do. Explain that flowers will turn into seeds or fruit. On the tree identify the flower, trunk, branches, and any leaves that can be found.
3. Have the students find the spring flowers. Explain that these are the first flowers that form in the spring but they will soon die at the end of spring and not live through the summer. On the spring flower, identify the flower, leaves, and stem.
4. Look at the trees and notice what is happening. The leaves are just starting to bud. Look at evergreen trees and realize they haven't changed over the season. But you should see some new needles added. Find areas on the end of the branches where new growth is occurring.
5. Have the students stand on the concrete. Have them notice their shadow. Ask them how a shadow is formed. Explain that when we block the sun we see our shadow. Look at shadows that formed from the building, houses, fences, or whatever other shadows may be found in the area.
6. Ask the students to feel how warm their body feels in the sun then move into a well shaded area and ask them if they feel as warm. Explain that in the shade, not all the sun's energy can reach our skin and it feels cooler. Go back and forth from sun to shade and have students identify the difference.
7. Find some soil that has different sized particles. Use your foot to smash the pieces into smaller pieces. Explain that larger rocks are broken down into smaller rocks. These smaller rocks eventually get broken down into our soil.
8. Bring the students back together as a group and discuss the main signs of spring: spring flowers, buds on trees, birds calling to each other as they ready their nests, and warming temperatures.

Bibliography:

Rio Tinto Hands-on Science Curriculum Team

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Author:

[Utah LessonPlans](#)



Summary:

Students will identify the Seasons using Navajo, Ute and Spanish words.

Time Frame: 2 class periods that run 60 minutes each.

Main Curriculum Tie:

Science - Kindergarten

Standard 2 Objective 3

Compare changes in weather over time.

[Supplemental Materials](#) (pdf)

Materials:

1. Cultural Awareness-Level Kindergarten: SJSD Media Center publication.
2. Handout of seasons in four languages (see below)
3. Paper, pencil, crayons.

Attachments

- o [seasons_handout.pdf](#)

Web Sites

- o [San Juan School District](#)
For reference to the media center.

Background for Teachers:

Guarded Vocabulary:

New words pre-taught/sustained in lesson:

Weather, season, winter, spring, summer, autumn-fall

<u>English</u>	<u>Navajo</u>	<u>Ute</u>	<u>Spanish</u>
Winter	hai	tüm7t	invierno
Spring	daan	tam1n	primavera
Summer	sh9	tach1t	verano

Intended Learning Outcomes:

Identify Vocabulary words in English, Navajo, Ute and Spanish for the Seasons.

Instructional Procedures:**Introduce lesson to capture student's attention:**

Teacher will walk the class outside and ask questions about the weather:

1. What is the weather right now?
2. What was the weather like yesterday?
3. Can anyone tell me the name of this season?
4. What is the typical weather of this season?

Teacher will tell class that they are going to learn more about the seasons and learn the names of the seasons in 3 different languages-Navajo, Ute and Spanish. Teacher and students return to class.

Problem/Prediction:

How can you get the students really thinking?

With students working in pairs, teacher will name the seasons and then ask the pairs to work together and tell each other the four seasons (in English). Teacher will call on each pair to report to class. Teacher will compile student given information on the board, on a projection device or on a flip chart and discuss the answers, listing the four seasons in order from Winter to Autumn, and ask students to tell some different weather patterns of the seasons, e.g., dry, hot, cloudy, rainy, snowy, freezing. Teacher will ask students if they know the names of the seasons in Navajo, Ute and Spanish. Teacher will write on the board, a projection device, or on a flipchart, the names of the seasons in the different languages listed under the name of the language.

Teacher Instruction:

Teacher will name and point to or write the four seasons in English and say a typical weather pattern of the season, e.g., winter-snow, spring-thunderstorms, summer-hot, autumn-rain. Teacher will tell the students that they are going to hear and learn to recognize the names of the seasons in Navajo, Ute and Spanish. Teacher will say the names of the seasons, winter-spring-summer-autumn, in Navajo and ask the students to repeat the Navajo name. Teacher will say the names of the seasons in the same order in Ute and ask students to repeat the Ute name. Teacher will say the names of the seasons in Spanish and ask students to repeat the names (utilize building staff for pronunciations).

Lesson could be divided into two days. Day 1- English and Navajo. Day 2-Ute and Spanish. Visiting native speakers of Navajo, Ute and Spanish could be invited to teach the pronunciations of the words.

Using the Cultural Awareness-Level K book, teacher will read the bottom half of page 45 to students, telling the Navajo meanings of their words for the seasons.

How will you end your lesson?.

Student will show/present to the whole class, their drawing of the seasons, and say the name of the season written on the drawing.

Strategies For Diverse Learners:**How will you help ELL students?****Guided Practice:**

Teacher will listen to each student say the names of the seasons in English as she/he points to the words written on board, projection device or flipchart.

Help students' master new concepts:

Teacher will spend time on each language separately and have students work in table groups of four saying the names for the seasons to each other in the four different languages as each language is introduced. A handout of the seasons written in the four languages will be disseminated.

Extensions:

Students will work in table groups of four or in pairs and draw a scene which represents a favorite season and label the drawing with the words from the board/handout for the season in all four languages. Teacher and assistant will circulate among groups to direct students.

Assessment Plan:

Observation of student participation, student completion of drawing with written words for season. Student presentation of drawing, and pronunciation of word(s) for season.

Author:

[Utah LessonPlans](#)



Summary:

Students will learn to recognize weather related vocabulary in Navajo, Ute and Spanish, in one or two class periods by receiving direct instruction and taking part in cooperative group activities.

Time Frame: 2 class periods that run 60 minutes each.

Main Curriculum Tie:

Science - Kindergarten

Standard 2 Objective 3

Compare changes in weather over time.

[Supplemental Materials](#) (pdf)

Materials:

1. Handout of words for weather conditions in four languages
2. Paper, pencil and crayons.

Attachments

- [K0301_lesson_2.pdf](#)

Background for Teachers:

Guarded Vocabulary:

New words pre-taught/sustained in lesson:

Weather, sunshine, cloudy, rain, wind, snow, thunderstorm,
See handout of weather conditions in four languages

Intended Learning Outcomes:

Some vocabulary words in English, Navajo, Ute and Spanish for weather conditions

Instructional Procedures:

Introduce lesson to capture student’s attention:

Teacher will walk the class outside and ask questions about the weather:

1. What is the weather right now?
2. What was the weather like yesterday?
3. Can anyone tell me the name of this season?
4. What is the typical weather of this season?

Teacher will tell class that they are going to learn more about the weather and learn the names of different weather conditions in different languages. Teacher and students return to class.

Problem/Prediction:

How can you get the students really thinking?

With students working in pairs, teacher will ask the pairs to work together and name some weather conditions (in English). Teacher will call on each pair to report to the class. Teacher will compile student given information on the board, on a projection device or on a flip chart and discuss the answers, listing the weather conditions and also talking about the season(s) in which the weather conditions are found. Teacher will ask students if they know the names of any weather conditions in Navajo, Ute and Spanish. Teacher will write on the board, on a projection device, or on a flipchart, the names of different weather conditions in the different languages listed under the name of the language.

Teacher Instruction:

Teacher will name and point to or write the words for weather conditions in English and say the name of a season where the weather pattern is experienced e.g., snow-winter, thunderstorms-spring, sunshine-summer, rain-autumn. Teacher will tell the students that they are going to hear and learn to recognize the names of some weather conditions in Navajo, Ute and Spanish. Teacher will say the names of the weather conditions in Navajo and ask the students to repeat the Navajo name. Teacher will say the names of the weather conditions in the same order in Ute and ask students to repeat the Ute name. Teacher will say the names of the weather conditions in Spanish and ask students to repeat the names (utilize building staff for pronunciations).

Lesson could be divided into two days. Day 1- English and Navajo. Day 2-Ute and Spanish. Visiting native speaker of Navajo, Ute and Spanish could be invited to teach the pronunciations of the words.

How will you end your lesson?

Student will show/present to the whole class, their drawing of the weather condition, and say the name of the weather condition written on the drawing.

Strategies for Diverse Learners:

How will you help ELL students?

Guided Practice:

Teacher will listen to each student say the names of weather conditions in English as she/he points to the words written on board, projection device or flipchart.

Help students' master new concept:

Teacher will spend time on each language separately and have students work in table groups of four saying the names for weather conditions to each other in the four different languages as each language is introduced. A handout of the weather conditions written in the four languages will be disseminated.

Extensions:

Students will work in table groups of four or in pairs and draw a scene which represents a favorite weather condition, and label the drawing with the words from the board/handout for the weather condition in all four languages. Teacher and assistant will circulate among groups to direct students.

Assessment Plan:

Observation of student participation, student completion of drawing with written words for weather condition. Student presentation of drawing, and pronunciation of words for weather condition.

Author:

[Utah LessonPlans](#)



Summary:

For each change of season, students will observe the weather and then dress a cut-out doll appropriately for a field trip outside.

Time Frame: 3 class periods that run 15 minutes each.

Main Curriculum Tie:

Science - Kindergarten

Standard 2 Objective 3

Compare changes in weather over time.

[Supplemental Materials](#) (pdf)

Materials:

- 1 paper cut-out doll per student (see attachment below)
- Cut-out clothing for the following weather conditions: hot day, rainy day, cool day, very cold day, and snowy day (see attachments below)
- Scissors
- Crayons

Background for Teachers:

Students may not have noticed the trends of weather typical of a season. To help establish background information about the current season, discuss things such as signs of the season, the class daily weather chart, and recurring symbols for weather they have recorded.

Student Prior Knowledge:

Review the names of the seasons. Clarify names such as fall and autumn that have the same meaning. ESL students may benefit from reviewing the names of seasonal clothing.

Intended Learning Outcomes:

- Observe, sort, and classify objects.
- Learn proper care of the body.
- Develop problem solving skills.
- Make connections from content areas to application in real life.

Instructional Procedures:

1. Each season take students for a walk outside and observe the weather conditions.
2. Return to the classroom. Instruct students to cut out and color the appropriate clothing for their dolls to wear outside. (see attachments below)
3. After the students have colored and dressed their cut-out dolls, have a class discussion about the reasons for choosing that clothing. Ask them to identify what they observed that made them decide to select that clothing. Discuss their observations. Elaborate on the influence of the weather on clothing choice.
4. Make a picture graph using the cut-out dolls each time this activity is conducted. This graph illustrates the clothing worn for various weather conditions.

Attachments

- [clothing3.gif](#)
A third set of cut-out outfits for use with this lesson. Please print out for classroom use.
- [Clothing2.gif](#)
A second page of cut-out outfits to use with the lesson. Please print out and photocopy for class use.
- [clothing1.gif](#)
Two paper cut-out outfits are used in this Kindergarten lesson. Print out this image and photocopy for classroom use.
- [doll.gif](#)
This is a paper doll cut-out for use in this lesson. Print out this image and photocopy for the class.

Strategies For Diverse Learners:

Be sensitive to cultural differences. Some children will select clothing that you do not think would be appropriate. This could be due to inaccurate observations or varying backgrounds. Ask them to explain their choices. If their observations are accurate and the reasons for their decisions understandable, accept their answers. If a student is just beginning to acquire English, invite him/her to point to specific articles of clothing. (The receptive vocabulary is often larger than a child's expressive vocabulary.)

Extensions:

1. Invite a child each day to record "today's" weather on a weather calendar. Discuss weather patterns of each season. Compare the current weather calendar with the calendar from a different season.
2. Demonstrate writing a weather poem for the class, then invite each child to create their own weather poem. An adult prompts each child to respond to the Weather Poem Format and writes the words dictated by the child. Mount the child's poem on the back side of a sheet of construction paper, and place his/her illustration on the front side.

Weather Poem Format

Title (kind of weather)

Describe what the weather looks and feels like, as well as and the kind of clothing worn.

Describe a favorite activity for this kind of weather. For example:

Sunny Day

No clouds.

The sun is hot.

The road is hot.

I am hot.

I sweat.

My bare feet run fast on the hot road.

I put on my swimsuit.

I run through the sprinklers.

I lay down on a towel on the hot driveway.

The hot feels good.

Assessment Plan:

Students should appropriately dress cut-out dolls for the weather. Students should be able to articulate and defend their observations and choices.

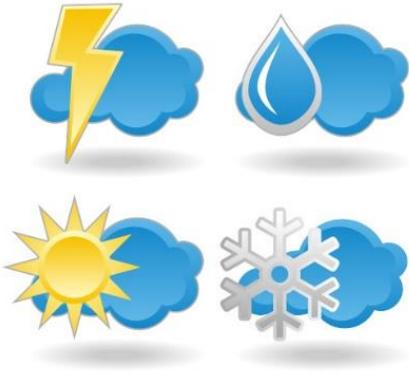
Bibliography:

This lesson was originally created by Brandon Thacker.

Author:

Julie Cook

Elisha Morgan



Summary:

Students will understand basic concepts about weather.

Time Frame: NA

Main Curriculum Tie:

Science - Kindergarten

Standard 2 Objective 3

Compare changes in weather over time.

[Supplemental Materials](#) (pdf)

Materials:

- *What Will the Weather Be Like Today?*
- [My Weather Book](#)
- Prism, flashlight
- Construction paper
- Crayons
- Wax-coated Sand
- Cotton Balls
- Water bottle
- Hot water
- Ice cubes
- Wax paper
- Aluminum foil
- Fake snow
- Hot plate
- Pot of water
- Pie tin
- Bubble solution

- Bubble wands
- Paper fan
- *Windmill Outline*
- **WINDMILL BLADES**
- Brads
- Fluorescent light bulb
- Rubber balloon
- Paper sack

Additional Resources

Books

Can it Rain Cats and Dogs?: Questions and Answers about Weather, by Melvin and Gilda Berger; ISBN 0-590-13083-8

Franklin and the Thunderstorm, by Paulette Bourgeois; ISBN 0-590-02635-6

Scholastic Atlas of Weather, by QA International; ISBN 0-439-67865-X

Scholastic Science Emergent Readers: Sun, by Susan Canizars; ISBN 0-590-10731-3

Scholastic Science Emergent Readers: Water, by Susan Canizars; ISBN 0-590-10727-5

Scholastic Science Emergent Readers: Weather, by Pamela Chanko; ISBN 0-590-10730-5

Scholastic Science Emergent Readers: Wind, by Susan Canizars; ISBN 0-590-10726-7

Scholastic Science Readers: Thunder and Lightning, by Wendy Pfeffer; ISBN 0-439-26988-1

Scholastic Science Readers: Tornadoes, by Brian Cassie; ISBN 0-439-26990-3

Snow? Let's Go!, by Karen Berman Nagel; ISBN 0-439-09906-4

Super Storms, by Seymour Simon; ISBN 0-439-46685-7

The Best Book of Weather, by Simon Adams; ISBN 0-7534-5584-6

The Magic School Bus Kicks up a Storm, by Joanna Cole and Bruce Degan; ISBN 0-439- 10275-8

Weather: A National Geographic Action Book, by Tom Kierein; ISBN 0-7922-2782-4

Weather Words and What They Mean, by Gail Gibbons; ISBN 0-590-44408-5

Welcome Books: Cold Days, by Jennifer S. Burke; ISBN 0-516-23870-1

Welcome Books: Rainy Days, by Jennifer S. Burke; ISBN 0-516-23869-8

Welcome Books: Windy Days, by Jennifer S. Burke; ISBN 0-516-23868-X

What Will the Weather be Like Today?, by Paul Rogers; ISBN 0-590-72617-X

World Book Encyclopedia, by Field Enterprises Educational Corporation; ISBN 0-7166-0073-0

Attachments

- [Windmill_Blade.pdf](#)
- [Windmill_Outline.pdf](#)
- [My_Weather_Book.pdf](#)

Web Sites

- [Weather Wiz Kids](#)
- [How Stuff Works](#)
- [Weather Bug](#)

Background for Teachers:

We want to make sure that we give our students correct information about what causes weather. Due to their developmental age, kindergarten students have limited abilities to understand complex ideas and theories about the weather. As early childhood educators, we need to find a way to make the concepts of weather more tangible so that our students can begin to comprehend the world around them. Remember that “weather” is the condition of the air and the atmosphere at one place at one time while “climate” is the usual weather for an area at a given time of year.

The air around Earth creates the weather. The layer of Earth’s atmosphere that is closest to Earth is called the troposphere. The troposphere is where the weather forms. The sun heats Earth’s surface unevenly. Areas around the equator are warmer than areas near the polar regions. Air moves based on high and low pressure areas. The moving air creates the winds, which, in combination with the water cycle, creates the weather. Air moves mostly in large blocks called air masses. Depending on where the air mass forms and which direction it moves, it brings with it different weather. Cold, dry air masses that form over cold land areas tend to move towards Earth’s equator. These air masses usually mean clear, dry weather. Cold and moist air masses form over the cold ocean waters. As they move towards the equator, they usually bring rain or snow with them. Warm and dry air masses form over tropical land and tend to move away from the equator. They frequently bring in hot, dry weather. Warm, moist air masses that form over warm ocean waters also have a tendency to move away from the equator. These air masses typically mean clouds and/or rain showers.

Here are some quick explanations of some of the types of weather that the students will be learning about. Naturally, there is more to it than these quick explanations, and there are many factors that affect the weather. However, these explanations should suffice for most kindergarten lessons.

Clouds: Clouds are formed from tiny droplets of water or ice crystals. As water vapor rises in the air, it cools and condenses into the droplets. A cloud is formed when there is enough water vapor that has condensed into billions of droplets or ice crystals. The varying shapes of clouds are due to the fact that clouds are formed in a variety of ways depending on air temperature and the amount of moisture in the cloud. Different types of clouds are indicative of different types of weather.

Fog: Fog is also made up of tiny droplets of water like clouds. However, fog is formed at ground level while clouds are formed higher in the sky. Fog occurs when there is calm weather during a cool night when the ground or a body of water is also cold. Because of the cool air and cold ground, water vapor in the air condenses into the tiny droplets of water near the ground (or over a body of water). The droplets of water are so small that it takes about seven trillion of them to fill one tablespoon of water.

Rain: As the sun warms bodies of water on Earth, some of the water evaporates into water vapor. This water vapor rises into the atmosphere and forms clouds as it cools down into tiny water droplets. As the water droplets bunch together, they become larger. Once the droplets become too heavy, they fall to Earth, usually as rain. There is a tiny bit of dust at the center of each raindrop because the water vapor condenses around specks of dust.

Snow: Snow is made up of ice crystals that develop when it is too cold for rain to form. When the temperature is cold enough, the water vapor in the clouds condenses into ice crystals instead of water droplets. If the temperature of the air that the ice crystals fall through remains cold enough, the crystals hit the ground as snow. Each snowflake is unique because it is formed from thousands of the ice crystals that have joined together in a unique way.

Lightning and Thunder: Lightning is formed as droplets of water or ice in cumulonimbus clouds bump and rub against each other, creating tiny electrical particles. When the charge from this bumping and rubbing becomes large enough, it creates lightning. Lightning bolts can jump between the clouds and the ground or between several clouds. Lightning in turn creates the thunder. The loud noise of thunder comes from the heat of the lightning. The sudden burst of heat that comes with the lightning makes a powerful explosion. The sudden movement of air is what we hear as thunder.

Wind: Wind is simply moving air. As air gets warmer, it rises and colder air moves in to take its place. As the colder air warms, it also begins to rise. However, now the warmer air that moved first has cooled and moved back down. It is the exchange of cold and warm air that creates the wind. Another way to look at it is that wind is created when air flows from an area of high pressure to an area with low pressure. If there is a big difference in the high and low pressure, it creates a strong wind. If there is only a small difference in the pressure, then the result is more of a light breeze.

Rainbow: While not a type of weather in and of itself, a rainbow can be the end result of a rainstorm. Rainbows are formed when the sun comes out after a morning or evening rainstorm. You can only see a rainbow when the sun is behind you. While it looks white, (sun)light is really made up of the whole spectrum of colors. When the sun's rays hit the tiny drops of water that are in the sky after a rain shower, the drops break up the light into the colors of the rainbow. Frequently, there are 2 rainbows that appear. There is an inner bow that is usually easier to see (the primary bow) and its "double" that tends to be paler (the secondary bow). The colors are always the same red, orange, yellow, green, blue, indigo and violet, with the colors going in reverse order in the secondary bow due to a double reflection in the raindrops.

Intended Learning Outcomes:

1. Demonstrate a positive learning attitude.
5. Understand and use basic concepts and skills.

Instructional Procedures: Invitation to Learn

Tell the students that they get to be scientists. As a class, they will be conducting a number of science experiments as they learn about the weather. In addition, they will have the chance to make a science book about the weather. Because it is a science book, they will need to make sure that they do their best work and make it "real". Show some examples of science-type books if needed.

Instructional Procedures

1. For each page in the weather book that the students will be making, talk about the different properties of each type of weather. Do the coordinating science experiment or sand and water activity. Through each experiment, ask students questions about what is happening and have them explain it in their own words. Demonstrate to the students how to create each page. Always discuss with your students the different types of activities that the students can do in each type of weather (e.g., fly a kite when it is windy). Discuss safe behavior for each type of weather. Collect the pages as students finish each one and compile all pages together in book form.
2. *My Weather Book*—Cover page with rainbow. Discuss how the cover of a book always has the title, the author's name, and the illustrator's name. Because the students will be writing the book and doing the illustrations, just their name will be on the cover. Explain to students how rainbows are formed. Ask students to very carefully color the rainbow in the correct rainbow color order. Have them write their names on the cover.

Teacher-Directed Coordinating Science Experiment: Show the students a prism and ask them to imagine that the prism is a raindrop. Use a flashlight to represent the sun. Dim the lights in the classroom. Shine the flashlight through the prism and find the resulting rainbow.

3. Sunny and Warm—Discuss with the students all of the different activities that they can do when the weather is warm and sunny. Some ideas are: bike riding, swimming, hiking, visiting the playground, going to the beach, etc. Make sure to explain that it can be sunny and cold, like in the winter, but for this page in the Weather Book that they are making they are focusing on warm and sunny weather. Using the light blue construction paper and construction paper crayons, have student draw a picture of themselves doing one of the activities that the class discussed. Have students label the page "Sunny and Warm".

Coordinating Sand and Water Table Activity: Put wax-coated sand (such as Delta Sand or Moon Sand) in the sand and water table and have the students pretend that they are at the beach by building sandcastles, etc.

4. Clouds—Discuss with the students how clouds are formed. Have students break up cotton balls so they appear cloud-like and glue them onto blue construction paper. Have students label the page "Cloudy".

Teacher Directed Coordinating Science Experiment: Fill a clear plastic water bottle with very hot water. Let it sit for about five minutes to make sure that the bottle gets warm as well. Pour out about half of the water. Place an ice cube on the opening of the bottle. Put the bottle in front of a sheet of black construction paper. Watch for the formation of "clouds" on the inside of the bottle's surface. Ask students to help you explain what happened (the evaporated water rose up and then cooled down and condensed into the water droplets that created the "cloud" in the bottle).

5. Fog—Discuss with students how fog is formed. Remind them that it is like having a cloud near the ground. Have student draw a picture on the light gray construction paper with construction paper crayons of either a car with its lights on or the seashore with a lighthouse. Label picture “Foggy”. Have students tear strips of wax paper and glue the strips over their pictures to represent fog. Remind students of the experiment that you did for clouds and how it is similar to fog.
6. Rain—Teach students about the water cycle and why it rains. Using the light gray paper, have student draw dark rain clouds. Give students a small piece of aluminum foil. Have them cut raindrop-shaped pieces of foil and glue the pieces under the rain clouds that they drew. Label page “Rainy.”

Teacher Directed Coordinating Science Experiment: Tell students that you are going to make it rain (just a little) in the classroom. They will need to use their imaginations. Show students the hot plate, the pot of water, and the pie dish that is filled with ice. The hot plate represents the sun. The pot of water represents a lake, an ocean, a stream, or a puddle. The pie dish filled with ice represents the cold clouds. Start heating the pot of water on the hot plate (remember not to let students get too close). As the steam starts to rise, explain to students that this is the evaporated water (or water vapor) that goes up into the sky and forms the clouds. Place the pie dish over the pot of boiling water. In a few moments, show students how the water is condensing on the bottom of the dish. Explain that as water vapor cools down in the clouds it condenses back into drops of water. As more steam condenses on the bottom of the pie dish, the droplets will get larger and heavier and soon will fall off the pie dish as “raindrops”. Show students as this happens. Explain that the water cycle happens over and over again.

7. Snow—Explain to students how snow is formed the same way as rain, except it is frozen. Have students tear small pieces of the white construction paper to create a snow picture on the blue construction paper. They may draw pictures of themselves in the picture as well. Possibilities for pictures include building a snowman, sledding, skiing, ice-skating, etc. They have to tear the white paper to make the snowman, snowflakes, and piles of snow. Have students label their picture “Snowy”.

Coordinating Sand and Water Table Activity: Put mixed up fake snow (such as Super Snow or Insta Sno) in the sand and water table for students to play with.

8. Wind—Explain to students how wind is formed. Remember to tell them that while we cannot actually see the wind, we can see what the wind does. For example, we can see how the wind bends the branches of trees and how it helps us fly a kite. But the actual wind itself cannot be seen. Show students the Windmill Outline and brad and demonstrate how to assemble it. Have students glue the windmill building on a piece of blue construction paper and attach the blade with a brad so it will spin around. Label page “Windy.”

Coordinating Sand and Water Table Activity: Fill sand and water table with bubble solution. Provide students with bubble wands of varying sizes. As they blow bubbles, ask them to pay attention to which way they blow the bubbles. Their blowing is similar to the wind; the direction in which they blow causes the bubbles to go different directions. Use a small hand-held fan or paper fan to redirect the direction of the bubbles as the wind would.

9. Lightning and Thunder—Explain how lightning and thunder are formed. Clarify that you see lightning but you hear thunder. Discuss with students how to be safe during a violent storm. Search the Internet for lightning pictures or video clips to show the students. Have students draw a picture of their house with a thunder and lightning storm on black construction paper. Use the construction paper crayons or dark paper colored pencils for intense colors. Label paper “Lightning and Thunder.”

Teacher-Directed Coordinating Science Experiments: To make “lightning” in your classroom, turn off the lights in the classroom. Rub a blown-up balloon on your hair for a few seconds. Hold the balloon near the end of a fluorescent light bulb. The light bulb will briefly illuminate. Why? Once you have rubbed the balloon on your hair, the balloon gets an electrical charge on it. When the balloon touches the end of the light bulb, the charge jumps from the balloon to the bulb. That is what illuminates the light bulb. Lightning is an electrical discharge in a thunderstorm. When the voltage becomes strong enough, the electricity leaps across the air from one place to another, and we see lightning. To make “thunder” in your classroom, blow up a paper sack. Twist the end tight and hold it in one hand. Use your free hand to quickly hit the bottom of the sack. The sack will burst with a loud “pop”. Remember that when lightning strikes, it heats the air around it. The hot air expands and produces waves of air that make the loud sound. Similarly, hitting the blown up sack causes the air inside the bag to compress so fast that the pressure breaks the bag. The air in the bag rushes out and pushes the air around the outside of the bag away, resulting in the “popping” sound that you hear.

10. Collect and assemble all of the students’ pages into book form for them to take home and enjoy with their families.

Extensions:

Curriculum Extensions/Adaptations/ Integration

- Add extra pages to the weather book about weather that we may not experience as much in Utah, (e.g., tornado, hurricane, etc).
- Invite students to read their books to peer reading buddies, parent volunteers, other school personnel, or a sibling's teacher.
- Assemble a book of photos of students playing, in different weather. Show safe things to do in different types of weather, such as what to do during lightning storms.
- Have students write in their classroom journals about different types of weather.

Family Connections

- Ask students to read their books to their families.
- Ask students to look with their families on-line, in newspapers, or in magazines for pictures relating to the weather.

Assessment Plan:

- Check students' weather books for understanding of each weather concept.
- Have students verbally explain to you about each weather concept.
- As students are participating in each experiment, question them for understanding.

Bibliography:

Research Basis

Bredenkamp, S. & Copple, C., (eds.) (1997) *Developmentally Appropriate Practices in Early Childhood Programs* (rev. ed). Washington DC: *National Association for the Education of Young Children*. 112, 114, 115

By kindergarten, young children have developed the ability to mentally and symbolically represent concrete objects, actions, and events. Students at this age have (or are developing) the ability to make a plan and then carry it out. Because of this ability, their activities can become more purposeful and goal-oriented. This can be applied to their understanding of science experiments. Kindergarteners can take a guess and then (sometimes with guided direction) figure out what is happening. Kindergarteners are more likely to comprehend and remember those new ideas when given the opportunity to experience new concepts, strategies, and relationships between objects, in a hands-on setting. We need to remember that although young children may have age-appropriate limits to their cognitive capabilities, they do have a vast ability to learn, think, reason, remember, and problem solve.

Church, E.B. (2003). Scientific Thinking: Step by Step. *Scholastic Early Childhood Today*. 4/2003. 35-37

There are several different skills that early childhood students should learn in order to understand scientific thinking. These include the abilities to observe, compare, sort and organize, predict, experiment, evaluate, and apply. When we give our students the opportunity to practice building these skills, we are helping them to learn process skills for understanding science as well as other subjects.

Observation is the process of looking closely without much actual doing. Kindergarteners often want to start the experiment right away. We should remind students that using observation is an important step in experiments. When students are encouraged to compare, they can begin to move beyond talking about what they noticed about an item and instead talk about relationships between items. Sorting and organizing is the processes of putting items together by recognizable traits. Students' should be encouraged to match, group, and organize items in many different ways. In this way, they begin to understand that some objects

can belong to more than one group. When students are encouraged to predict, they practice building questioning and speculating skills. Students learn to use prior knowledge and information gained from observation, comparing, and sorting to make the best guess that they can as to what may or may not happen in a science experiment. Student's prediction skills will get better and better with experience. During an experiment, students can test their predictions and try out their ideas. Students need to be given ample time and provided with plenty of materials to experiment. One way for students to evaluate is by letting them take their concrete experience and communicate their findings to others. They can do this verbally or be given the opportunity to write it down in journals. They can also abstractly represent their finds through graphs, drawings, and charts. The last skill is for students to learn how to apply what they learned to other experiments. Students can be given new materials and new questions to answer. This is also a good time for open-ended questions.

Author:

[Utah LessonPlans](#)



Summary:

Activities will help students understand seasons and the changes they bring.

Time Frame: NA

Main Curriculum Tie:

Science - Kindergarten

Standard 2 Objective 3

Compare changes in weather over time.

[Supplemental Materials](#) (pdf)

Materials:

Invitation to Learn

- Seasonal cutouts
- Chart paper
- Journal
- Pencil

Class Season Chart

- Poster Board
- A Tree for All Seasons

Season Journals

- *Around the Year*
- [My Season Journal](#)
- [Tree Outline](#)
- [Writing Page](#)
- Any of the materials that you may want to use in the Season Journals

Seasons vs. Months vs. Holidays

- 12 gift bags
- [Holiday Pictures](#)
- 4 seasons boxes

Additional Resources

Books

A Busy Year, by Leo Lionni; ISBN 0-590-47273-9

A Tree for all Seasons (National Geographic) by Robin Bernard; ISBN 0-7922-9435-1

A Time to Keep, by Tasha Tudor; ISBN 0689811624

Around the Year, by Tasha Tudor; ISBN 0689873506

Caps, Hats, Socks, and Mittens: A Book about the Four Seasons, by Louise Borden; ISBN 0-590-44872-2

Four Puppies, by Anne Heathers; ISBN 0-307-59753-9

I Can Read About Seasons, by Robyn Supraner; ISBN 0-8167-4719-9

Let's Look at the Seasons: Summertime, by Ann Schweninger; ISBN 0-590-616746-X

My Favorite Time of Year, by Susan Pearson; ISBN 0-590-46353-5

Science Around the Year, by Janice VanCleave; ISBN 0-439-27535-0

Season Song, by Marcy Barack; ISBN 0-439-50323-X

Attachments

- [Holiday_Pictures.pdf](#)
- [Writing_Page.pdf](#)
- [Tree_Outline.pdf](#)
- [My_Season_Journal.pdf](#)

Web Sites

- [Enchanted Learning](#)

Background for Teachers:

One of the most common misconceptions about the seasons is the idea that the seasons are a result of the varying distance of Earth from the Sun throughout the year. An easy way to see that this idea is incorrect is to remember that when it is summer in the Northern Hemisphere, it is winter in the Southern Hemisphere. The main cause of the seasons is due to the 23.5-degree tilt of Earth's rotation axis. As Earth goes around the sun, at times the Northern hemisphere is oriented more towards the sun, and at other times it is farther from the sun. When the Northern Hemisphere is oriented more towards the sun, we have our spring and summer seasons. As Earth continues to move on its revolution around the sun and the Northern Hemisphere begins to orient away from the sun, we have our autumn and winter seasons. The opposite is true for the Southern Hemisphere.

In the Northern Hemisphere, the Autumnal Equinox (a day when day and night are of equal length) occurs on or about September 21, marking the official start of autumn. Winter officially begins with the Winter Solstice, which occurs on or about December 22 of each year. This is also the shortest day of the year. The Vernal Equinox occurs on or about March 21, marking

the first day of spring and another day and night of equal time. Summer officially begins on or about June 21, which is the longest day of the year and makes the Summer Solstice.

Additionally, it is often common for students to mix up seasons, months, and holidays. We want to help them begin to understand that the holidays occur in the months and that months occur in the seasons. This lesson plan can be used over the course of a school year, covering one month's seasonal activities at a time, or as an inclusive unit completed over the course of several weeks.

Intended Learning Outcomes:

1. Demonstrate a positive learning attitude.
6. Communicate clearly in oral, artistic, written, and nonverbal form.

Instructional Procedures:

Invitation to Learn

Provide the students with paper cutouts that represent the four seasons (e.g., a leaf for autumn, a snowflake for winter, a flower for spring, and a sun for summer.) Divide chart paper into four sections labeled autumn, winter, spring, and summer. Have each student choose which season is his/her favorite by placing a cutout in the corresponding section on the chart paper. Allow students to talk about why they chose the seasons that they did. Some students may say "fall" for "autumn." Teach them that these words can be used interchangeably. Have students write in their classroom journals what their favorite season is and why. Write down some of their responses on chart paper for later reference.

Instructional Procedures

Class Season Chart

1. Read *A Tree for All Seasons*. Discuss the different seasons that occur in the story and the different types of activities that were shown in the book.
2. Discuss with students the different months of the year and what months belongs to each season. Have students help decide what month belongs in what season. Pose questions about the months and the seasons. For example, July is a summer month. How does it vary from January, which is a winter month?
3. Create a Season Chart. Divide a piece of poster board into four equal sections. Label one section summer, one autumn, one spring, and one winter. In the appropriate section, write the months that fit in that season. For most of the Utah area, the weather seems to dictate that the months fit into the seasons in the following way: winter: December, January, February; spring: March, April, May; summer: June, July, August; autumn: September, October, and November. However, according to the official dates of the seasons (in accordance to summer and winter solstices and the vernal and autumnal equinox dates), it goes as follows: winter: January, February, March; spring: April, May, June; summer: July, August, September; and autumn: October, November, December. Because kindergarten students tend to follow the rule of "what you see is what you get," you may want to adjust the months in the seasons for what works best for the area in which you teach. However, you should let your students know the first "official day" of each season.
4. Teach students the Seasons and Months song (to the tune of *The Farmer in the Dell*):

Season and Months

In the summer it is hot

In the summer it is hot

June, July, and August

In the summer it is hot.

In autumn the leaves fall

In autumn the leaves fall

September, October, November

In autumn the leaves fall.

In the winter it is cold

In the winter it is cold

December, January, February

In the winter it is cold.

In spring new things grow

In spring new things grow

March, April, and May

In spring new things grow.

5. As a class, discuss the various attributes of each season and write several key seasonal words in each corresponding section on the Season Chart. For example, for summer, some words could be “hot,” “sunny,” “dry,” and “longer days.” For autumn some examples are, “cooler days”, “leaves changing colors,” and “harvest time.” Descriptive winter words could be “cold,” “snowy,” and “longer nights.” Examples for spring are “snow melting,” “new things growing,” “new buds and flowers.”
6. Keep the Season Chart for use with the Season Journals that the students will be making.

Season Journals

1. Read *Around the Year*. Lead a class discussion about the different types of activities that the children in the book participate in each month and what season it is.
2. Tell the students that they will be making a Season Journal about all the different months of the year and the types of seasonal activities that they can do each month.
3. Have students color the cover page of the *My Season Journal*.
4. Show students the *Tree Outline* page and the *Writing Page* for the *My Season Journal*. For each month, they will be adding their own drawings to the *Tree Outline* page. First, they will need to color/decorate the outline of the tree appropriately for that month’s season (e.g. in July the tree has leaves). Then, they will need to draw pictures of themselves (and/or friends and family) by the tree doing appropriate seasonal activities for that month.
5. Show students the *Writing Page*. Explain that they will be able to write a sentence or two about each month. Then, all those pages for each month will go into a *My Season Journal* that they will be able to take home and share with their families. When writing the sentences, take the students’ writing abilities into consideration. Students who are able to write with just a little help (or independently) should be encouraged to do so. However, those who need assistance should be allowed to participate in a class sentence about each month. For each month in the *My Season Journal*, class discussion should take place in order to decide what sentence(s) will be written for that month. For example, write down several sentence ideas and then, as a class, decide what will be written. Sound the words out as a class and discuss sentence structure. Students can write with the teacher or write independently. Always have students write the name of the month in the rectangular space on top of the *Writing Page*.
6. Following are some ideas for the *Tree Outline* for each month. There are some ideas of how to decorate the tree with a variety of objects. You do not need to follow those ideas, you can have the students just color the *Tree Outline* if you would like. If you do choose to use the additional items, remember to gather together any of the items that you will need to use. Adjust as needed with your class. Remember to discuss which months belong to each season (refer to Season Chart) and discuss appropriate seasonal activities.
 - a. January—winter. The tree is dormant. There is snow on the ground and some piled in the tree. Use cotton balls for the snow. Students can draw a picture of themselves building a snowman, sledding, ice-skating, etc.
 - b. February—winter. There is still snow on the ground. Use white paint for the snow. Draw a bird feeder on the tree and discuss helping animals during the winter. Students can draw a picture of themselves putting the bird feeder on the tree. You can make pinecone birdfeeders (see Instructional Procedure number 9) as a class for the students to take home and hang on trees in their own yards.
 - c. March—spring. Maybe a patch or two of snow is left, but it is mostly gone. There are some leaf buds just starting to form on the tree. Use dried split peas for the buds. Students can draw a picture of themselves flying a kite.
 - d. April—spring. There are now blossoms on the tree as well as small green leaves. Use tissue paper for the blossoms and the leaves. Flower-shaped beads could also be used. Students can draw a picture of themselves having an egg hunt.

e. May—spring. Leaves are bigger now. Birds are building a nest in the tree. There are flowers growing by the side of the tree. Students can draw pictures of themselves picking the flowers. Use watercolors to paint the flowers.

f. June—summer. There are baby birds in the nest in the tree. The parent birds are flying around. The leaves on the tree are now a dark green. Use green-colored masking tape, green foam, or green felt for the leaves. Students can draw a picture of themselves blowing bubbles.

g. July—summer. There are still dark green leaves on the tree. The baby birds are flying, too. Students can draw pictures of themselves playing with sparklers or watching fireworks. Use glitter glue for the sparklers and fireworks.

h. August—summer. Most of the leaves on the tree are still green, but there are a few that are changing color. Students can draw pictures of themselves watching the clouds. Use colored pencils or markers for the intense autumn colors.

i. September—autumn. Most of the leaves on the tree are now red, orange, or yellow. A few have started to fall to the ground. Tear pieces of colored paper as leaves. Students can draw pictures of themselves catching the bus to school.

j. October—autumn. Most of the leaves are on the ground. Some may be in piles. Students can draw pictures of themselves raking leaves or in their Halloween costumes. Sponge paint or watercolor the leaves.

k. November—autumn. There are no leaves left on the tree. There is a light dusting of snow or frost on the ground. Use boiled Epsom salt to create the frosty effect (see Instructional Procedure number 9). Students can draw their families driving to Grandma's house for Thanksgiving.

l. December—winter. Snow on the ground. Use sequins (or colored wrapping paper) and green string to decorate the tree with colored lights. Students can draw pictures of themselves caroling.

7. Here are some ideas for sentences for each month:

a. In January it is cold and snowy. We dress warmly to play in the snow.

b. It is still cold in February. We can make birdfeeders to help feed the birds.

c. Spring starts in March. The snow starts to melt and there are buds on the trees.

d. Soon blossoms will begin to grow on the tree in April.

e. In May, the flowers are starting to grow. Everything is new and green.

f. In June there are lots of leaves on the trees. It is starting to get warm.

g. In July it is hot and sunny. We can play outside. We can watch the fireworks.

h. It is still sunny in August. A few of the leaves are beginning to change color.

i. In September, lots of leaves are changing color. We get to go back to school.

j. In October, it is starting to get chilly. We need to dress warmly to go trick-or-treating.

k. In November there is often frost on the ground.

l. In December it snows. We can decorate for the holidays.

8. When all the pages are finished, assemble each child's pages into his/her Season Journal. Read the Journals with the class before sending the Journals home for the students to enjoy with their families.

9. Directions for Additional Activities in Instructional Procedure number 6:

a. Pinecone Birdfeeder: Have a pinecone available for each student. Tie about 8 to 12 inches of yarn or ribbon to the pinecone. Mix equal parts vegetable shortening, peanut butter, and oatmeal (or cornmeal) together. Spread the mixture over

each pinecone. Roll pinecone in birdseed. Hang on a tree for the birds to enjoy. If students have peanut allergies, you can eliminate the peanut butter and just use the shortening.

b. Epsom Salt Painting: Boil together equal parts Epsom salt and water. Use it to “paint over” any dark paper or coloring. As it dries, it will leave a frosty look. You can also “paint” over the picture with water or watercolors and then sprinkle it with table salt.

10. Ask students again what their favorite season is and why. Have them write again in their classroom journals about their favorite season. Refer back to their responses that you wrote down earlier and see if their opinions about the seasons have changed now that they have learned more about the seasons.

Seasons vs. Months vs. Holidays

1. Have a set of the *Holiday Pictures* colored and laminated and ready to use. The bags should be sized so that three of them can fit into each box. Lunch bag sized works well. Clear 15 quart storage containers work well.
2. Show students the 12 bags labeled with the names of the months. Have the students help you arrange the bags in calendar order.
3. Ask students to tell you about their favorite holidays. What time of year contains their favorite holiday in?
4. Have students help you sort the Holiday Pictures into the correct coordinating month bag. If appropriate, review what you have already taught the students about each holiday as the students place the pictures into the bags.
5. Once all of the Holiday Pictures are in the correct month bags, refer back to the Season Chart and have students help you place the month bags into the correct boxes with the season names on them.
6. Review with students which holidays are in which months and which seasons.

Extensions:

Curriculum Extensions/Adaptations/ Integration

- Encourage students to write additional sentences for each month independently.
- Have students read their Season Journals to each other or peer tutor buddies.

Family Connections

- Ask parents to read over the Season Journals with their students and think of additional seasonal activities that they could do for each month.
- Encourage students to do some of the activities that they wrote about with their families.

Assessment Plan:

- Observe and check students’ writing and drawings for developmentally appropriate work.
- Check students’ work to see that the activities that they drew for each month correspond with the season.
- Read students’ responses that they write in their classroom journals. Check for developmentally appropriate writing skills.

Bibliography:

Research Basis

Joshua, M., (2007). The Effects of Pictures and Prompts on the Writing of Students in Primary Grades: Action Research by Graduate Students at California State University, Northridge. *Action Teacher Education*. 29 (2) 80-93.

The researchers in this action research project wanted to examine the idea that when verbal writing prompts are accompanied by a coordinating picture, students will be more engaged in the process and therefore produce more writing containing more detail than the writing that they would produce without any visual aid. Quoting from the article, "Teachers can stimulate children to write by introducing children's literature and by relating writing to children's experiences. The teacher's role is to guide students in their topic development and to lead young writers to understand the purpose of the writing assignment and the intended audience." The researchers found that when the kindergarten students were given a verbal prompt and a visual aid, their writing quality and the number of words (and/or letters) both improved. Those at the earliest stage of emergent writing improved the most. This was particularly true for English Language Learners. Because of the limited experience of kindergarten students, visual aids appeared to provide concrete examples and therefore assisted them with their writing.

Furness, L.B., Cohen, M.R. (1989). Children's Conception of the Seasons: A Comparison of Three Interview Techniques. *Presented at the Annual Meeting of the National Association for Research in Science Teaching*. San Francisco, CA. 2-11. [ERIC.com](#)

The authors of this paper studied and compiled research from several different sources. They discussed the idea that a child's thought process has two domains of knowledge labeled "life-world knowledge" (based on and developed from day-to-day experience) and "scientific knowledge" (created by school-centered teaching). A student's preconceived ideas of the world (e.g. the four seasons) will influence how he/she will assimilate the scientific concepts about the seasons that are taught in school. In order to successfully teach the student the correct ideas about the world around him/her (e.g., the seasons), educators must find a way to link the students existing ideas to the correct ones. Educators must take what the students already know (or what they think they know/assume) and build on it while simultaneously correcting any misconceptions.

Author:
[Utah LessonPlans](#)



Summary:

Students will help make a Five Senses and Four Seasons quilt and cinquain poem.

Time Frame: NA

Main Curriculum Tie:

Science - Kindergarten

Standard 2 Objective 3

Compare changes in weather over time.

Standard 4 Objective 2

Describe the parts of living things.

[Supplemental Materials](#) (pdf)

Materials:

ONE PER CLASS:

- Four 24" x 24" butcher paper squares, one in green, yellow, blue, and orange
- One 57" x 57" piece of black butcher paper
- MY CIRCLE OF SEASONS

ONE PER STUDENT:

- 8" x 8" square of white construction paper
- Markers or crayons
- Glue

Additional Resources

- MY FAVORITE TIME OF YEAR, by Susan Person; ISBN 0590-46353-5
- CAPS, HATS, SOCKS, AND MITTENS, by Louise Borden; ISBN 0-590-72429-0
- SNOWY, FLOWY, BLOWY, by Nancy Tufari; ISBN0-590-18973-5
- THE FOUR SEASONS, by Ruth Thomson; ISBN 0-918831-63-6
- NAMES OF SNOW, by Judi K. Beach; ISBN 078681937-5

Background for Teachers:

Each of the four seasons has general characteristics that makes it different from the rest. We can use our five senses to discover different attributes of each season. We smell different things, hear different sounds, taste different foods, have different activities, and see changes around us as the seasons rotate through the year. We use different words when we describe different seasons. This activity is a culminating activity about seasons. Students will be able to demonstrate the many attributes they've discovered about each season using corporative learning.

Intended Learning Outcomes:

1. Demonstrate a positive learning attitude.
2. Develop social skills and ethical responsibility
5. Understand and use basic concepts and skills.

Instructional Procedures:

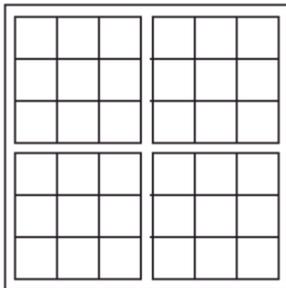
Invitation to Learn

Ask the class the following set of questions:

- Would you go snow skiing in summer?
- Do you pick apples in spring?
- When do you eat watermelon?
- When do you hear sprinklers?
- Can you smell flowers outside in the winter? Why not?

Instructional Procedures

1. Today we are going to make a FIVE SENSES AND FOUR SEASONS quilt. Read the book MY CIRCLE OF SEASONS by Gerda Muller
2. Divide the class into four different seasonal groups. (You may assign groups or let students choose so that the numbers will be even.)
3. Give each group an 8" x 8" piece of white construction paper. Have each group brainstorm about how the five senses help us learn about the season it has been assigned. Have one person in each group draw something that s/he can hear, see, feel, taste, or smell. Each group should have four squares with pictures draw using markers or crayons.



4. For the center square each group will write a cinquain about their season. A cinquain is written in this order:

FIRST LINE—one word (name something you see)
SECOND LINE—two words (use words that describe how it feels)
THIRD LINE—three words (something you hear)
FOURTH LINE—four words (something to taste or smell)
FIFTH LINE—one word (name of the season)

5. Glue each of the five squares (four pictures and one poem) onto the colored butcher paper square that matches the season: blue for winter, green for spring, yellow for summer, and orange for fall.
6. Glue each 24" square onto the black paper leaving a 3" border around each square.

7. Review the pictures and the cinquains with the class. Have the class guess the last line of each cinquain. The teacher may want to discuss other possibilities for pictures.

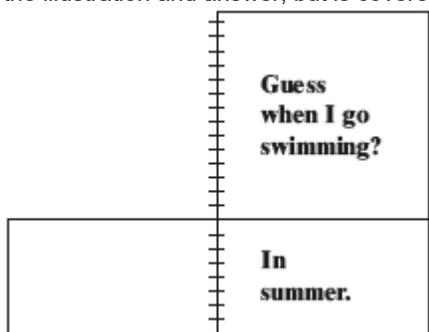
Attachments

- [guess_book.gif](#)
- [graph.gif](#)

Extensions:

Additional Language Arts Activities

1. Let each student make a small book entitled IN SUMMER I LIKE TO _____. Individual books may be created in class or as homework.
2. Make a class book entitled GUESS WHEN. On the top half, each student writes a question about a season and one of the senses, such as, "Guess when you drink hot chocolate?" Or "Guess when I hear crunchy leaves?" The bottom half shows the illustration and answer, but is covered with a half sheet of colored paper so the answer can't be seen (see illustration).



Family Connections

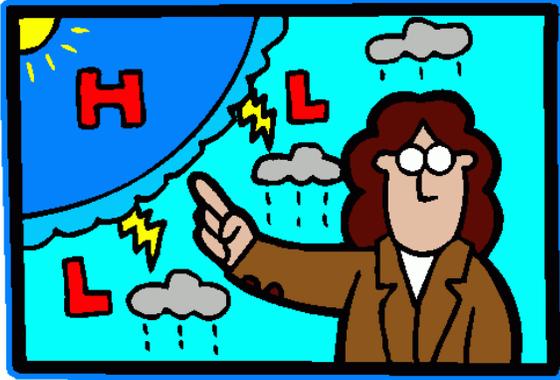
- Students may identify, draw, and label things they see, hear, smell, taste, and touch in their homes or neighborhoods during each season. When these papers are returned, they may be placed in their portfolios and brought out to examine before beginning this activity.
- Send home the GUESS WHEN book for families to share together.

Assessment Plan:

The students can be assessed as they share their ideas about how they use their five senses in each season. The artwork and cinquain suggestions will also be an indicator as to whether students understand about each season and about the five senses.

Author:

[Utah LessonPlans](#)



Summary:

Students will gain an understanding of the profound effect weather has on our everyday lives.

Time Frame: NA

Main Curriculum Tie:

Science - Kindergarten

Standard 2 Objective 3

Compare changes in weather over time.

[Supplemental Materials](#) (pdf)

Materials:

- Weather journal for each student
- Pencils
- Rubber bands
- Crayons
- Dry erase markers
- Camera
- Microphone
- [Weather forecasting chart](#) (pdf)
- [Reporters recording sheet](#) (pdf)
- [Children with clothes blacklines](#) (pdf)

Books:

- *What Will the Weather Be?* by Lynda DeWitt, ISBN-13:978-0-06-445113-0
- *What's the Weather? With Fun Flaps to Lift and Wheels to Turn*, by Scholastic, ISBN-13-978-0-545-02599-7
- *Thunder Cake*, by Patricia Polacco, ISBN: 0-698-11581-3
- *It Looked Like Spilt Milk*, by Charles G. Shaw, ISBN: 0-59042875-6
- *Cloudy with a Chance of Meatballs*, by Judi Barrett, ISBN: 0-590-30384-8

Media:

- [The Weather Network](#)
- [Space Weather](#)
- [Media Matters](#)
- [Climate Change article](#)
- [Weather Underground](#)

Articles:

- [About.com: Weather](#)
- [Weather](#)

Attachments

- [weather-forecast.pdf](#)
- [children.pdf](#)
- [reporter-checklist.pdf](#)

Web Sites

- [Weather Unit](#)
- [Lesson Plan Central](#)
- [ProTeacher](#)

Background for Teachers:

It is important for children and adults to gain an understanding of the weather because of the profound effect that it has on our everyday lives.

The students need to have a basic understanding of what the five senses are. The students also need to be able to know how to dress appropriately for the weather.

To forecast the weather, you can observe the weather using all five of your senses: sight, touch, hearing, smell, and taste.

NOTE: Review the senses but do not teach them.

Instructional Procedures:**Invitation to Learn:**

Launch: (10-20 minutes)

Begin this lesson reading the book *What Will the Weather Be?* by Lynda DeWitt. As you read, point out the different senses the people are using throughout the book.

- How did the people in the story use sight?

Sight is the easiest sense to use when you forecast. If you look out the window and see rain, then it's raining outside. Sight is very important and useful for forecasting.

- How did the people in the story use touch?

Touch is another sense that's easy to use when forecasting. You can feel the sun hitting your face, and you can feel your face get colder when a cloud passes between you and the sun. You use touch when you use the wind to forecast the weather.

- How did the people in the story use their hearing to forecast the weather?

Hearing is useful for forecasting the weather. When you hear thunder, you know that a storm is nearby, even if you didn't see the lightning. You can hear the wind blow harder or softer through trees or as it whips around your ears.

- Did the people use their sense of smell to help them forecast the weather?

It sounds funny, but your sense of smell can help you predict the weather too. When you know it's about to rain, smell the air. Rain has a distinct smell to it. A snowstorm has a distinct smell too. When you smell these aromas in the air, you know what kind of weather is likely to happen.

As for taste, you can't use it to forecast the weather. You can't taste the wind or sunshine. You can taste rain or snow by catching it on your tongue as it falls from the sky, but it won't tell you anything about the weather. And never drink rain water off the ground, or eat yellow snow.

Instructional Procedures:

Explore (10 minutes)

After reading the book, assign one of your students to be the reporter and another student to be the cameraman.

1. The reporter's job is to go outside and predict the weather using his/her senses. Send the recorder out and have the student fill out the recording sheet (see attached blacklines).
2. The cameraman's job is to record using a play camera or an old camera as he/she reports the daily weather to the rest of the class.
3. While the reporter is outside have the other students get out their weather journal and predict what they think the weather will be.
4. Have the reporter come back and forecast to the students what the weather will be today and dress the girl or boy (see attached blacklines) in the kind of clothes they should be wearing when they go outside for recess today.

Discuss (Whole Group Discussion) (5-10 minutes)

1. Ask the students if their prediction was the same as the reporter's.
2. As a class, predict what the weather will be for the next day and fill out the chart.

Solidify (Closure) (10 minutes)

1. Use questioning to solidify learning.
2. How did you know how to dress the girl/boy for recess?
3. What senses did you use to help predict the weather?

Additional Lesson Activities:

Thunder Cake Activity:

1. Read the book *Thunder Cake* by Patricia Polacco (ISBN: 0-698-11581-3).
2. After reading the book, talk about thunder. Have a fun discussion about how we know how far away the thunder is by counting between each thunder sound.
3. Then say, "It thundered last night, while you were sleeping, so I made a thunder cake so when you hear thunder in the future you don't have to be scared."

"It Looked Like Spilt Milk" Activity:

Materials:

Blue construction paper
White computer paper
Pencil

1. Read the book, *It Looked Like Spilt Milk* by Charles G. Shaw (ISBN: 0-590-42875-6).

2. Have the students draw a picture of anything they want on the white piece of paper, and have them tear it out instead of using scissors.
3. Glue the white "creation" on the blue paper and then have the student write, "It looked like spilt milk but it was really _____." This is a great writing connection.

"Cloudy with a Chance of Meatballs" Writing Activity

1. Read the book, *Cloudy with a chance of Meatballs* by Judi Barrett, (ISBN: 0-590-30384-8).
2. Have the student write "[Cloudy with a chance of _____](#)" (pdf) and have them write and illustrate what they would like to see fall from the sky.

Attachments

- [cloudy.pdf](#)

Extensions:

- For your higher-level thinkers, have them predict what the weather will be all week long and record their predictions in their weather journals. As the days pass, have them see if their predictions were correct and explain why if they weren't. Ask the students questions like, "What made you think it was going to snow today and not tomorrow?" or "Why would you predict that it would be sunny all week?"
- For students who have a hard time thinking past today, have them write down what they think the weather will be that afternoon.
- If students struggle with writing, have them draw pictures of what they think the weather will be instead of words.
- Math integration: Have them record daily what the weather is on a weekly graph and have a discussion of what they found out at the end of the week.

Family Connections:

Assignments to do with parents:

Send home the following two stories on Monday and Thursday (see attached blacklines) Have the children take this home and have their parents help answer the questions!

Monday:

With the weather radio dead, your family has a problem. They have lots of activities planned for this weekend, like hiking and canoeing. How are they going to know if the weather will be nice when they go hiking, or when a storm may appear?

Thursday:

Hope you remember your lesson about senses forecasting, because now you're going to need it! Your brother wants to go canoeing this afternoon, and wants to know if it's going to rain. He wants you to use your senses forecasting lesson to see if the weather will stay nice this afternoon. And if you don't get it right, he's going to make you use your sense of taste to eat dirt.

So you use your sense forecasting lessons to see what the weather will be. With your sight, you see dark clouds that are covering the sky in the distance. With your sense of touch, you feel a warm wind coming from the south. With your sense of hearing, you hear a dull rumbling off in the distance.

So what do you tell your brother?

Assessment Plan:

- A great assessment will be students' weather journals – this is an ongoing assessment to be used every day.
- Did they dress the girl/boy appropriately?
- Did they fill out the recording sheet correctly?

Author:

Nichol Lyman



Summary:

Students use their senses to investigate changes in the seasons.

Time Frame: 2 class periods that run 15 minutes each.

Main Curriculum Tie:

Science - Kindergarten

Standard 2 Objective 3

Compare changes in weather over time.

[Supplemental Materials](#) (pdf)

Materials:

For the teacher:

- umbrellas, boxes, or large pieces of butcher paper
- digital camera
- collecting bag

For each student:

- exploration kit with materials to help investigate the particular season
- clipboard
- paper
- pencil
- crayons (optional)
- thermometer
- magnifier

- black sheet of construction paper to collect snowflakes (investigating winter)
- appropriate dress for the season

Background for Teachers:

Seasons change as our earth rotates around the sun. When we receive more direct sunlight, the result is summer heat; as the earth tilts away from the sun, we lose heat and experience winter cold. These changes happen gradually and we see and feel evidence of change all around us.

Intended Learning Outcomes:

- Display a sense of curiosity.
- Demonstrate aesthetic awareness.
- Apply prior knowledge and processes to construct new knowledge.
- Develop vocabulary.

Instructional Procedures:

1. In early fall, when temperatures are still relatively warm, go on an exploratory walk to help students see and feel the signs of the season. Give each student a clipboard with paper and pencil. If desired, bring "exploration kits" (which could include crayons, clipboards, pencils, paper bags, thermometers, magnifiers, bug jars, etc.) for the students to use. Students observe signs of the season and record their findings on their clipboards. Students can collect objects that are signs of the season and place them in the class collecting bag for later discussion or extension activities.

2. Have students stand in the sun for several minutes. What do they feel? Have students orally describe what they feel. Have students brainstorm what they could do to be cooler. (If possible, try the students' suggestions.) Using the umbrella, box, or paper, let students try standing in the shade. Ask students to describe what they feel. Is it different in the shade? What happened when the cover was over their heads? Why? What heats our earth? What is happening in the fall? Record student observations on a class language experience chart for comparison with other seasons.

3. Repeat the activity with each new season (or as often as desired). Taking photographs of each seasonal outing enhances seasonal comparisons. Have students explore the same ideas in each season: how the sun feels, what they see around them, whether shade feels any different, what they would do to warm up/cool down, etc.

4. Keep and compare data from these walks. As the year progresses, students will have visual reminders of how the world around them has changed.

Strategies for Diverse Learners:

Learn the names of some of the objects from the collection bag in a different language. If a child has recently moved from a different country or location, ask the child about seasons there. Is winter always in December? Is winter always cold? Do some places stay cold all the time?

Extensions:

1. Gather two of each of the following items: plastic spoons, containers of water, metal spoons, balloons, or balls of clay. Ask students to predict what will happen when the objects are placed in the shade or in the sun. Place one of each object in the direct sunlight and the other in complete shade. Return to the classroom. On a poster or chalkboard, make a chart. List "Sun" and "Shade" across the top; list the items down the left side. Discuss and record student predictions for what will happen to each object. After the objects sit for an hour, return and feel them. Have students describe how each object feels and record the results. Compare results with the students' predictions. Compare and contrast which objects feel the hottest and the coolest. Repeat the activity in a different season. Compare the relative temperatures of the objects in the two different seasons. Discuss differences in their observations.

2. Take a walk outside. Have the students find a partner and take turns being each other's shadow. When do we see a shadow? Play shadow tag. Have students identify where shadows come from. Use flashlights in a darkened classroom and let students make shadows on the wall or movie screen. Literature resources: Asch, F. (1990). *Bear Shadow* NY: Scholastic, Inc. ISBN 0-590-44054-3. Bear sets out to get rid of his shadow because it scared the big fish away. When the shadow keeps coming back, the bear makes a deal.

Assessment Plan:

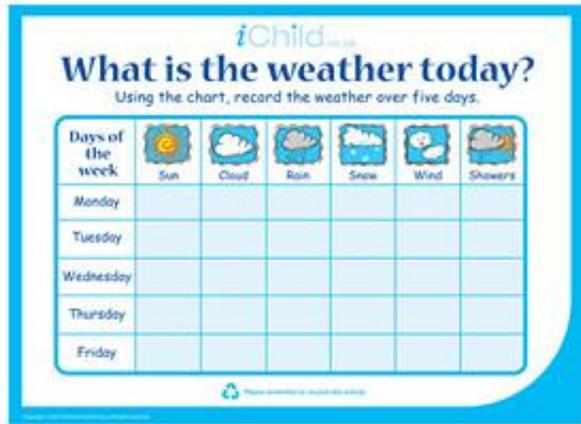
The students' clipboard papers offer a way to assess each child's observation skills, drawing and writing skills, and ability to note changes in the seasons. If the activity is continued throughout the year, the teacher can observe how each child progresses in these areas.

Bibliography:

Now I Know Changing Seasons Greydanus, R. (1983). NJ: Troll Associates. ISBN 0-8167-1478-9. Introduces the four seasons through the eyes of a friendly bear. *Now I Know What Makes the Weather* Palazzo, J. (1982). NJ: Troll Associates. ISBN 0-89375-655-5. Brief text and pictures present different kinds of weather and suggest how to tell from the sky what the day may be like. *Chicken Soup with Rice* Sendak, M. (1962). NY: Scholastic. 0-590-71789-8. Deliciously amusing calendar of rhymes beginning with January and continuing with a wonderful use for chicken soup each month.

Author:

[Julie Cook](#)
[Elasha Morgan](#)
[Teresa Hislop](#)

**Summary:**

Students will create a class graph charting their favorite season.

Time Frame: NA

Main Curriculum Tie:

Science - Kindergarten

Standard 2 Objective 3

Compare changes in weather over time.

[Supplemental Materials](#) (pdf)

Materials:

One per class:

- chart with circle graph
- markers for recording on chart

One per child:

- die-cut boy or girl shape 2x4" white paper
- crayons
- tape or glue stick

Additional Resources

MY FAVORITE TIME OF YEAR by Susan Person

Attachments

- [sample_graph.pdf](#)
Sample Circle Graph

Background for Teachers:

There are four seasons. They are winter, spring, summer, and fall. Seasons change in an ongoing and repeating pattern. The seasons have general characteristics that make each one of them different. These characteristics help us identify each season.

Intended Learning Outcomes:

Intended Learning Outcomes

5. Understand and use basic concepts and skills.
6. Communicate clearly in oral, artistic, written and nonverbal form.

Process Skills

Symbolization, observation, description, communication, data collection

Instructional Procedures:

Invitation to Learn

Ask the students, "What is your favorite season of the year?" Allow them to discuss with a partner or with the whole group reasons why they particularly like a given season.

Instructional Procedures

Prior to beginning this activity the teacher should have a die-cut shape of a boy or girl to correlate with each of the students in the class. If you do not have access to a die-cut machine, cut pieces of paper 2 inches wide by 4 inches long to give to each student. Also, a large circle (big enough for all of the die-cuts to fit around the outside edge of the circle) should be drawn on the middle of a large chart paper. At the top of the paper the teacher should write the question, "What is your favorite season of the year?"

1. Show the chart to the class. Tell them that there are many ways to record information on different kinds of charts and graphs. Today the class is going to create a circle graph showing their favorite season.
2. Give each child a die-cut (boy die-cut for a boy, girl die-cut for a girl). Have each child write their name on the die-cut. The students may also like to draw themselves dressed appropriately for their favorite season on the die-cut.
3. Begin by asking all the children who like winter best to bring their die-cut shape to the circle graph and glue or tape them on the chart around the outside edge of the circle.
4. Continue the same procedure with the seasons spring, summer and fall until the die cuts encircle the graph.
5. Use a marker to label each of the seasons on the appropriate places on the graph. You may also like to count out loud as a group the number of die-cuts that represent each season and write the number by the name of the season.
6. On the inner part of the circle, use four different colors of markers or crayons to color in the wedge shape in the circle to distinctly show how much of the circle is representative of winter, spring, summer, and fall.

Extensions:

Family Connections

Students may survey their family members by asking them the question, "What is your favorite season of the year?" The results may be recorded on a bar graph. After gathering the findings for the graph, the family members may discuss with their child the number concepts found. Another option would be to return the graph to school and allow students to compare their findings with each other.

Attachments

- [family_survey.pdf](#)
Family Survey - What is your favorite season?

Assessment Plan:

Ask the students, "What can you tell me about this graph?" Allow students to share their observations with a partner or small group and then out loud with the entire class. Some of the things they should notice include concepts of greater than, less than, equal to, differences between a bar graph and a circle graph, and that the circle shows how the seasons change in an ongoing and repeating pattern.

If a particular child shares an idea that shows significant understanding in a certain concept you may wish to record this on a sticky note and include it in the student's progress file.

As a class you may like to do further follow-up by reading aloud *My Favorite Time of Year* by Susan Pearson and discussing the different activities people are involved in throughout the different seasons.

Author:

[Utah LessonPlans](#)



Summary:

Students will create a seasonal painting in "Claude Monet's" style.

Time Frame: NA

Main Curriculum Tie:

Science - Kindergarten

Standard 2 Objective 3

Compare changes in weather over time.

[Supplemental Materials](#) (pdf)

Materials:

- a variety of Claude Monet prints
- 9x12" sheet of white art paper for each student
- paint brush for each student
- tempera paint of the following colors: blue, brown, white, green, red, orange and pink (may be altered according to the season chosen)
- paper plates
- water
- containers

Additional Resources

CLAUDE MONET: SUNSHINE AND WATERLILIES by True Kelley

MONET by Mike Venezia

KATIE MEETS THE IMPRESSIONISTS by James Mayhew

Web Sites

- [Monet](#)

Background for Teachers:

Over a period of time, present to the class a variety of art prints by Claude Monet (half price calendars are a great source for prints). Particularly notice and discuss Monet's fascination with light and how it changes the whole look of the same landscape. Monet has several series of paintings in which he paints the same landscape or scene at various times of the year (seasons) and/or during various times of the day. These include haystacks, Notre Dame, poplars, water lilies, etc.

As the students observe the artwork, point out how Monet used colors to let the observer know each painting was completed at a different times of the year (for example, he uses reds and oranges to show the fall season, and blues and whites to show the winter season). Also notice Monet's style of painting which includes his use of large brush strokes, blobs of paint on the canvas, and indistinct features of scenes.

Depending on each individual circumstance, the teacher may choose one of the following ways to organize the painting process:

1. Divide the class into four groups, each assigned to paint one season (summer, fall, winter, or spring).
2. Allow students to choose which season they would like to represent in their painting.
3. Have the whole class complete a painting representing only one season chosen by the teacher.

Intended Learning Outcomes:

Intended Learning Outcomes

3. Demonstrate responsible emotional and cognitive behaviors.
5. Understand and use basic concepts and skills.
6. Communicate clearly in oral, artistic, written and nonverbal form.

Process Skills

Description, form conclusions

Instructional Procedures:

Invitation to Learn

Remind the students of the art prints by Claude Monet previously viewed and discussed. Tell them that they will be making their own "Claude Monet" painting of a season today. Ask them to think in their minds about the season they will be painting and the style of Monet's artwork.

Instructional Procedures:

1. Demonstrate to the students how Monet painted using large brush strokes and an almost careless approach to his painting. Show the students on a piece of paper how to use the paintbrush to obtain a Monet-like painting with large blots of paint.
2. Students use blue paint to complete the sky and brown, green, or white paint (depending on the season) to create the ground. Encourage the students to make sure the sky and ground meet. There should be no white space in between the ground and the sky. Allow that portion of the painting to dry completely.
3. Students use brown paint to create a tree in the center of the page. Allow it to dry.
4. Students use their knowledge of colors apparent in each season to complete the painting (e.g. pink trees for spring blossoms, white or bare trees for winter, green trees for summer, and red, yellow, and orange trees for fall). Allow it to dry.
5. Students may also want to add "blobs" of white and yellow in the sky to represent clouds and sunshine. Flowers or leaves may be added to summer, spring, and fall paintings. Allow the paintings to dry.
6. Have students title their paintings and share them with others.

Extensions:**Possible Extensions/Adaptations**

This activity may be done several times throughout the year. Each time this activity is completed, a different season may be represented. This is especially effective if the season being painted is the season that is currently being experienced.

Family Connections

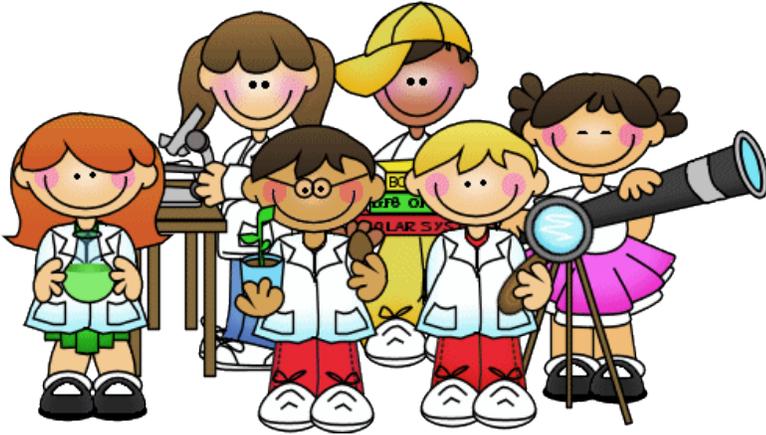
The students may share their knowledge of art styles and colors with their family by going to an art museum together. While there, they may notice the different art styles of the artists as well as their use of color to represent a variety of seasons, times of day, or feelings.

Assessment Plan:

This activity may act as its own form of a summative assessment as the teacher observes the paint choices the students make as they are painting their trees. If students have been assigned a specific season to represent, the teacher may identify if the student appropriately creates the season. The titles given by the students may also indicate student understanding of identification of seasons. Paintings may be kept from the beginning until the end of the year in order to observe the development in the student's fine motor skills and knowledge of the seasons.

Author:

[Utah LessonPlans](#)



Summary:

Using their five senses, students will conduct outdoor observations of the four seasons.

Time Frame: NA

Main Curriculum Tie:

Science - Kindergarten

Standard 2 Objective 3

Compare changes in weather over time.

[Supplemental Materials](#) (pdf)

Materials:

ONE FOR THE GROUP TO SHARE:

- Four seasons read aloud books
- chart paper and markers

ONE PER STUDENT:

- pencil
- crayons
- magnifying lens
- clipboard
- outdoor observation

Additional Resources

CAPS, HATS, SOCKS, AND MITTENS by Louise Borden
SKY TREE by Thomas Locker
RUN, JUMP, WHIZ, SPLASH by Vera Rosenberry
SNOWY, FLOWY, BLOWY by Nancy Tufari
ON A HOT, HOT DAY by Nicki Weiss
ANIMAL SEASONS by Brian Wildsmith

Attachments

- [seasons.pdf](#)
Outdoor Observation Worksheets

Background for Teachers:

There are five senses: seeing, hearing, smelling, tasting, and touching. We use our five senses to gather information about the world around us. For example, we use our five sense to identify the characteristics of the seasons winter, spring, summer, and fall. Sometimes we use instruments or tools to enhance our senses, such as a magnifying lens. A magnifying lens helps us to see things better so we have even more accurate information about the thing we are studying.

Intended Learning Outcomes:

Intending Learning Outcomes

1. Demonstrate a positive learning attitude.
5. Understand and use basic concepts and skills.
6. Communicate clearly in oral, artistic, written and nonverbal form.

Process Skills

Symbolization, observation, description, data collection, form, conclusions

Instructional Procedures:

Invitation To Learn

After sharing a variety of your favorite read aloud books about the current season with your class, brainstorm and create a list of the types of outdoor observations that may be made using one or more of the five senses. (e.g., weather conditions, animal behavior, changes in plants, people's clothing, or activities.)

Instructional Procedures

1. Tell the students that they will be making outdoor observations of their own. They should look for and be aware of the same things noticed in the books that were read.
2. Give each student a clipboard, pencil, crayons, magnifying glass, and outdoor observation page (these pages are included in this packet) for the current season.
3. Take the class outside with their materials. Have them watch as you model how to be aware of the five senses they are using and how to accurately record their observations as they write and draw their information.
4. Allow the students to record their findings on the given page. The students should be encouraged to actively engage in this activity for at least 20 minutes.
5. Repeat this activity throughout the year so that students may record their findings for each of the four seasons.
6. After completing each page, discuss as a group how the information gathered for the current season is the same or different from the past season.

Extensions:

Family Connections

Students may identify, draw, and label things they see, hear, smell, taste, and touch in their neighborhood during a given season. Students may return their paper to school and share their findings with each other.

Attachments

- [five_senses.pdf](#)
Signs of the Season Worksheet

Assessment Plan:

This outdoor observation page is an excellent assessment tool. After completing each page, date it and save it in the student's portfolio. Look for progress in the student's ability to record details and specifics in seasonal drawings, phonetic spelling, descriptive language, use of more than one sense, etc.

Author:

[Utah LessonPlans](#)



Summary:

Students will create a mural depicting themselves participating in an activity appropriate for the season they are studying.

Time Frame: NA

Main Curriculum Tie:

Science - Kindergarten

Standard 2 Objective 3

Compare changes in weather over time.

[Supplemental Materials](#) (pdf)

Materials:

ONE PER CLASS:

- 3x5 foot butcher paper mural with a green ground, blue sky, a pond, and a bare, brown tree (see illustration).

ONE PER STUDENT:

- 4x4 sheet of white art paper
- pencil
- crayons
- tape or glue stick
- scissors

Additional Resources

MY FAVORITE TIME OF YEAR by Susan Person
SUMMER by Nicola Baxter (also Spring, Autumn, Winter)
CAPS, HATS, SOCKS AND MITTENS by Louise Borden
SUMMERTIME by Ann Schwening (series)

Attachments

- [mural_example.pdf](#)
Mural Illustration

Background for Teachers:

There are four seasons: winter, summer, spring, and fall. Animals and people change their behaviors as the season changes. These unique behaviors help us identify the various seasons.

Intended Learning Outcomes:

Intended Learning Outcomes

5. Understand and use basic concepts and skills.
6. Communicate clearly in oral, artistic, written and nonverbal form.

Process Skills

Symbolization, observation, description/communication, data collection, classification

Instructional Procedures:

Invitation to Learn

Ask the students, "What outdoor activities do you like to do during the summer (fall, winter, spring)?" Have the class discuss to discuss their choices.

Instructional Procedures

1. As a class, read various books about the seasons. Discuss the behaviors of people and animals during a given season.
2. The teacher will prepare the background for the mural using butcher paper. Include the sky, ground, a pond and bare tree.
3. Each student will be given a 4x4 piece of white art paper. On this paper, students will illustrate themselves participating in an activity appropriate to the season being studied. The illustration should also show how the student should be dressed for the particular season. The students may also select an animal to draw and show the behavior of that animal during that season.
4. Each student will dictate/write a statement describing his or her illustration. Have the students glue or tape their illustration and writing in the appropriate place on the mural.
5. After the mural is assembled, the class will tally up the various activities that were illustrated on the mural.
6. As a class, produce a shared writing (caption, poem, narrative). Attach the writing to the mural.

Extensions:

Family Connections

Each child could ask family members what activities that they enjoy doing during the summer. Choose a summer activity and participate in the activity. Report back to the class what your family enjoys doing.

Assessment Plan:

This activity in itself is an assessment tool. Do the children correctly depict themselves doing activities that are appropriate to the season being discussed?

Author:

[Utah LessonPlans](#)

**Summary:**

Students will create a class chart showing what they are wearing. They will also become "season watchers" to help them understand the seasons.

Time Frame: NA

Main Curriculum Tie:

Science - Kindergarten

Standard 2 Objective 3

Compare changes in weather over time.

[Supplemental Materials](#) (pdf)

Materials:

ONE PER CLASS:

- Butcher paper 2' x 3' with graph titled [What are you Wearing?](#) (pdf)
- CIRCLE OF SEASONS or any other book on seasons

FOR EACH STUDENT:

- 3" x 3" Post-it® note
- File folder
- Scissors
- Clipboard
- Plastic bag
- Glue stick
- Crayons
- Piece of white construction paper

Additional Resources

- CIRCLE OF SEASONS, by Gerda Muller; ISBN 0525453946
- CAPS, HATS, SOCKS AND MITTENS, by Louise Border; ISBN 0-590-72429-0
- THE SEASON'S OF ARNOLD'S APPLE TREE, by Gail Gibbons; ISBN 0152712453
- ANIMAL SEASONS, by Brian Wildsmith; ISBN 0192721755
- SEE THE SEASONS, by Rozanne Lanczak Williams; ISBN 0153148454

Attachments

- [wearing.pdf](#)
What Are You Wearing?

Background for Teachers:

There are four seasons: winter, spring, summer, and fall. Changes in weather occur from day to day and over seasons, affecting Earth, people, animals, and plants. Each season has different characteristics that makes it different, helping us identify each season.

Intended Learning Outcomes:

1. Demonstrate a positive learning attitude.
5. Understand and use basic concepts and skills.
6. Communicate clearly in oral, artistic, written, and nonverbal form.

Instructional Procedures:

Invitation to Learn

Ask the students a few of the following questions:

- What was the weather like yesterday?
- How did you know what to wear today?
- What time of year does it usually snow?
- What time of year do we have falling leaves?

Instructional Procedures

1. Explain to the class that they are all going to become season watchers to help us understand the seasons.
2. Read Circle of Seasons.
3. Before going outside, discuss what students are wearing today.
4. Give each student a Post-it® note to write his/her name on.
5. Have each student place his/her name on the graph in the appropriate place according to what s/he is wearing.
6. Discuss the results of the graph.
7. Pass out a file folder to every child. Demonstrate how to cut a window.



8. Give each student a clipboard, glue stick, plastic bag, piece of white construction paper, and crayons.
9. Plan a season walk on a day that is typical of the current season. Invite the children to pick things that are typical of the season and place the different items in their bags (e.g., fall-colored leaves, sticks, summer-green leaves, grass, dandelions, etc.).

10. After several minutes of collecting, have the students sit in a place where they can observe either a tree or the mountains. Have students open up their folders to use as a frame and hold it up to “frame” the tree or mountain they are observing. Encourage students to observe how their “picture” looks at this time of year.
11. Place the white construction paper under the frame and clip the frame and paper to the clipboard. Have each student use crayons to draw the picture s/he is observing. When finished, have him/her decorate the folder frame with the items s/he collected and placed in his/her bag. Be sure each artist adds his/her name to his/her creation.

Attachments

- [square.gif](#)

Extensions:

Language Arts

- Have the class work together to create an acrostic poem that goes with the name of the season. Hang the poem with the framed season artwork.

ACROSTIC POEM

Write descriptive words or phrases beginning with the accompanying letter from the name of a season (i.e., spring, summer, autumn, winter).

For example:

Falling leaves
All over the ground
Leaves of every color
Lovely sight to see

- Take pictures of the same tree or area during different seasons. As a class, create text to describe the changes in the seasons.
- Make a class book entitled What Happens in (name of season). Each student writes and fills in the sentence, “In (name of season) _____” on a separate piece of construction paper. Have students illustrate their sentence. Create a cover and bind all the pages together.

Family Connections

- Encourage students to observe the changes in the seasons in their backyard. Have them bring signs of the season you are studying to put on the Discovery Table set up in the classroom. Leaves, flowers, acorns, blossoms, pumpkins, etc. may all be part of the table. Include magnifying glasses for closer observations.
- Send the class book What Happens in Seasons home each night for a different student to read with his/her family.

Assessment Plan:

- Artwork is an excellent assessment tool. Date each art piece and place in the student’s portfolio. Encourage students to add details and observe changes in the environment carefully. Look for progress in the student’s ability to draw specific changes as the seasons change.

Author:
[Utah LessonPlans](#)



Summary:

This is a Unit. Do each activity on separate days. Students observe the changes in our environment during the spring. They use their sense of touch, sight, hearing and smell to investigate their surroundings. Students discuss how a shadow forms, how large rocks become smaller rocks, and finally learn the different parts of a plant. Consider using non-fiction books read outside; Look What I did with a Leaf? by Morteza E. Sohi and Red Leaf Yellow Leaf and Leaf Man by Lois Ehlert.

Time Frame: 1 class period that runs 30 minutes

Main Curriculum Tie:

Science - Kindergarten

Standard 2 Objective 1

Investigate non-living things.

Standard 2 Objective 2

Observe and describe changes in day and night.

Standard 2 Objective 3

Compare changes in weather over time.

Standard 4 Objective 2

Describe the parts of living things.

[Supplemental Materials](#) (pdf)

Materials:

Attachments

- [springwalkobservations.pdf](#)
Students are asked to either draw or write about three signs of spring they saw on their nature walk.

Intended Learning Outcomes:

1. Framing questions. Conducting investigations. Collecting data. Drawing conclusions.
2. Developing social interaction skills with peers. Sharing ideas with peers. Connecting ideas with reasons.
3. Ideas are supported by reasons. Communication of ideas in science is important for helping to check the reasons for ideas.

Instructional Procedures:

Pre-lab discussion: Show the students a picture of a tulip (or whatever spring flower they will find outside) and tell them they are going on a tulip hunt. Ask them if they see tulips all summer long or in just a special season. Take them outside and begin the spring nature walk.

Instructional Procedures: Take the students outside for this activity.

1. Group the students sitting down outside. Ask the students what season it is and what they would expect to see the plants, trees and animals doing in this season. Have them close their eyes and use their sense of smell, feeling, and hearing to identify signs of spring. Discuss the smell of flowers and plants, the feeling of sun on their faces, and if they hear any insects or birds.
2. Find an area with buds on trees. Discuss how flowers on trees form before the leaves on the trees do. Explain that flowers will turn into seeds or fruit. On the tree identify the flower, trunk, branches, and any leaves that can be found.
3. Have the students find the spring flowers. Explain that these are the first flowers that form in the spring but they will soon die at the end of spring and not live through the summer. On the spring flower, identify the flower, leaves, and stem.
4. Look at the trees and notice what is happening. The leaves are just starting to bud. Look at evergreen trees and realize they haven't changed over the season. But you should see some new needles added. Find areas on the end of the branches where new growth is occurring.
5. Have the students stand on the concrete. Have them notice their shadow. Ask them how a shadow is formed. Explain that when we block the sun we see our shadow. Look at shadows that formed from the building, houses, fences, or whatever other shadows may be found in the area.
6. Ask the students to feel how warm their body feels in the sun then move into a well shaded area and ask them if they feel as warm. Explain that in the shade, not all the sun's energy can reach our skin and it feels cooler. Go back and forth from sun to shade and have students identify the difference.
7. Find some soil that has different sized particles. Use your foot to smash the pieces into smaller pieces. Explain that larger rocks are broken down into smaller rocks. These smaller rocks eventually get broken down into our soil.
8. Bring the students back together as a group and discuss the main signs of spring: spring flowers, buds on trees, birds calling to each other as they ready their nests, and warming temperatures.

Bibliography:

Rio Tinto Hands-on Science Curriculum Team

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Summary:

Students will read literature about the seasons and observe and describe the weather in each. The group will compare and contrast the activities of people during different weather conditions showing how they adapt to changes. They will generate activity and nutritional guides appropriate to each.

Time Frame: 4 class periods that run 30 minutes each.

Main Curriculum Tie:

Science - Kindergarten

Standard 2 Objective 3

Compare changes in weather over time.

[Supplemental Materials](#) (pdf)

Materials:

- books (see bibliography)
- writing material

Web Sites

- [yahoo](#)
Once in yahoo I typed in *fall ron hirschi* and got a list of wonderful sites to click onto. There was a *Booklist-Seasons* that listed books for 4-8 yr. olds so that you can find appropriate resource material in your school library for this lesson. There was also a site called *Learning Kits to Go* that may be helpful.
A good one for parents was *The Wild Place at the Richland County Public Library*

Intended Learning Outcomes:

Students will observe and describe the basic components of weather and understand how a healthy diet and exercise can increase the likelihood of physical and mental wellness year round.

Instructional Procedures:

1. Read a variety of books about the seasons or weather. (see bibliography)
2. Make a chart of physical activities appropriate for different weather conditions found in each season.
3. Generate a list of favorite seasonal foods or comfort foods triggered by weather conditions and discuss good nutrition year round.

Strategies for Diverse Learners:

Gifted Students: Gather and read books independently. Generate activity and food lists independently.

Struggling Student: Listen to books read to them. Draw or cut out pictures of appropriate activities and food.

Extensions:

This lesson could be done with a whole group, in cooperative learning groups, or as individual projects. Final projects could include lists, charts, posters, demonstrations, dioramas, oral reports, class or individual books.

Assessment Plan:

The rubric called "Staying Healthy Year Round" may be used to assess student learning.

Rubric:

- [Staying Healthy Year Round](#)

Bibliography:

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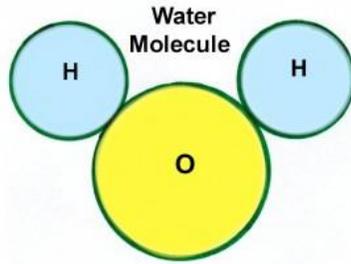
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Krensky, Stephen. Lionel in the Fall. 1987.

Author:

[LOENE HILL](#)

**Summary:**

Students become water molecules as they simulate the movement of water through the water cycle.

Time Frame: 1 class period that runs 45 minutes

Main Curriculum Tie:

Science - Kindergarten

Standard 1 Objective 2

Communicating Science: Communicating effectively using science language and reasoning

Materials:

- 7 large pieces of paper labeled with each [station name](#) (pdf)
- Marking pens
- 7 boxes, about 6 inches on each side (Boxes are used to make dice for the game. Gift boxes used for coffee mugs are a good size or inquire at your local mailing outlet). There will be one die [or box] per station of the water cycle. [Labels](#) (pdf) for the dice. These labels represent the options for pathways that water can follow.
- Copies of [student worksheet](#) (pdf)
- A bell, whistle, buzzer, or some sound maker.

Attachments

- [incredible-journey.pdf](#)
- [dice-labels.pdf](#)
- [station-name.pdf](#)

Background for Teachers:

While water does circulate from one point or state to another in the water cycle, the paths it can take are variable.

Heat energy directly influences the rate of motion of water molecules. When the motion of the molecule increases because of an increase in heat energy, water will change from solid to liquid to gas. With each change in state, physical movement from one location to another usually follows. Glaciers melt to pools which overflow to streams, where water may evaporate into the atmosphere.

Gravity further influences the ability of water to travel over, under, and above the surface of the earth. Water as a solid, liquid or gas has mass and is subject to gravitational force. Snow on mountaintops melts and descends through watersheds to the oceans of the world.

One of the most visible states in which water moves is the liquid form. Water is seen flowing in streams and rivers and tumbling in ocean waves. Water travels slowly underground, seeping and filtering through particles of soil and pores within rocks.

Although unseen, water's most dramatic movements take place during its gaseous phase. Water is constantly evaporating, changing from a liquid to a gas. Evaporation occurs when water from the ground or bodies of water move into the atmosphere. Plants give off water vapor through transpiration. The combination of evaporation and transpiration is referred to as evapotranspiration. As a vapor, water can travel through the atmosphere over the earth's surface. In fact, water vapor surrounds us all the time. Where it condenses and returns to earth depends upon loss of heat energy, gravity, and the structure of the earth's surface.

Water condensation can be seen as dew on plants or water droplets on the outside of a glass of cold water. In clouds, water molecules collect on tiny dust particles. Eventually, the water droplets become too heavy and gravity pulls the water to the earth.

Living organisms also help move water. Humans and other animals carry water within their bodies, transporting it from one location to another. Water is either directly consumed by animals or is removed from foods during digestion. Water is excreted as a liquid or leaves as a gas, usually through respiration. When water is present on the skin of an animal (for example, as perspiration), evaporation may occur.

Attachments

- [glossary.pdf](#)
- [discussion.pdf](#)
Discussion Questions

Instructional Procedures:

CONNECTIONS TO “DROP IN A BUCKET”:

Ask students to recall where water is located on the earth (oceans, rivers, ground, etc.). Ask if they recall where the most water is located (Oceans). Ask students if they know how water moves from one location to the next. Tell them this lesson will discuss how water moves between each location.

PROCEDURE:

1. Place the station labels around the room in different locations.
2. Ask students to identify the different places water can go as it moves through and around the earth. Write their responses on the board.
3. Tell students that they are going to become water molecules moving through the water cycle.
4. Categorize the places water can move through into seven stations: Mountain, Groundwater, Stream, Ocean, Animal, Cloud, and Plant.
5. Assign an even number of students to each station. (The cloud station can have an uneven number.) Have students identify the different places water can go from their station in the water cycle. Discuss the conditions that cause the water to move. Explain that water movement depends on energy from the sun, electromagnetic energy, and gravity. Sometimes water will not go anywhere. After students have come up with lists, have each group share their work. The die for each station can be handed to that group and they can check to see if they covered all the places water can go. The die labels provide an explanation of water movements from each station.
6. Students should discuss the form in which water moves from one location to another. Most of the movement from one station to another will take place when water is in its liquid form. However, any time water moves to the clouds, it is in the form of water vapor, with molecules moving rapidly and apart from each other.
7. Tell the students they will be demonstrating water's movement from one location to another. When they move as liquid water, they will move in pairs, representing many water molecules together in a water drop. When they move to the clouds (evaporate), they will separate from their partners and move alone as individual water molecules. When water rains from the clouds (condenses), the students will grab a partner and move to the next location.
8. In this game, a roll of the die determines where water will go. Students line up behind the die at their station. (At the cloud station they will line up in single file; at the rest of the stations they should line up in pairs.) Students roll the die and go to the location indicated by the label facing up. If they roll stay, they move to the back of the line. When students arrive at the next station, they get in line. When they reach the front of the line, they roll the die and move to the next station (or proceed to the back of the line if they roll stay). In the clouds, students roll the die individually, but if they leave the clouds they grab a partner (the person immediately behind them) and move to the next station; the partner does not roll the die.
9. Students should keep track of their movements. This can be done using the Incredible Journey Worksheet. Having them keep a journal or notepad to record each move they make, including stays, can also do it. (See extensions for other ideas) Another approach is to have half the class play the game while the other half watches. Onlookers can be assigned to track the movements of their classmates. In the next round the onlookers will play the game, and the other half of the class can record their movements).

10. Tell students the game will begin and end with the sound of a bell (or buzzer or whistle). Begin the game! (Approximately 10 minutes for a class of 25 students is sufficient for students to understand the concepts of the water cycle)

WRAP UP:

Ask students about their journey. Did anyone get frustrated because they spent most of their time at one or two stations? Do you think that water molecules often get trapped in one location (oceans or atmosphere)? Discuss the water cycle with students and help them understand that it is not a well-defined cycle, but a series of pathways. Water does not always complete the full cycle, but can follow a multitude of pathways.

Extensions:

- Remind students about how pollutants or contaminants would affect our water supply and ask students how they think pollution affects the water cycle. Does pollution travel through the water cycle? Is there any point where pollution would be deposited or left behind?
- Discuss with students how water becomes polluted and is cleaned as it travels through the water cycle.
- Have the students make bracelets as they travel through the water cycle. Fill seven small containers with beads (one container for each station). Each station should have a specific color of bead. Give the students thread or a cord long enough for a bracelet and have them collect one bead every time they visit a station.
- Have students use their bracelets or travel records to write a story about their journey through the water cycle. If a water molecule could think and talk, how would it tell its story?

Activities:

These activities can be used to enhance or reinforce concepts and vocabulary words learned in the preceding lessons.

- [Drip's Journey](#) (pdf)
- [Word Search](#) (pdf)
- [Song](#) (pdf)
- [Crossword](#) (pdf)

Bibliography:

This lesson plan was developed by the Utah State University Water Quality Extension.

Author:

[Utah LessonPlans](#)



Summary:

Students will learn about weather by taking walks in various types conditions: sunny, rainy, windy and snowy.

Time Frame: NA

Main Curriculum Tie:

Science - Kindergarten

Standard 2 Objective 3

Compare changes in weather over time.

[Supplemental Materials](#) (pdf)

Materials:

Sunny Walk

ONE PER CLASS:

- WHAT MAKES A SHADOW, by Clyde Robert Bulla
- Sidewalk chalk
- SUN SONG, by Jean Marzollo

Hot Walk

FOR THE CLASS:

- Thermometer
- Roll of paper towels
- Ziploc bag
- Two glass jars that are the same size
- Two elastic bands
- Chart paper
- Markers

FOR EACH STUDENT:

- Paintbrushes
- Bucket of water
- White construction paper

- Corn syrup
- Yellow food coloring
- Scissors

Wind Walk

ONE PER CLASS:

- Poem, "[Who Has Seen The Wind?](#)" (pdf)
- THE WIND BLEW, by Pat Hutchins

ONE PER STUDENT:

- Crepe paper streamers
- Crayons
- White construction paper
- Paper strips
- Glue stick

Rain Walk

ONE PER CLASS:

- Rain Talk
- WET WORLD, by Norma Simon

ONE PER STUDENT:

- Foil pie plates
- Blue construction paper
- String
- Paper punch
- Gray butcher paper
- Tape
- Rain gear

Snowy Walk

ONE PER CLASS:

- Two glass jars
- Thermometer
- THE SNOWY DAY, by Ezra Jack Keats
- Yardstick
- 2 Elastic bands

Additional Resources

- WHAT MAKES A SHADOW, by Clyde Robert Bulla; ISBN 0060229152
- SUN SONG, by Jean Marzollo; ISBN 060611937X
- THE WIND BLEW, by Pat Hutchins; ISBN 068971744X
- WET WORLD, by Norma Simon; ISBN 1564021904
- THE SNOWY DAY, by Ezra Jack Keats; ISBN 0670867330
- WEATHER, by Ann Flag; ISBN 0-590-13111-7
- WHATEVER THE WEATHER, by Karen Wallace; ISBN 0-7894-4750-9
- SHADOWS, by Carolyn B. Otto; ISBN 0-439-20548-4
- GUESS WHOSE SHADOW, by Stephen R. Swinburne; ISBN 0-439-26651-3

Attachments

- [wind.pdf](#)
Who Has Seen The Wind? Poem

Background for Teachers:

Weather develops in the air that surrounds Earth. The condition of the air determines the temperature and whether the day is cloudy or clear, windy or calm. The combination of these conditions determines whether we have rain or snow. Temperature is one of these conditions. Heat from the sun warms Earth's atmosphere and surface waters. Cloudy days may be cooler than sunny days because clouds block some of the sun's warmth. Wind is moving air. Some winds are gentle; others are very strong.

There are different tools to help us observe, measure and track weather. Meteorologists are people who report and forecast the weather.

Intended Learning Outcomes:

1. Demonstrate a positive learning attitude.
5. Understand and use basic concepts and skills.

Instructional Procedures:

Invitation to Learn

Teach students the weather song that goes to the tune of BINGO. The words are:

We have weather everyday
Today is sunny weather.
S-U-N-N-Y, S-U-N-N-Y, S-U-N-N-Y
Today it's sunny weather.

Change the words of the song to match the weather—possibilities include: snowy, windy, rainy, foggy, cloudy.

Tell students that they are going to become weather watchers and weather walkers! Be flexible and ready to include the following activities on an appropriate day.

Instructional Procedures

Sunny Walk

1. Discuss that it can be sunny weather in the summer and in the winter. When it is sunny weather we have shadows. The sun's rays cannot pass through solid objects so shadows are the places light could not get through.
2. Read *What Makes a Shadow*, by Clyde Robert Bulla.
3. Divide up into partners. Go outside and trace each others' shadows on the sidewalk with chalk.
4. You may want to go outside later and see if you can "fit" into the shadow tracings made earlier in the day. Explain how the sun appears to have moved in the sky, causing a change in the shadows.
5. *Sun Song* by Jean Marzollo describes the sun's activities from sunrise to sunset.

FAMILY CONNECTIONS

- Have students observe where the sun sets and at what time, and where the sun rises and at what time.

Hot Walk

1. Take a thermometer outside with you and determine where the hottest area in the playground is. Experiment with the sidewalk, a shady spot, and the sandbox. Discuss your findings.
2. After studying about shapes, draw shapes on the sidewalk with paintbrushes and water. Discuss why the water disappears.
3. Take two paper towels and wet each of them. Ask the class which one will dry first: the one you leave in the shade, or the one you leave in the sun. Take a class vote and chart your predictions and your findings. This is a good time to remind students that scientists are interested in learning, not in wanting to vote like their friends. All ideas are important.
4. Take two paper towels and wet each of them. Place one towel spread out inside. Squeeze the other towel into a small ball. Ask the class which will dry first. Chart predictions and findings. Relate this experiment to towels students might use when swimming. Ask, "Which way will your towel dry fastest; hanging up or in a pile on the floor?" Explain how air dries the towel and how we can use that knowledge to help us.
5. Take two paper towels and wet each of them. Place one in a sealed Ziploc bag and the other on a counter. Follow the procedure used in #4.
6. Fill two jars that are the same size and shape with the same amount of water. Place a rubber band around the jars to show the water level. Put a lid on one jar and leave the other without a lid. Ask the students what they think will happen. Chart their predictions. Check the jars each day for a week. Read the predictions and discuss what happened. The water without the lid evaporated because it is exposed to air. The water in the other jar stayed the same because the air stayed the same.

LANGUAGE ARTS AND ART CONNECTION

1. Have each child draw or trace a large sun on white construction paper.
2. Draw a dark pencil drawing (representative of a shadow) of a favorite summertime activity inside the sun. Have students write and complete the sentence, "In summer I like to _____" underneath their drawing.
3. Cut the large sun out.
4. Paint over the drawings and words with a transparent paint made by mixing one cup corn syrup with about 20 drops yellow food coloring. Let this dry a day or two.

FAMILY CONNECTIONS

- Have students do one experiment at home and report his/her findings with the class.

Wind Walk

1. Read the poem, [Who Has Seen The Wind?](#) (pdf) by Christina Rossetti.
2. Ask what happened when the wind was passing through.
3. Ask students how they can tell which direction the wind is blowing.
4. Go outside and have students run into the wind, as well as with the wind. Discuss which one is easier. Skip, hop, and twirl with the wind.
5. Give students a four foot crepe paper streamer to take outside. Experiment which way the streamer moves when you move it up and down or try to spin it.
6. Wet a finger and hold it up in the air. Ask students what they feel? The wind will cool one side as it passes by.

LANGUAGE ARTS AND ART CONNECTION

1. Read *The Wind Blew*, by Pat Hutchins
2. Make a class book similar to *The Wind Blew*. Ask each student to fill in the blank "The wind blew my _____." Write the completed sentence for each student. Then cut the sentence into individual words. Have each student glue his/her "word puzzle" together in order at the bottom of the page, illustrate his/her page with crayons, and bind the pages together into a book.
3. Let each child read his/her own page to the class.

FAMILY CONNECTIONS

- Have students make a book at home entitled, *What Moves in the Wind*. Share with the class.

Rain Walk

1. Explain that the students are going to be detectives. They are going to discover the answer to some rain questions. The questions are:
 - Where is the biggest puddle on our playground and why is it so large?
 - What do raindrops do when they land on the sidewalk?
 - What do raindrops do when they land on the grass?
 - What do raindrops do when they land on our coats?
 - What do raindrops do when they land on leaves?
2. Chart the predictions on a chart using the headings "What We Think" and "What We Learned" before the class goes outside and when they come back.
3. Have students hold foil pie plates above their heads and listen to the sound the rain makes as they stand outside. Back in the classroom, demonstrate how to tap on the back of the foil pan with a pencil to imitate the sound of the raindrop. Experiment what a thunderstorm would sound like, as well as a drizzle, a light rain, and a steady downpour.
4. Read *Wet World* by Norma Simon.
5. Experiment with hands to find other ways to make rain sounds (e.g., snapping, rubbing, clapping, etc.).

LANGUAGE ARTS AND ART CONNECTION

1. Have students cut large water drops out of blue construction paper. Write words that describe rain on both sides, such as wet, splashing, cold, etc.
2. Punch a hole at the top of each drop and tie a string of different lengths to each.
3. Cut two large clouds that are exactly the same (you may want to provide a template to trace around) out of gray butcher paper. Staple around the two clouds about half way. Stuff the cloud with scraps of paper and then finish stapling the rest.
4. Tape the ends of the strings with the water drops to the bottom of the cloud so that the water drops can dangle under the puffy cloud (see illustration).



Snowy Walk

1. Read *The Snowy Day* by Ezra Keats.
2. Have students measure how deep the snow is in different places. Discuss why it is different.
3. Take the temperature of the snow and the ground beneath. Is it different? Discuss why. How would that affect animals?
4. Collect snow in one jar and ice in another.
5. Place an elastic band around the jars to show where the snow and ice levels are. Ask the class for predictions about how much water will remain when the ice and snow melt. Will the water level be above the elastic or below the elastic? Record the answers.
6. Ask students which jar will melt faster, the ice or the snow. Record their predictions and later their answers.
7. Explain that there is more air in snow so it makes less water. The air also causes the snow to melt faster. Have students observe how clean the melted snow is. Discuss the reasons for not eating snow.

LANGUAGE ARTS AND ART CONNECTION

- Have students use crayons to draw a winter tree and themselves wearing winter clothes on blue construction paper. Under supervision have students dab Q-tips into bleach to paint snowflakes on their pictures. Underneath have students finish the sentence: In winter I like to _____.

Attachments

- [cloud.gif](#)

**Extensions:
Family Connections**

- Have students watch the weather on television. Have them record the temperature and the forecast for the next day.
- Have students bring weather maps from the newspaper. Let them share the information they have learned from the map.

Assessment Plan:

Student artwork and participation in each weather walk is a good assessment of whether they understand the concepts covered. Each weather walk is designed to help students become more observant and experience the weather in different ways than they might have before.

Author:
[Utah LessonPlans](#)

**Summary:**

Students will predict and observe a variety of items and determine whether or not they will float or sink.

Time Frame: NA

Main Curriculum Tie:

Science - Kindergarten

Standard 3 Objective 1

Identify how non-living things move.

[Supplemental Materials](#) (pdf)

Materials:

- Tub of water (similar to Rubbermaid)
- A boat (you may wish to use a milk carton reserved from lunch cut in half lengthwise - you can glue the opening shut)
- Various animals all the same size for each floating activity (don't mix sizes and weights together because the results would be difficult for the children to understand)
- Items that sink and float for the initial demonstration (For example: paper clip, toothpick, pencil, rock, etc.)
- Crayons
- [Who Sank the Boat?](#) (blackline) (pdf)

Books:

- *Who Sank the Boat?* by Pamela Allen, ISBN: 13: 978-0698113732
- *Forces Make Things Move*, by Kimberly Brubaker Bradley, ISBN: 978-0-06-445214-4
- *Hands-On Science (Forces in Motion)*, by John Graham, ISBN: 978-0-7534-5348-3
- *What Makes a Magnet*, by Franklyn M. Branley, ISBN: 978-0-06-445148-2

Attachments

- [sank-boat.pdf](#)

Background for Teachers:

This is a discovery-type lesson in which students will predict and observe a variety of items and determine whether or not they will float or sink. The lesson begins with a short story about animals in a boat. Students often have a misconception that the last animal to get on the boat is the one who caused it to sink. Performing this experiment, a variety of times, and having an open-class discussion will often produce questions such as, "Whose fault is it?" and "Why is the last animal in the boat always the one that sinks it?" Through guided discussion, your students should come to the conclusion that the boat sinks when the weight becomes too heavy, regardless of which animal is the last in the boat. Some students may need an initial demonstration to help them clearly define floating and sinking. Helpful vocabulary words include float and sink. It is important for the teacher to let the

students make this discovery on their own and not give too much direct instruction or information. When the children are allowed to experiment and try it out on their own, they will gain a deeper understanding and can then participate in the class discussion.

This lesson is only a small part of a larger unit about how objects move. Several additional activities at the end of this lesson may be used in conjunction with this lesson to provide students with a better understanding about how objects move. The lessons may be taught individually or in a small group rotation-type activity.

The math connection related to this lesson requires students to record information on a graph. The teacher may need to demonstrate simple graphing skills prior to this activity.

Instructional Procedures:

Invitation to Learn:

Launch (Introduction): (10 minutes)

Begin by reading the story, *Who Sank the Boat?* by Pamela Allen. Ask the children to think about why the boat would sink. Have them watch as you model what floating and sinking means with two objects. Quickly review vocabulary to assess if students have an understanding of the vocabulary. Invite them to act out the story for themselves to find out who really sank the boat and why.

Instructional Procedures:

Explore: (15 min.)

1. Divide children in small groups of 4 to 5 students per group. Fill large plastic tub 2/3 full with water and provide animals and a boat for each group. Allow the children time to put animals in the boat one at a time until the boat sinks. As the children are experimenting with this walk around and ask the following question: Which animal sank the boat?
2. Compare which animal sank the boats between individuals within the group. Students should observe that different animals "sank the boat." They may still have a misunderstanding that it is the last animal that sinks the boat, and not understand that it is the weight that sinks the boat.
3. Encourage students to keep exploring by trying the same animals in a different order, or all of the same animals until the boat sinks.
4. Make connections between other groups (e.g., "Table one said it was the sheep's fault, is that what you found?" "Why didn't the sheep sink your boat instead of the cow?").
5. Continue using guided questions to help the children discover that it doesn't matter which animal sinks the boat; it is more important that the boat becomes too heavy.

Discuss: (10 min.)

Students return to the carpet where the teacher has a bucket, boat, and animals. Lead a discussion about each group's discoveries.

1. If students claim that a certain animal sank the boat, put that animal alone in the boat and question why it won't sink.
2. Did the same animal always sink the boat?
3. Further explore with students what many animals cause weight, and that the weight sinks the boat.
4. What does "too heavy" mean?

Solidify: (15 min.)

Students return to their desks with their math notebooks. Instruct them to respond to the prompt, "Why did the boat sink?" Students can draw pictures, write words, label, and draw arrows to explain their thinking. As they are doing this, interactively observe and question students' work, checking for understanding.

Practice: (15 min.)

1. Make copies of the attached blackline for each student.
2. Students will work in groups of four.
3. There are four blacklines per group.
4. Using one blackline, students take turns placing animals one at a time in the boat, coloring the corresponding square on the blackline to make a graph until the boat sinks.
5. Have them do this four different times working as a whole group, with each student having a turn to record the results.

Additional Lesson Activities:

Making Tracks

The purpose of this lesson is to teach the motions of “back and forth” and “zigzag.” In the activity each student is given a cookie sheet, a piece of white paper that fits inside the cookie sheet, and paper plates with various colors of paint on each one. The students are also given several cars and some marbles (preferably one car and one marble for each paint color). The student will then roll the car or marble in one paint color and place it on the cookie sheet. The student will pick up the cookie sheet and tilt it in various directions to make the tire tracks or marble tracks on the paper. The student may repeat this method as many times as he or she wishes using a variety of cars and marbles dipped in paint. Discussions following this lesson should emphasize the motion vocabulary back and forth, and zigzag.

How Far Will It Go?

In this lesson students will explore the way objects roll. Divide students in to small groups and provide them with a ramp made from PVC pipe cut lengthwise and several balls of various sizes and weights, made of a variety of materials. Have the students angle the ramps using books or small boxes. Let the children explore by rolling each ball down the ramp and placing a piece of masking tape to show where the ball stopped. Students should keep the ramp at the same angle for each of the balls. After each one has been rolled and measured, change the angle of the ramp by adding more books or placing the ramp on a desk. Repeat the activity by rolling and measuring each ball as it rolls down the ramp. Children may change the angle of the ramp as many times as you would like. Discuss with the children whether or not changing the height of the ramp changes the distance each ball will roll.

Extensions:

- Advanced learners will make predictions about how many of each animal the boat would hold before sinking. Additionally, you can guide them to understand that the placement of the animals in the boat will have an effect.
- Formal assessment of non-typical learners can include verbal communication of what floats and what sinks.
- Math integration: Students will analyze the graphs from their experiment. They will notice which graph had more animals, fewer, how many in total, etc. You may have to demonstrate graphing skills prior to this activity.

Family Connections:

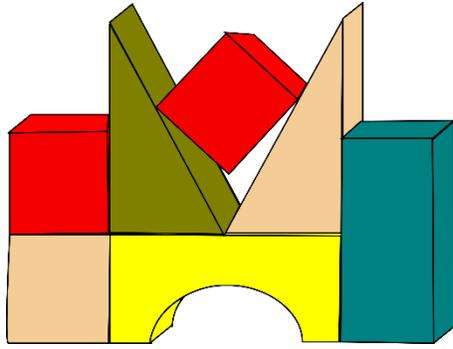
Assignments to do with parents:

- Explore objects that float and sink in the bathtub or in the kitchen sink. Have students write/draw which objects they discovered floated or sank.
- Students can make predictions before they place an object in the water. Will this float or will it sink? Why do they think it did or didn't float?
- Students can create their own boats with objects that float. They can also explore with toys.

Assessment Plan:

- Informal assessment will be the teacher observance of the answers to the guided questions.
- Formal assessment will be the math notebook entry. Did the students understand what floating and sinking mean, and were they able to communicate that to you?

Author:
Stephanie Wall



Summary:

Students will understand that non-living things are made of parts.

Time Frame: NA

Main Curriculum Tie:

Science - Kindergarten

Standard 3 Objective 2

Describe parts of non-living things.

[Supplemental Materials](#) (pdf)

Materials:

- Different sets of building materials for each table (Jenga, blocks, Legos, etc.)
- [Blackline of the house with individual parts cut into pieces](#) (enlarged to an 11"x17" size) (pdf)
- [Picture cards](#) (pdf) from the attached blacklines, copied on cardstock and cut into cards
- Several pictures of non-living things (enough for each student to have one or two)
- Equipment Needed: Something to hold the house and its parts (blackboard, easel, etc.): magnets or tape

Books:

- *Teddy Bears, From Start to Finish*, by Tanya Lee Stone ISBN: 1567114792 /9781567114799 / 1-56711-479-2

Articles:

- "Kindergarten Science: What to Expect," *Parent and Child Magazine: Read for Kindergarten?*

Organizations:

- [National Science Foundation](#)
- [National Science Teachers Association](#)

Attachments

- [part-cards.pdf](#)
- [house-parts.pdf](#)

Web Sites

- [PBS Kids](#)

Background for Teachers:

Students will need to understand the difference between a living and a non-living thing prior to this lesson. This lesson is specifically designed to show that non-living things are made of parts. Then, through demonstration, those parts will be taken away and students will be able to see how their function changes. (This lesson is only an introduction to this concept. In the additional lesson activities section, there are several ideas to extend this lesson.)

Instructional Procedures:

Invitation to Learn:

Launch (Introduction): (10 minutes)

1. Students will sit in a circle as the teacher models how to build a tower with building blocks.
2. Engage the students in building the tower, adding one part at a time. Draw attention to the "parts" that are being used to build the tower.
3. Demonstrate that when you take away the parts of the tower, the tower can't stand up – it falls because some of the parts are missing.

Explore (Individual and Small Group work): (5 minutes per rotation)

1. Students will return to their tables and in small groups build a tower with the building materials at their table (blocks, Legos, Jenga, etc.).
2. After they have built a tower, have them each in turn start taking away a part of the tower until it is no longer a tower.
3. Have children rotate through the different tables and build and take away the parts of the several different building materials.

Discuss (Whole Group Discussion): (10 minutes)

At the carpet, discuss with the children the following questions:

1. What was the tower made of (parts of blocks, Legos, etc.)
2. What happened when we took away some of the parts? (It eventually fell.)
3. If the parts are missing, is it still a tower? (No-it changes.)
4. Explain to the students that you are going to look at the parts of a house.
5. Show students the picture of the blank house (see attached blacklines). Name all the parts of the house and their functions as you put the pictures on the house.
6. After all the parts are on the house, take away a part and discuss how the house would be different if the "door" or "window" wasn't there.

Solidify (Closure): (5 minutes)

Review that all things have parts. Even things in our classroom have parts. Name the parts of an object that you use frequently in your room. Discuss how the object would change if it didn't have all of its parts.

Play the "What If" game.

1. Students sit at the carpet.
2. Teacher give the scenario and the children answer:
 - What if a chocolate chip cookie didn't have chocolate chips in it?
 - What if a peanut butter and jelly sandwich didn't have peanut butter on it?
 - What if your classroom didn't have tables and chairs?
 - What if your bed didn't have a mattress?
 - What if the lunchroom didn't have tables?
 - What if your car didn't have wheels?

- What if your bike didn't have any pedals?

Practice (Review): (15 minutes)

Copy the pictures cards from the attached blacklines on 8_"x11" white cardstock. The pictures are divided into parts. Each student will receive one picture. The teacher will read the clues from the attached [clue list](#) (pdf). One student will have the card that represents the first part of the clue, and another student will have a card that represents the second part of the clue. Each student will look at the parts and try to match his/her part with the other student. Continue in this way until all students have matched their parts. Note: This can be done several different times during this unit and would make a great center pocket chart activity for extended practice.

Additional Lesson Activities:

Mystery Part on Picture Card:

For this activity you will need several pictures of non-living objects. Hand one picture out to each student. Choose one picture that you want to be the mystery card. Give students clues as to the mystery object on the card by naming some of its parts. Students will stand up if they have the part on their picture, and sit down when they don't have all the parts talked about. For instance: If the mystery card I chose was a truck, I would say, "I have a round part." Students would look at their cards and identify something round. The next clue might be, "I have a part that gives light." Students who don't have this part must sit down. Continue with clues until only one student is standing.

Taking Away Parts:

For this activity you will need magazines, newspapers, toy catalogs etc. Each student will choose a picture of a non-living object. Students will cut the picture of the object out. They will then take the object and cut off the parts that make the object. They will glue the pieces on the object on an 8_"x11" sheet of white paper and label the parts.

Whole group connections can be made by observing how the object is not the same without the part that the student cut off. Have students show the picture cut into parts and predict what the object is from the parts. Questioning can be in this type of format: "If you cut off the legs of the chair, does it still work like a chair?"

Stuffed Animal Experiment:

Begin this activity by reading the book *Teddy Bears, From Start to Finish*, by Tanya Lee Stone.

NOTE: If you don't have this book, you may want to draw teddy bear parts of a teddy bear, and how those parts make a bear when they are all put together.

Show a teddy bear and do a whole class discussion about the "parts" of this toy. She will then show the students how she has opened up the teddy bear and now you can see the parts on the inside. As the students discuss the parts of the bear, the teacher can ask what part doesn't need to be on the teddy bear (none-all the parts are necessary). What if it didn't have a head? What about eyes, or arms? Would it still be a teddy bear?

Have students return to their tables, where there is a different stuffed animal on each table. Each student will be given a task (draw head, torso, legs, arms, etc.) and then they will label the parts of their animal on a large sheet of paper.

Students will return to the carpet with their pictures (sitting in their table groups). As a group, they will discuss their pictures and the parts that made up their stuffed animal. Reinforce how all the parts are needed in order for it to be that "toy" or "animal."
Note: You could do this with any type of toy that has parts.

I Spy The Parts Game:

Play a guessing game like "I Spy." Describe a familiar object in the indoor or outdoor setting. Ask the children to guess the object based on the parts you list and describe. Can students find, point to, or touch the object in question? Ask the children to take turns as they, with teacher help, describe an object and have their classmates guess the item by the description of its parts.

Mystery Bag Item:

Place an object in a brown bag. Suggested items might be a truck, a dish, a doll, a book, etc. Have a group of students come and feel the object. Have them tell you what the object is upon their feeling it. Write or draw the object they have described on chart paper. After several students have guessed, reveal the object and involve the group in carefully re-examining the item and talk about its characteristics and parts.

Ask probing questions such as:

1. How many parts make up the object?
2. What would happen if the _____ was missing? How would this change the object?
3. Would this still work if not all the parts were there?

Literature Connection with Letters and Worlds:

Put up a known three-letter word with magnetic letters on a whiteboard. Ask the students the name of the word. Slowly break the letters out of the word by sliding them to the left, one letter at a time, then run a finger under the word and read it. This is to demonstrate that words are made up of parts.

Ask the following questions:

1. How many letters are in this word?
2. Where is the first letter in this word?
3. Where is the last letter of this word?
4. If I took away this letter would it still be a word?

This word is made up of three letters. If we take away one of these letters, it doesn't work the same way.

The teacher can also take a multi-syllable name of one of the students and write it on a sentence strip. As a class, the teacher and students clap the syllables or parts of the name. The teacher then cuts the name into parts and has the students read the parts of the name with you.

Ask the following questions:

1. Whose name is this?
2. How many parts did we hear in this name?
3. Where is the first, second and last part of the name?
4. What would happen if I took away this part of the name? Would it still be the same name?

This name has parts in it; if we take away some of the parts, it is not the same name.

Finding Parts of an Object in a Book:

For this activity you must have different books that have large pictures of objects like balls, playground equipment, rocks, homes, food, etc. Give a pair of students a book and a large "[looking glass](#)" (pdf). Copy the 'looking glass' onto 8"x11" cardstock, cut out the small square in the center, and laminate. The "looking glass" is large enough that it will completely cover the page of the book, and only have a small area to look through. One student will look at the picture and choose an object for the other student to identify. The other student will try to find out what the picture is by just observing parts. The partner will observe him/her until he/she guesses correctly. The partners will continue taking turns with the looking glass and identifying objects by only looking at small parts. This would be a wonder center.

Attachments

- [parts.pdf](#)
- [parts-clues.pdf](#)

Extensions:

- Advanced learners can identify the parts that make up specific items in a classroom and draw and label the parts on paper. They would choose one classroom object and then describe its parts, and exactly what parts are needed. For example, a book has pages, letters, words, pictures, and a cover.

- For special accommodations, teach using the picture cards, review vocabulary and have parent helpers review the cards and the house. The picture cards should be helpful for English Language Learners.

FAMILY CONNECTIONS:

Assignments to Do with Parents:

- Students will discuss with their parents the things that make up their bedroom. What if they didn't have a bed, a dresser, or a closet? How would their room be different?
- Students can discuss the parts of their bike. What if it didn't have wheels, pedals, or a handlebar?
- Students could take a blank 8_ "x11" piece of white paper home and draw their kitchen. Have students label the parts of their kitchen. What if there wasn't a sink, a fridge, or an oven? Students would explain what would happen in their kitchen if those items were missing. Where would they put food, cook food, wash dishes, etc.?

Assessment Plan:

- Informal assessment could consist of observing students during the "building" and "taking away" activity.
- Informal Assessment: Do the students understand that things are made of parts, and that parts can be taken away? Were they able to match the parts of the picture cards?
- Formal Assessment: Give students a blank 8_ "x11" sheet of white paper. Explain that the blank paper represents a classroom without anything in it. They should draw the things they would need in order to have an empty room turn into a classroom. What are all the parts that make up a classroom?

Author:
PENNY MCENTIRE

**Summary:**

Students will be able to identify and discuss seasonal animal behaviors after direct instruction and taking part in cooperative group activities, in 1-2 class periods.

Time Frame: 2 class periods that run 60 minutes each.

Main Curriculum Tie:

Science - Kindergarten

Standard 4 Objective 1

Investigate living things.

[Supplemental Materials](#) (pdf)

Materials:

1. Southwest Mammals: Navajo Beliefs and Legends, a SJSD Media Center publication.
2. Paper, pencil, crayons.

Web Sites

- [San Juan School District](#)
For reference to the Media Center.

Background for Teachers:**Guarded Vocabulary:**

New words pre-taught/sustained in lesson:

Mammal, hibernate, migrate, estivate, burrow, territory, gestate, birth.

Intended Learning Outcomes:

The behaviors of some animals, e.g., coyotes, prairie dogs, black bear, red fox, and skunks, during the four seasons.

Instructional Procedures:**Introduce lesson to capture student's attention:**

Teacher will ask students to tell the names of animals which are native to and live in the local geographic area. Teacher will list names of animals on the board, projection device or flipchart. Teacher will ask students if they have ever seen those animals in real-life. Teacher will ask in what season of the year did the student see the animal. Teacher will write the season next to the name of the animal, e.g., prairie dog-summer, raven-all seasons, deer- fall and winter.

Problem/Prediction:

How can you get the students really thinking?

Students are asked to consider if they ever see prairie dogs or hummingbirds in the winter. Student's are asked to work in pairs and first discuss among themselves, then tell class why they don't see hummingbirds or prairie dogs in the winter, and where they think prairie dogs and hummingbirds go for the winter.

Teacher Instruction:

Using text, *Southwest Mammals: Navajo Beliefs and Legends*, teacher will choose several animals in text and read to students about the animals and tell the Navajo legend about the animal. Teacher will ask students questions regarding animal seasonal behavior and ask students if they know the meanings of the words: hibernate, migrate, estivate, burrow, gestate, birth, written on the board, projection device or flipchart. Teacher will list names of animals underneath the behaviors for which the animals are known. Teacher will then ask students in which season the behavior occurs and write the words for the seasons on top of the animal behavior.

Teacher will read as many animal entries from the text as time allows (adding words to the list of seasonal behavior), teaching lesson over 1-2 days (or expanding into full unit).

How will you end your lesson?

Student will show/present to the whole class, their drawing of the animal and behavior and season, and say the name of the animal, behavior and season written on the drawing.

Strategies for Diverse Learners:

How will you help ELL students?

Guided Practice:

Teacher will listen to each student say the names of the animal behaviors, and the meaning, and the seasons in English as she/he points to the words written on board, projection device or flipchart.

Help students' master new concept:

Teacher will read from text to students and regularly ask questions to check for comprehension for every new concept introduced. Teacher will clarify and explain concept as needed.

Extensions:

Students will work in table groups of four or in pairs and draw a scene which represents a favorite animal and a seasonal behavior of the animal, and label the drawing with the words (from the board, projection device or flipchart) for the animal and the season and the behavior. Teacher and assistant will circulate among groups to direct students.

Assessment Plan:

Observation of student participation, student completion of drawing with written words for animal and behavior and season. Student presentation of drawing and pronunciation of words for animal, behavior and season.

Author:

[Utah LessonPlans](#)



Summary:

Students will learn about butterflies and how a butterfly's color and pattern can help its environment protect it.

Time Frame: NA

Main Curriculum Tie:

Science – Kindergarten

Standard 4 Objective 1

Investigate living things.

Standard 4 Objective 2

Describe the parts of living things.

[Supplemental Materials](#) (pdf)

Materials:

- Colored toothpicks
- [Toothpick Chart](#)
- Fabric of Utah's environments
- Newspaper
- Crayons, markers, or colored pencils
- *How to Hide a Butterfly and Other Insects*, by R. Heller.
- [Butterfly](#)
- [Hide & Seek Data Collection Sheet](#)

Additional Resources

Books

- *How to Hide a Butterfly and Other Insects*, by R. Heller; ISBN 0-448-40477-X
- *If At First You Do Not See*, by Ruth Brown; ISBN 0-8050-1031-9
- *How to Hide a Meadow Frog and Other Amphibians*, by R. Heller; ISBN 0-448-40965-8
- *How to Hide a Crocodile and Other Reptiles*, by R. Heller; ISBN 0-448-40477-X
- *How to Hide an Octopus and Other Sea Creatures*, by R. Heller; ISBN 0-448-40215-7

Attachments

- [hide_seek.pdf](#)
- [butterfly.pdf](#)
- [toothpick_chart.pdf](#)

Web Sites

- [Where Do Butterflies Come From?](#)
- [Monarch Watch: Butterfly Gardening](#)
- [Butterfly Coloring Page](#)
- [Butterfly Pavilion: Hide and Seek](#)
- [Butterflies and Moths](#)
- [The Butterfly Website](#)
- [Monarch Butterflies](#)

Background for Teachers:

There are different kinds of places, or habitats, where animals live. Each habitat or environment has a climate that encourages certain types of plant and animal life. In Utah, we have deserts, forests, and wetlands all of which are also impacted by altitude. Another habitat that is often forgotten is the city. Animals rely on their environment for many things. Not only do they depend on their environment for food, air, water, and space they rely on it for shelter. Shelter can be provided in many ways. Many animals live in the open or in trees, on plants, or even on the ground. Many animals find safety in their environment by blending in and becoming camouflaged. Since many other creatures eat insects it is important to understand how they remain unseen. The relationship of the physical characteristics of an organism and its environment needs to be understood in order to appreciate and not harm that environment. Butterflies are an insect that is familiar to the children in most communities and are particularly suited to this activity. Other insects or animals can be studied as well if they are particularly important to your area.

The development of inquiry skills is part of the process of discovering explanations for occurrences in our surroundings. As children collect information they need to have a way to record their information to analyze later. The use of a data sheet will aid students in making predictions, collecting their data, analyzing it, drawing conclusions, and providing evidence for their conclusions. Children need to test their predictions and evaluate the results.

Intended Learning Outcomes:

6. Communicate clearly in oral, artistic, written, and nonverbal form.

Instructional Procedures:

Invitation to Learn

Sprinkle (a pre-counted amount of) colored toothpicks over a section of grass in your schoolyard. Ask the children to find all of the toothpicks. Once they have been found ask the children to place them on a [chart](#) to record how many of each color has been found. Explain to the children that originally each color group had the same number of toothpicks. Ask for ideas on why it was hard to find all of certain colors.

Instructional Procedures

1. Before class prepare one set of crayons (6-8), markers, or colored pencils for each team of four children. The colors in each set should be chosen to match the colors found in the fabric in each different habitat.
2. Fabric that has natural looking patterns found in different habitats should be mounted and hung around the classroom. Be sure to have a representative fabric from each of Utah's environments (hot desert, high desert, forest, wetland foliage) plus a square of solid black and white. The fabric should be all the same size (36" X 36" is good). Even though these will be already hung prior to the reading of the book, don't draw attention to them.
3. Read the book *How to Hide a Butterfly and Other Insects* by R. Heller.
4. Discuss the book briefly to assess the children's understanding.
5. Divide the class into cooperative learning teams with four students in each. Give each team a pre-selected set of crayons and [black lines of four butterflies](#). Let the children color their own butterfly as they wish using the pre-selected colors.
6. Bring the students together for a discussion about habitats that were noticed in the book. Ask the children to then describe habitats they might have seen in their community. Hopefully, the children will comment on how dry a desert is and how moist and lush wetlands can be. During the discussion encourage discussion about how a butterfly's color and pattern can help its

environment protect it. Other questions might include: What does an animal need to survive? What is a shelter? How many different kinds of shelters can you think of? Ask the children where a butterfly lives and what they think its shelter might be or ask the child if they know that some animals live in the open on trees, plants, or on the ground. When the question surfaces on how an animal that lives outside in the open can be safe from being seen and eaten it is time to connect the question to the butterfly they each have made.

7. Data collection— point out each labeled environment in the room. Give each child a **Data Collection sheet**. Each student needs to then examine his or her butterfly and predict which habitat would be the safest for it. This will be recorded on the sheet. Since each habitat is labeled the children can copy the name onto their paper. As a group each prediction will be tested. The groups will rotate from habitat to habitat with their butterflies. Each insect will be taped onto the fabric and the group will decide if this habitat helps the butterfly hide or not. When they have decided which habitat camouflaged the butterfly the best the children will mark their sheet. The children then leave their butterfly on the habitat that it seems best suited. When this portion is complete the small group will look at their decisions and compare their choices. If the students have decided that a butterfly is better suited to a different habitat it can be moved.
8. Conclusions— the teams need to identify why they think their butterflies were best suited to certain environments. Children may identify color, shape, or wing pattern as the reason a butterfly can hide in a given habitat.
9. After the small groups talk about their completed data sheets, members from each team explain their ideas to the whole group. This takes some guiding if your children haven't done this before.
10. Ask the children to create a drawing of a camouflaged butterfly. These can be compiled into a class book and looked at again and again.
11. During this whole process a newspaper has been hanging in a different part of the room. Very carefully placed on the newspaper is a butterfly made of newspaper. Choose a portion with lots of type to create a butterfly that will blend right in. The children might notice this right away and they might not realize the camouflaged butterfly is there until the teacher points it out. Whenever the children notice it, take a moment to ask and answer questions that might be generated. The teacher might ask "Why couldn't we see this butterfly earlier?" and the children should be able to identify the pattern and color of the butterfly's wings as the reasons.

Extensions:

Curriculum Extensions/Adaptations/ Integration

- Two and three inch sections of colored chenille pipe cleaners used as caterpillars can be hidden in plain sight in your classroom. These 'caterpillars' could be used as the invitation to learn or as an extension to this activity. Ask the children to find as many as they can and chart the results. Determine which ones were the hardest to find. This could also be used as a forum to evaluate understanding.
- Consider working with a fourth grade buddy class as a follow up exercise. Have your kindergartners teach their fourth grade friends how to do this investigative activity. After the activity has been completed and the new conclusions drawn, have the buddy pairs create butterflies that will be camouflaged in those environments. This time it will be with the benefit of experience and new knowledge. This investigation fits neatly into kindergarten and fourth grade CORE Standards.
- Math- Create freely formed pieces of art that use the crayon resist technique. Be sure to stress the concept of symmetry as a type of pattern. After drawing with crayons, paint using watercolors, and cut the butterflies out. Integrate these into a math bulletin board.
- Language- An acrostic poem could be created with the word butterflies.

Family Connections

- A family butterfly garden is a wonderful way for insects, specifically butterflies, to be enticed to the backyard. Planning of the garden can begin in the cold weather months and planting can begin in the spring. The child will have experiences that will extend Kindergarten learning into the summer.
- If the weather is warm enough that the butterflies have begun showing up a Butterfly sighting log or chart could be kept.

Assessment Plan:

- Ask the children to create a drawing of a camouflaged butterfly. Look for evidence that the child is trying to hide the butterfly visually camouflaging it.
- Ask a series of questions such as, "What did you learn about butterflies and where they live?"

- Keep a portfolio for each child to document his or her growth and progress in acquiring inquiry skills and content knowledge.

**Bibliography:
Research Basis**

Stein, M., McNair, S., & Butcher, J. (2001). Drawing On Student Understanding. *Science And Children*, 38 (4), 21

Young children can often express their understanding and concept development more effectively through drawings than verbally or in written assignments. They are often more engaged in details of their understanding when they draw. Examining drawings, their emerging understandings become evident.

Hudson, P. & Hudson, S. (2001). Linking visual arts with science & technology in the primary classroom. *Australian Science Teachers Association*, 17 (4), 29.

Integration has obvious benefits for alleviating and addressing the overcrowded curriculum. Through visual arts, primary science and technology students can transfer and consolidate knowledge and synthesize new experiences. Students need to have a wide range of perceptual experiences relating to their environment.

Author:
[Utah LessonPlans](#)



Summary:

Students work together as a class to generate a science fair project. The students use the steps of the scientific method to ask a question, form a hypothesis, design a test, collect data, and draw conclusions. Their findings are presented to the class and placed on a science fair project board for the school science fair. The topic of this project is how penguins survive in the icy ocean.

Time Frame: 1 class period that runs 45 minutes

Main Curriculum Tie:

Science - Kindergarten

Standard 4 Objective 1

Investigate living things.

[Supplemental Materials](#) (pdf)

Materials:

- gallon Ziploc bags (2 per group)
- large bowl filled with ice water (one per group)
- one large container of shortening (one can will work for 4 or 5 groups of students)
- one thermometer per group
- several half sheets of paper per group
- one science fair presentation board
- headings made for the presentation board: what we want to learn, what we think will happen, how we did it, what we saw, what we learned

Background for Teachers:

How does a penguin stay warm in the Antarctic waters? Penguins are warm-blooded animals that need to keep their internal body temperature between 95 – 107 degrees Fahrenheit. Penguins have a fat layer called blubber that insulates them and keeps them warm in the ocean. The feathers on the penguin with the blubber keep it warm while on land. Penguins also stay in groups while on land so that they can block the wind and use each other's body heat to stay warm. We can test if this blubber layer keeps a penguin warm by using shortening.

Intended Learning Outcomes:

1. Framing questions. Designing investigations. Conducting investigations. Collecting data. Drawing conclusions.
2. Developing social interaction skills with peers. Sharing ideas with peers. Connecting ideas with reasons. Using multiple methods of communicating reasons/evidence.
3. Ideas are supported by reasons. There are limits to ideas in science. Differences in conclusions are best settled through additional observations and investigations. Communication of ideas in science is important for helping to check the reasons for ideas.

Instructional Procedures:

Pre-lab Discussion:

Show the students pictures of penguins and ask them how penguins stay warm in the ocean. Ask them how long they would stay warm in the freezing water. Discuss with the students what a science fair is and tell them that they will complete a science fair project today in the classroom.

Instructional Procedures:

Experiment: Complete the experiment first and then work on the project.

1. Have students place their hands in the ice bucket for 20 seconds. Some students will not be able to make the entire time. Discuss how that feels and how long they think they could survive in Antarctic waters.
2. Place a thermometer into the ice water mixture. Leave it for one minute and then read the temperature. Go over how to read a thermometer with the students. Place this temperature reading in a data table.
3. Have students place their hand in the inner bag of the blubber bag. Have them take turns putting the bag with their hand into the ice water. Discuss how this feels and how long they think they could survive in Antarctic waters if they had a layer of blubber around them.
4. Have students predict the temperature reading inside the blubber bag.
5. Place a thermometer into the inner bag of the blubber bag. Be sure the thermometer is covered with Crisco. Place it into the ice bucket. Leave it for one minute and then read and record the temperature.

Science Fair Display Board:

Assign each group a different section of the class science fair display board. Each group can decide what to write and then help the students take turns writing the different words on a half sheet of paper. Students will write up their section and then place it in the appropriate area on the display board. If you take pictures of the students working on the project you can put them on the board as well.

1. Why we did the project -- In a couple of sentences, write the purpose of the experiment. For example, we want to find out how penguins stay warm in the Antarctic.
2. What we think will happen -- We will do this as a group before we do the experiment. An example, we think that blubber will keep a penguin warm in the cold ocean. If they predict a different outcome then use their hypothesis.
3. How we did our project -- Simplify the experiment. Put it in number format of no more than 3 steps.
4. Title --make a title that is catchy and describes the experiment
5. What we saw -- Place each group's data table on the project board. Students can also draw some pictures at the same time to add to the board.
6. What we learned -- In a few sentences, explain whether our prediction was correct. Explain what that tells us about penguin's blubber.

Display Board Sections:

Left Panel	Center Panel	Right Panel
why we did the project	title	what we learned
what we think will happen	tables, pictures	
how we did our project	drawings	name of teacher

Bibliography:**Rio Tinto Hands-on Science Curriculum Team**

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- Ruth Li – Curriculum design, K-6 Science Educator at Indian Hills Elementary
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Author:

[Utah LessonPlans](#)



Summary:

Students will use their prediction, observation, and recording skills to learn about animal growth.

Time Frame: NA

Main Curriculum Tie:

Science - Kindergarten

Standard 4 Objective 1

Investigate living things.

[Supplemental Materials](#) (pdf)

Materials:

ONE PER CLASS:

- animal growth / sponge capsule
- container for animal growth capsule
- water
- various tools for nonstandard measurement (paper clips, crayons, etc.)

ONE PER STUDENT:

- "Animal Growth Journal" handout
- pencil
- crayons

Additional Resources

BECOMING BUTTERFLIES by Anne Rockwell
Instant Insects (capsules), Wal-Mart

Attachments

- [growth_journal.pdf](#)
Animal Growth Journal

Web Sites

- [InsectLore](#)
Habitat and Discovery Kit, 1-800-LIVE BUG

Background for Teachers:

Select books about animals in your environment. These books should include information about animal growth. The students should also have knowledge of how to use nonstandard measurement tools.

Intended Learning Outcomes:

Intended Learning Outcomes

5. Understand and use basic concepts and skills.
6. Communicate clearly in oral, artistic, written and nonverbal form.

Process Skills

Description, observation, prediction, data collection and interpretation

Instructional Procedures:

Invitation to Learn

Ask the students to recall information about different animals that they have seen. Share information about the growth of animals. Read and discuss your favorite books on how animals grow.

Instructional Procedures

1. Show the class the animal growth capsule. Have the class predict how long it will take the capsule to grow to its full size. Predict how big the “animal” will be at the end of the cycle.
2. Place the capsule in the water container and observe the capsule.
3. Have students record their observations in their Animal Growth Journal. They may include the starting day/time of the observation. A nonstandard measurement may also be taken during the initial observation.
4. Return to the water container an hour later. Observe and record changes in the Animal Growth Journal. Discuss the changes that are evident.
5. Observe the animal growth capsule after another hour. Observe and record observations in the Animal Growth Journal. Measure and note the changes that have happened.
6. Have a class discussion about what has happened during the various stages of observation. Ask the students if their predictions for the animal’s growth were accurate.

Extensions:

Family Connections

Each child should go home and invite their family to help them look around their neighborhood for animals in various stages of development in their environment. Bring your written descriptions back to class and discuss what was learned.

Assessment Plan:

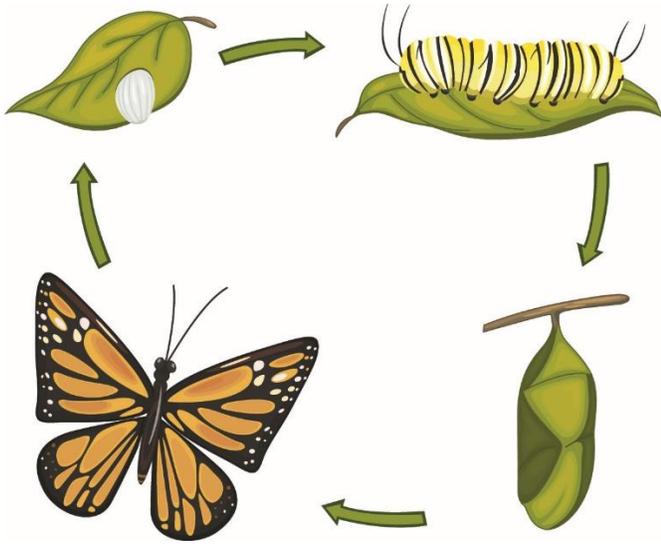
Give each child a copy of the animal growth assessment page. Each child may choose an animal of their choice and draw the changes that happen during the life cycle of the animal. Each child may share their findings with other members of the class.

Attachments

- [growth_chart.pdf](#)
Animal Growth Chart

Author:

[Utah LessonPlans](#)



Summary:

Students will complete an in depth study of an animal that lives near them.

Time Frame: NA

Main Curriculum Tie:

Science - Kindergarten

Standard 4 Objective 1

Investigate living things.

[Supplemental Materials](#) (pdf)

Materials:

ONE PER CLASS:

- 4-5 sheets of chart paper
- markers
- animal of teacher's choice
- books and other resources to obtain information about the given animal

ONE PER STUDENT:

- paper
- pencil and/or crayons
- clipboard

Additional Resources

ALL ABOUT FROGS by Jim Arnosky
AMAZING FROGS AND TOADS by Barry Clarke, Eyewitness Juniors
FROGS by Gail Gibbons
HOW TO HIDE, A MEADOW FROG by Ruth Heller
IT'S A FROG'S LIFE by Steve Parker

THE FROG ALPHABET BOOK by Jerry Pallotta
TALE OF A TADPOLE by Barbara Ann Porte
FROG'S EGGS by Alex Ramsay and Paul Humphrey
FROM TADPOLE TO FROG by Kathleen Weidner Zoehfeld

Background for Teachers:

The teacher will be responsible for identifying an animal that can easily be found and observed in the local area. The setting in which children observe or interact with the animal should be safe both for the child and the animal. Some creatures to consider are insects, worms, frogs, toads, lizards, turtles, rabbits, birds, and fish. The teacher should be prepared to help the children find books, web-sites, resource people, etc. so they can find information to answer questions generated by the class.

Intended Learning Outcomes:

Intended Learning Outcomes

1. Demonstrate a positive learning attitude.
5. Understand and use basic concepts and skills.
6. Communicate clearly in oral, artistic, written and nonverbal form.

Process Skills

Observation, description, data collection and interpretation, investigation, problem solving, form conclusions

Instructional Procedures:

Invitation to Learn

Create an anticipation guide to introduce the animal that will be studied by the class. An appropriate anticipation guide for kindergarten students would consist of three to five true or false questions written on a chart or overhead. The students listen and follow along as the teacher reads aloud the questions. After each question the class indicates whether the answer is true or false. This can be done by having the students show thumbs up for true or thumbs down for false. The teacher can write on the chart or overhead the response that the majority of the students indicate. The teacher then reads a short selection of text that answers each of the questions. After listening to the text, the teacher and students reread the questions and check to see if their answers are correct. Each question should be clearly answered from a portion of the text (see the example "Anticipation Guide" about frogs).

Instructional Procedures

Tell the students that they are going to begin an in depth study of an animal that lives near them. The study of frogs will be the example given here. However, these steps and strategies can be used to study any topic of the teacher or student's choice.

1. Give each student a clipboard, pencil, and paper. Take students to a place where they can carefully observe a frog. Students should record with drawings and words the interesting things they notice about the frog.
2. After making individual observations, ask the class to share their observations with the class. The teacher should record these findings on a large chart paper entitled "Our Observations About a Frog."
3. Ask the class, "Now that we have made some interesting observations about the frog, do you have any questions that you wonder about or that come to your mind?" Record the class questions on another chart entitled "Our Questions About a Frog." It is suggested that the class only record three to five questions that are especially interesting to them. This will make finding the answers to the given questions more manageable.
4. Tell the class, "These are some great questions! I can't wait to find out the answers to these questions. Do any of you have some ideas about how we could get answers to our questions?" The class will brainstorm a variety of ways to get answers to questions. The list should at least include different kinds of books, internet options, resource people, and possible places to visit.
5. The teacher should model for students and help them understand the different ways that questions can be answered. This is an example of modeling how to read and listen to find answers in books. A teacher could begin by saying, "I think we could do some reading so we can answer our questions. I'll read part of this book. Listen for information that might answer this question (identify a specific question for the question chart) and give me the thumbs up sign when you hear some information we should remember." After reading, allow the students to tell the answer they think they heard to a partner sitting near them. Record the answer the class agrees upon on a separate chart entitled, "Answers to Our Questions?" This chart should be placed by the question chart so that the students can clearly see the relationship between the question and the answer. This process of finding answers to questions is repeated over several days until all of the questions have been answered.
6. Throughout the animal research process, a separate chart containing content vocabulary words could be created. The chart may be entitled, "Words About Frogs." As the class comes across new vocabulary words in their reading the words could be

added to the chart. One or two students could draw a simple picture next to the word illustrating its meaning. This list does not need to be lengthy. Rather it should simply meet the immediate needs of the students.

7. After the class has found answers to their questions, the students may be asked to work independently or with a partner to draw a picture and write a simple sentence showing their understanding of one of the new facts they learned. These pages could be shared orally with the class and then compiled into a class book.

Attachments

- [anticipation_guide.pdf](#)

Extensions:

Family Connections

Each child should select a local animal of their choice to research at home with their family and create a book about the animal to share with the class (see the example parent letter and animal fact book format).

Attachments

- [animal_book.pdf](#)
Parent Letter and Animal Fact Book

Assessment Plan:

As an entire class, create a summary paragraph about what the class learned and what they would still like to know. The paragraph could be written on chart paper or on the overhead (see the example summary paragraph).

Author:

[Utah LessonPlans](#)

Summary:

Students will create an "Who Am I?"

Time Frame: NA

Main Curriculum Tie:

Science - Kindergarten

Standard 4 Objective 1

Investigate living things.

[Supplemental Materials](#) (pdf)

Materials:

- animal tracks stamps
- stamp pad
- 8x14" white paper (previously prepared by teacher—see background information)
- crayons
- picture books

Additional Resources

IN THE SNOW: WHO'S BEEN HERE? by Lindsay Barrett George

AROUND THE POND: WHO'S BEEN HERE? by Lindsay Barrett George

IN THE WOODS: WHO'S BEEN HERE? by Lindsay Barrett George

BIG TRACKS, LITTLE TRACKS: FOLLOWING ANIMAL PRINTS by Millicent E. Selsam

FOOTPRINTS IN THE SNOW by Cynthia Benjamin

FOOTPRINTS IN THE SAND by Cynthia Benjamin

Background for Teachers:

The teacher will become familiar with local animals and locate these animals in picture books and nonfiction books to share with students. Animals leave indications of their presence behind when they move from location to location. Some animals leave footprints while others leave feathers, droppings, scratches on trees, nuts, shells, etc. We can track the movement of the animal by looking at the evidence left and create a scenario of the situation by careful observation.

Be prepared to show the students several books listed in the additional resources section to introduce students to the concept that animals leave behind evidence of their presence in their environment. Notice in books, photos, and your own environment animal tracks and other traces left by animals.

The teacher will prepare for each student an 8x14" white paper folded over three inches from the long end.

Prior to the lesson the teacher will need to select which animal prints (stamps) will be used in order to focus the student discussion and to inform students of the choices available to them.



Attachments

- [example_page.pdf](#)
example of 8x14" page folded

Intended Learning Outcomes:

Intended Learning Outcomes

1. Demonstrate a positive learning attitude.
5. Understand and use basic concepts and skills.

Process Skills

Symbolization, observation, description, investigation

Instructional Procedures:

Invitation to Learn

Read the book ANIMAL TRACKS by Arthur Dorros and show the students how they can be a "nature detective" by looking at animal tracks and other evidences left by animals. Share the picture books and photos you have collected demonstrating pieces of evidence that animals have left. Let them know they are going to be creating a personal mural in which they will be able to leave clues for others to figure out their chosen animal.

Instructional Procedures

1. Have students choose an animal from the list provided by the teacher.
2. On the outside of the flap, have the students write the words "Who Am I?" Students may also create a pattern border around the flap. This may be a simple color pattern or related in some way to their animal.
3. On the rest of the paper, have students illustrate the habitat appropriate for their chosen animal. The habitat should include "clues" (source of water, food eaten by the animal, type of environment, etc.) for the observer to use to identify the hidden animal. For example, a student illustrating a bear would include mountains, bushes with berries, a pond with fish, a beehive in a tree, and trees.
4. The student will draw the chosen animal underneath the flap that says, "Who am I?" so that the animal is hidden from view when the flap is closed. The student may want to illustrate the animal in its "home" such as a bear in its den or a bird in its nest.
5. Under the animal, have the student write the animal's name.
6. Help students use a track stamp, starting at the opposite side of the page from where the animal is located, and proceed to stamp the footprint of the animal across the page until reaching the animal.

Extensions:

Family Connections

Students may look around their home and neighborhood for evidence of animals. Students may record tracks they find, as well as other items left behind by animals, through illustrations and labels or photographs. Students may complete and return the attached family connection paper and share their findings with the class.

Attachments

- [family_connection.pdf](#)
Animal Tracks paper

Assessment Plan:

After the students have completed their murals, allow each to share it with the class. Observe the student as he/she presents the mural. Check to make sure the mural includes a proper environment, as well as food and water sources for their animal. As classmates identify the student's hidden animal, ask them what clues they used to figure out what the hidden animal was. Students should be looking at the type of footprint as well as the environmental clues in the illustration.

Author:

Utah LessonPlans



Summary:

Students will bring a stuff animal to school and create a class graph and individual pet books.

Time Frame: NA

Main Curriculum Tie:

Science - Kindergarten

Standard 4 Objective 1

Investigate living things.

[Supplemental Materials](#) (pdf)

Materials:

ONE PER CLASS:

- THE PERFECT PET, by Courtney Baker
- FRANKLIN WANTS A PET, by Paulette Bourgeois and Brenda Clark

ONE PER STUDENT:

- [Our Classroom Stuffed Animals graph](#) (pdf)
- Crayons
- [My Pet Book](#) (pdf)
- [Animal Fact Wheel](#) (pdf)
- Goldfish crackers
- [Subtraction handout](#) (pdf)

Additional Resources

- THE PERFECT PET, by Courtney Baker; ISBN 0439471117
- FRANKLIN WANTS A PET, by Paulette Bourgeois and Brenda Clark; ISBN 0613002369
- GOOD DOG CARL, by Alexandra Day; ISBN 0-590-72629-3
- THE PET THAT I WANT, by Mary Packard; ISBN 0-590-48512-1
- PET SHOW, by Ezra Jack Keats; ISBN 0-02-179071-X

Attachments

- [subtraction.pdf](#)
- [animal_fact_wheels.pdf](#)
- [pet_book.pdf](#)
- [stuffed.pdf](#)
Our Classroom Stuffed Animals

Background for Teachers:

There are different kinds of animals. Familiar animal categories are birds, insects, mammals, reptiles, and fish. Animals are all around us. Some animals are tame, others are wild. Tame animals are animals that live with or around people. When animals live with people they are called pets. People need to take care of pets by providing food and shelter.

Intended Learning Outcomes:

1. Demonstrate a positive learning attitude.
5. Understand and use basic concepts and skills.
6. Communicate clearly in oral, artistic, written, and nonverbal form.

Instructional Procedures:

Invitation to Learn

Students should be asked ahead of time to bring their favorite stuffed animal. Ask students what they think would be the perfect pet. Read THE PERFECT PET by Courtney Baker.

Instructional Procedures

1. Tell the students that they are going to make a graph of all the stuffed pet animals they brought today.
2. Give each student a copy of OUR CLASSROOM STUFFED ANIMALS graph.
3. Read the name of the first animal. Have all students who brought that animal bring their pet up to the front. Have the class count and graph the number of pets.
4. Continue the same way with all the animals listed. If an animal is brought that is not listed, have the students write the animal name in the blank squares and graph.
5. Discuss the findings of the graph. Determine which animal there was the most of, the least, and the same.
6. Discuss which pet animal could be a real pet and which could not. Talk about tame and wild animals.
7. Pass out the writing booklet entitled MY PET BOOK to each student. Have students read the first page together and fill in the sentence. Have each student illustrate what his/her pet looks like. Have students finish the booklet independently.

Extensions:

Language Arts Research Activity

1. Explain to each student that s/he is going to have a chance to teach the class an interesting fact about a pet.
2. Demonstrate how each student will present his/her information to the class by showing the ANIMAL FACT WHEEL. Each student will choose an animal and learn what they eat, what the baby animal is called, how the animal moves, and one additional interesting fact.
3. Discuss where students can look to find this information.
4. Assign each student a day and time to present his/her project.

Math Activity

1. Read the book FRANKLIN WANTS A PET.
2. Discuss what kind of care different pets need.
3. Tell students that today they are going to subtract pets. Distribute SUBTRACTION handout and a small cup of goldfish crackers to each student. Have each student place the amount of goldfish shown on the first problem. Explain that subtraction also means “take away” or “minus” and is represented by subtraction sign (-). Ask the class how we could subtract some goldfish (by eating them). Work through each problem together as a class.
4. Have students sort pets in a variety of ways (e.g., size, number of legs, tame or wild, etc.).

Family Connections

- Have students make a graph of what each family member (or friends) would choose for their favorite pet.
- Have students make books at home with some of the listed titles:
 1. MY FAVORITE MAKE BELIEVE PET
 2. THINGS I LIKE TO DO WITH MY PET
 3. PET TRICKS
 4. PLACES WE GO TOGETHER

Assessment Plan:

- The assessment for these activities comes through the involvement of the activity. Can the student graph the pets that are brought to class? Can s/he read the graph to answer questions? Can the student complete the subtraction problems without teacher intervention? As the student presents his/her ANIMAL FACT WHEEL, make sure the wheel is complete. Can s/he share a fact about the animal?

Author:

[Utah LessonPlans](#)



Summary:

This activity focuses on germs and learning how to prevent the spread of germs.

Time Frame: NA

Main Curriculum Tie:

Kindergarten - Content

Standard 1 Objective 1

Describe and practice responsible behaviors for health and safety.

Standard 4 Objective 1

Investigate living things.

Materials:

- Two potatoes cut into chunky slices and stored in salt water
- Six Ziploc sandwich bags
- Soap
- Poster board or paper for signs
- Wall space to display experiment at eye level

Additional Resources

BOOKS

- LITTLE RABBIT'S LOOSE TOOTH, by Lucy Bate; ISBN 0517551225
- GERMS MAKE ME SICK!, by Melvin Berger; ISBN 0064450988

Web Sites

- [Healthy Kids Means Happy Classrooms](#)

Background for Teachers:

Germs can be found everywhere; they are just so tiny that we can't see them. There are good germs and bad ones. Two kinds of germs that will make us sick are called bacteria and viruses. We can get these germs from other people who cough or sneeze and don't cover their mouth. We can also get germs from not washing our hands long enough with soap.

Intended Learning Outcomes:

4. Develop physical skills and personal hygiene.
6. Communicate clearly in oral, artistic, written, and nonverbal form.

Instructional Procedures:

Invitation to Learn

Have soap, Ziploc bags, and potatoes on the table.

Instructional Procedures

Talk about germs. Talk about where they are found and how they are spread. Discuss how you can help prevent germs from spreading. Talk about why it is important to use soap.

1. Students will be divided into three groups.
2. Each group will handle two pieces of peeled potato, then place them into a separate sealed Ziploc bag.
GROUP 1—Will not wash their hands
GROUP 2—Will wash with cold water
GROUP 3—Will wash with soap and warm water
3. The bags will then be placed on a wall at an eye level for the students to watch them for the next week.
4. The growth will be charted on a picture graph next to the Ziploc bags.
5. Students will graph (on a separate graph) their prediction of what might happen.
6. At the end of this experiment, your results should be quite different. The potatoes that were touched by the unwashed hands should have a greater bacterial growth than those touched by hands washed with soap.

Extensions:

Germs

Talk about germs in your mouth

- Apple experiment
 1. Take two apples.
 2. Poke a nail hole in the side of one of the apples.
 3. Place each apple in a separate paper bag for a week.
 4. Take both apples out and look at them before cutting them in half, the one through the nail hole.
 5. Talk about what happened to the apple. Compare it to our teeth and when we get cavities.
- Egg experiment #1
 1. Use a hard boiled egg and compare the shell to the enamel on our teeth. The enamel protects the tooth just like the shell protects the egg.
 2. Place the egg in vinegar for a few minutes.
 3. Take the egg out and poke an indentation into the side of the shell. Compare it to a cavity.
 4. Talk about how it is important to clean our teeth.

- Egg experiment #2
 1. Take two boiled eggs.
 2. Place one in cola overnight and the other in vinegar. The cola will stain the shell and the vinegar will dissolve the shell. Compare your finding to what might happen if you don't brush and floss your teeth.
- Demonstrate how to brush your teeth.
- Paint with a toothbrush.
- Talk about sneezing and coughing.
- Make a sneezing/coughing face.
 1. Have each student make their face on a oval piece of paper.
 2. Trace both hands on a paper and cut it out.
 3. Last glue on the hands at the bottom of the face and a tissue under one of the hands.
- Play Find Your Potato game.
 1. Give each child a potato right out of the bag.
 2. Let each child study their potato.
 3. Place all of the potatoes in a big bowl.
 4. Have each child try and find their potato.
 5. Repeat activity, this time have a neighbor find your potato.
 6. Talk about how everyone is different.

Family Connections

- Draw fun pictures of washing our hands to hang up around the house.
- Have students explain to a family member the proper way to wash hands.

Assessment Plan:

- Watch how the students graph the growth on the potatoes each day.
- Observe students to see if they are doing a better job at washing their hands after the lesson.
- Observe if the students are more health conscious when they have a runny nose or are sneezing around others.

Author:
Utah LessonPlans

**Summary:**

This is a great lab to do before you attend a zoo field trip. Students sort pictures or small plastic animals into groups. Students classify animals as to where they live; whether they have scales, feathers, or hair; and whether they have hands, wings, flippers, or fins.

Time Frame: 1 class period that runs 30 minutes

Main Curriculum Tie:

Science - Kindergarten

Standard 4 Objective 2

Describe the parts of living things.

[Supplemental Materials](#) (pdf)

Materials:

This lab can be completed as stations in which one set of each supply is needed or you can make multiple sets of all three activities.

1. Animal sorting pages
2. For activity 1: If you have a supply of small plastic animals they can be used here. If not, you can find pictures. Find at least 5 animals for each environment.
3. For activity 2: Pictures work best because the students can observe the animal's outer covering more easily. Find at least 5 pictures for each outer covering. A great source of pictures is old copies of Ranger Rick, Backyard Barn, or National Geographic.
4. For activity 3: Pictures again work best. Find at least 4 pictures for each type of appendage.

Attachments

- [whatamlassessment.pdf](#)
What Am I Assessment
- [animalsortingpages.pdf](#)
Animal Sorting Pages

Background for Teachers:

Classification is an important science skill. In kindergarten, students will begin to learn to classify animals by sorting them into groups. As students sort, they observe similarities and differences in a variety of animals.

Intended Learning Outcomes:

1. Framing questions. Designing investigations. Conducting investigations. Drawing conclusions.
2. Developing social interaction skills with peers. Sharing ideas with pers. Connecting ideas with reasons.
3. Ideas are supported by reasons. Communication of ideas in science is important for helping to check the reasons for ideas.

Instructional Procedures:

Pre-activity discussion: Show students the sorting pages. Have students give examples of animals with hair/fur, scales, and feathers. Discuss different types of animal appendages and ask for examples of animals with hands, fins, flippers, and wings. Finally, show students the three environments and ask for animals that would live in each of them.

Instructional procedure:

1. Animals that live on land, in the water, or both. Students will use an assortment of small plastic animals and place them on their proper environment page. Have students take turns and decide where they think the animal lives; then, as a group, decide if the animal was placed appropriately.
2. Animals that have scales, feathers or hair/fur. Students will use an assortment of pictures of animals and place them on either a scale, feather, or fur page. Have students take turns and decide what type of covering they think the animal pictured has; then, as a group, decide if the picture was placed appropriately.
3. Animals that have hands, wings, flippers, or fins. Students will use an assortment of pictures of animals and place them on either a hand, wing, flipper, or fin page. Have students take turns and decide what type of appendage they think the animal pictured has; then, as a group, decide if the picture was placed appropriately.

Bibliography:**Rio Tinto Hands-on Science Curriculum Team**

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- Tim Rausch – Website development, Library Media at Beacon Heights Elementary

Author:

[Utah LessonPlans](#)



Summary:

Categorize animal pictures by their coverings.

Time Frame: 1 class period that runs 15 minutes

Main Curriculum Tie:

Science - Kindergarten

Standard 4 Objective 2

Describe the parts of living things.

[Supplemental Materials](#) (pdf)

Materials:

For the Teacher:

- Animals or skin samples including: reptile and/or fish scales, fur, hair, feathers, frog/ amphibian skin.
- Pictures of animals
- Bulletin board divided into headings: Fur, Feathers, Skin, Hair, Scales, Shells.
- Book: *Animals Should Definitely Not Wear Clothing*

Background for Teachers:

Scales cover the bodies of most snakes, lizards, and bony fish and generally vary in size, shape, and arrangement. The age of a fish can be determined by counting the rings on the scales. The scales typically overlap and protect the skin underneath. Other animals, like the pangolin (a mammal of the anteater variety) are also covered with scales. The scaly tails of beavers, muskrats, and many rats and mice have hairs between the scales.

Feathers keep birds warm, help them to fly, and even act as a raincoat. Birds have three kinds of feathers. Down feathers are the smallest and the first to grow. They have a central shaft with thinner, fluffy strands called barbs on either side. Many birds have down over much of their bodies to keep them warm. Flight feathers are made up of a long, hollow shaft. The barbs on either side are held together by hundreds of tiny hooks. Semiplumes, or body feathers, are smaller and fluffier than flight feathers. Semiplumes are usually found under flight feathers.

Fur, hair, or bristles cover most mammals. Some mammals, such as elephants, have very little hair. Our ancestors had thick hair all over their bodies. Today, human beings have thick hair on parts of their bodies.

Shells are found on land and ocean animals. Mollusks are one type of invertebrate we commonly associate with shells, such as snails, clams, and oysters. Turtles and tortoises are the only reptiles with shells.

Use live animals whenever possible so students can observe behaviors as well as physical characteristics. If you are unable to obtain live animals, museums or universities may have samples of animal skins available on loan for classroom use. Be sure students wash hands thoroughly after handling animals or animal coverings. Be sensitive to potential ALLERGIES that students may have to any animals or animal products brought into the classroom.

Student Prior Knowledge:

Key vocabulary for this lesson includes: fur, feathers, scales, skin, shell.

Intended Learning Outcomes:

- Apply prior knowledge and processes to construct new knowledge.
- Observe, sort and classify objects
- Make and interpret representations and graphs.
- Make connections from content areas to application in real life.
- Develop vocabulary.

Instructional Procedures:

Step 1. Show photographs of animals. Ask students to give descriptive words as to how they think the animal's covering would feel if they could actually touch it.

Step 2. When students have developed their descriptive vocabulary, ask a child to attempt to describe a picture that he alone can see. Ask the class to try to identify the animal.

Step 3. Invite students to explore a science center display of animal skins, furs, shells, feathers, and magnifiers. Encourage students to discuss animals they have felt. Invite students to bring in animal coverings to share with the class. Pictures of animals can be matched to the actual animal covering. In small groups, show animals or animal skins and give students time to use tools, such as a hand lens or microscope, to examine the structure of the different body coverings. Encourage students to discuss the function of the specialized kinds of coverings and why they are suited to the particular animal. Compare and contrast feathers and scales, for example. Why would animals need different body coverings?

Step 4. As the class is coming or going, possibly to or from recess or on a walk to observe animals, discuss the purpose of the protective clothing students wear, such as shoes, sweaters, coats, hats, or raincoats. Ask the students why animals don't wear clothing. (An excellent book is *Animals Should Definitely Not Wear Clothing* by Judi Barrett.) Discuss the different kinds of animal coverings and how each covering protects the animal or keeps it warm.

Step 5. Categorize pictures of animals by their covering (e.g., fur, feathers, shells, skin, or scales). Tape the pictures into categories on a piece of chart paper with labels and, if possible, post on a bulletin board for reference.

Step 6. Give each student a picture of a different animal. Show animal pictures one at a time and ask students to categorize the pictures by placing them on the bulletin board under the appropriate heading. If students are unfamiliar with an animal and unable to determine the body covering from the picture, encourage and allow time for students to do research to find out enough about the animal to place it on the graph.

Strategies for Diverse Learners:

Many students have limited experience with animals. A photograph may give the impression that an animal feels soft when in fact the covering may be rough. Invite students to share experiences of actually feeling an animal covering. A field trip to a pet store, petting zoo, or visiting pets can build essential background knowledge and vocabulary.

Extensions:

Glue actual or simulated body covering samples on or next to pictures or drawings of animals (e.g., buttons for shells, craft feathers, fake fur, sequins for scales).

Students may make a representation of an animal by drawing the animal and gluing appropriate collage materials for the animal covering.

Collect feathers and attach them in a notebook by using staples or glue. Look at all the different types of feathers. Can you identify which bird they belong to? What type of feather is this sample? Where would it be located on the bird? How would it be used? Remember to wash hands after handling feathers.

Literature Resources: Barrett, J. (1970). *Animals Should Definitely Not Wear Clothing* NY: Scholastic Inc. ISBN: 0-590-44739-4.

Assessment Plan:

Ongoing assessment enables teachers to note each student's ability to describe textures of animal coverings, identify animal names, and categorize animals by covering. Step 6 is particularly useful as assessment.

Teachers will also make note of the student's ability to identify sounds of words. This skill enables students who are not yet reading to sort accurately into written categories. For example the words fur and feathers both begin with "f". Shells, skin and scales all begin with "s". Students who do not know letter sounds may demonstrate their ability to sort orally.

Bibliography:

Barrett, J. (1970). *Animals Should Definitely Not Wear Clothing* NY: Scholastic Inc. ISBN: 0-590-44739-4.

Author:

[Julie Cook](#)

[Elasha Morgan](#)

[Teresa Hislop](#)

**Summary:**

Students will explore animal movements. They will compare movements and relate them to where animals live and how they obtain food.

Time Frame: 1 class period that runs 15 minutes

Main Curriculum Tie:

Science - Kindergarten

Standard 4 Objective 2

Describe the parts of living things.

[Supplemental Materials](#) (pdf)

Materials:

- Pictures or drawings of animals (include animals that move in a variety of ways)
- Animal cards (see attachment below)
- Animal movements worksheet (see attachment below)

Background for Teachers:

Animal movements are usually based on where they live (land, water, or both), how they obtain food, reproduce, and how they protect themselves. Some animals travel very long distances to find warmth and food, or to give birth to their young. Some of the fastest moving mammals in the world live in the grasslands, where there are large open spaces for running. The cheetah chases its prey at speeds of up to 70 miles an hour. Zebras, antelopes, and ostriches can run fast to escape from their predators.

Students will enjoy opportunities to watch animals in motion through videos, films, or laser disk technology. Kinesthetic learners will remember animal characteristics by linking new information with the opportunity to move like the animals. Encourage free play and imagination as students imitate animal movements.

Student Prior Knowledge:

Names of animals

Names of movement words (e.g. run, hop, jump, fly, swim, crawl)

Intended Learning Outcomes:

- Function positively as a member of a class.
- Develop knowledge that enhances participation in physical activities.
- Observe, sort, and classify objects.
- Use physical activity for self-expression.

Instructional Procedures:

Step 1. Show photographs of a variety of animals. Explain that each animal moves in its own unique way.

Step 2. Tell students to look at the pictures of animals and think of other animals in their own minds. Ask:

- Which animals move slowly?
- Which animals swim?
- Which animals crawl?
- Which animals fly?
- Which animals climb?
- Which animals run fast?
- Which animals hop?

Write a list for each category of student responses.

Step 3. Ask "Which animals move in more than one way?"

Step 4. Discuss ways people can move. Ask students to describe how they got to school today. Are there other ways people move? List all the words students can name that describe how people move from place to place without the aid of a machine (car, bus, bike, etc.). Write the list horizontally across the top of the board or chart with room under each category. Words might include: walk, run, skip, hop, jog, shuffle, swim, crawl, climb.

Step 5. Show students one picture at a time and discuss how each animal would move. Are there ways animals move that people cannot (without help, like fly) that could be added to classifications? Have students demonstrate what that animal movement might look like and then classify the animal pictures on the graph according to those that hop, run, fly, climb, crawl, swim, slither, etc., or move in more than one way.

Step 6. Divide students into two teams. Line up on two sides of a large area, such as a gymnasium. Show one team an animal picture. Instruct one team to walk toward the other team and, on a given signal, imitate the movement of their animal. When the other team guesses the animal, they chase the first team back to their line (using the animal movement). Those "captured" return with the other team.

Step 7. Individually or in small groups, give students a copy of the Animal Movements worksheet (see attachment below) and a set of Animal Cards (see attachment below). Read categories and instruct students to arrange animal pictures in the correct categories.

Attachments

- [Animal_Movements.pdf](#)
Sorting sheet for animal cards
- [Animal_Cards.pdf](#)
Card size animal images

Strategies for Diverse Learners:

Learn the names of some of the animals in the language of ESL students in the classroom. Labels for animal names and movements could be posted in each language.

Extensions:

Play animal charades with students seated in a large circle. One student in the center of the circle imitates the way an animal moves without telling the students which animal he is pretending to be. If students are unable to guess, additional clues could be given, such as the sound the animal makes, what it eats, its color or body covering. The student who guesses trades places with the student in the center.

A variation of the game "Duck, Duck, Goose!" is "Duck, Duck, ? ? ?" Students sit in a circle while the one who is "it" walks around the circle saying "duck" until he chooses a responder by naming another animal, such as "rabbit." The responder, who must then hop like a rabbit, chases the leader around the circle and back to the responder's seat. The responder becomes the new leader and chooses another responder and a different animal to imitate.

Examine the legs and feet of various animals. How do the animals' legs and feet help them move? When animals and people move, they often make footprints. Let the students make footprints using the bottoms of their sneakers. There are several ways footprints can be created.

- Take the sneaker off and use paper and a crayon to do a rubbing.
- Provide a tub with moist sand for students to make tracks of their own shoes.
- Make prints of hands and feet using tempera paint.

Literature Resources:

- *Pretend You're A Cat* by J Maarzollo. Each rhyming verse invites the children to pretend they are different animals. Each line of the verse gives another action of the animal and ends with "What else can you do like a _____?"
- *Jump or Jiggle* by Evelyn Beyer. "Frogs jump, Caterpillars hump, Worms wiggle, Bugs jiggle, Rabbits hop, Horses clop, Snakes slide, Sea gulls glide, Mice creep, Deer leap, Puppies bounce, Kittens pounce, Lions stalk-- But-- I walk!"

Assessment Plan:

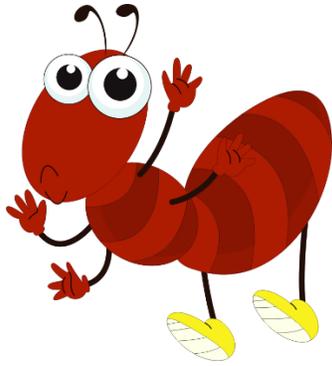
As part of an ongoing assessment, note each student's ability to name animals, list animal movements, and sort animals by movement. Step 7 is an excellent assessment.

Bibliography:

Pretend You're A Cat by J Maarzollo. *Jump or Jiggle* by Evelyn Beyer

Author:

Julie Cook
Elasha Morgan
Teresa Hislop

**Summary:**

Students will read and observe ants to discover how ants are the same and different than people.

Time Frame: NA

Main Curriculum Tie:

Science - Kindergarten

Standard 4 Objective 2

Describe the parts of living things.

[Supplemental Materials](#) (pdf)

Materials:

ONE PER CLASS:

- 3' x 5' butcher paper mural with ant hill, tunnels, rooms, grass and sky (see illustration)
- *Ant Cities*, by Arthur Dorros

ONE PER STUDENT:

- 3" x 3" white construction paper
- Crayons
- Scissors
- Glue stick
- [Ant City handout](#) (pdf)
- Plastic ants
- [Who Can Find the Ant Hill? handout](#) (pdf)
- Ant stamp

Additional Resources**BOOKS**

- ANT CITIES, by Arthur Dorros; ISBN 0064450741
- WHAT IS AN INSECT?, by Susan Canizares and Mary Reid; ISBN 0590397907
- BACKYARD DETECTIVE, by Nic Bishop; ISBN 0-439-51839-3
- THE WORLD OF ANTS, by Melvin Berger; ISBN 1-56784-008-6

ADDITIONAL MEDIA

- Classroom Ant Farm (Lakeshore Learning Materials, <http://lakeshorelearning.com>); Item BR763
- Ants (Life Studies, <http://www.antsalive.com>, 877-864-2207 or life@infowest.com)

Attachments

- [anthill.pdf](#)
Who Can Find the Anthill?
- [ant_city.pdf](#)

Background for Teachers:

Our backyards are full of animals. Insects are everywhere and come in many sizes, shapes, and colors. They eat, have homes, and have specific characteristics. Ants are insects. Ants have three body parts: the head, thorax, and abdomen. Ants are like people in many ways. Have several books about ants available.

Intended Learning Outcomes:

1. Demonstrate a positive learning attitude.
5. Understand and use basic concepts and skills.
6. Communicate clearly in oral, artistic, written, and nonverbal form.

Instructional Procedures:

Invitation to Learn

To create interest in learning about ants, the teacher guides the class in a discussion about how ants are different and the same as people. These ideas should be listed on a chart divided in half with the headings "How We Are the Same" and "How We Are Different." After students have given initial observations, additional questions can be asked.

1. Do ants have homes similar to ours?
2. Do ants take care of their young?
3. Do ants have jobs?
4. Do ants have babies?
5. How do ants get their food?
6. Are ants strong?

Instructional Procedures

1. Read ANT CITIES by Arthur Dorros.
2. Have students add ideas to the chart on how ants are the same and different than people.
3. Model the three parts of an ant.
4. Make a class mural of an ant city. Prepare the background for the mural using butcher paper. It should include an underground view of the different rooms, tunnels, ant hill, top grass, and sky.
5. Give each student a 3" x 3" piece of white construction paper. Students will draw their own ant, including the three body parts, with crayons. Have each student cut out his/her ant and place it anywhere that is appropriate on the mural.
6. Have the class work together to label each room and review its uses.
7. Start a classroom ant farm. See ADDITIONAL RESOURCES for ordering information.

Extensions:

Additional Math Activities

1. Pass out the ANT CITY handout. Each room has a number in it. Have students count out the correct number of plastic ants for each room. Switch with a partner to check each other's papers.

2. Have students play WHO CAN FIND THE ANTHILL. Each student has his/her own handout. Place one plastic ant on each numbered starting spot. Each student rolls a die. Whichever ant is on the corresponding number is moved one stepping stone toward the anthill. Game continues in this manner until an ant reaches the anthill.
3. Use plastic ants for different addition or subtraction activities.

Additional Language Arts Activities

Make a class book entitled, AN ANT CAN.

1. Brainstorm with the class all the different activities ants do. List these on the board.
2. Have each student chose one idea. Give each student a piece of construction paper. Have students use an ant stamp to illustrate a picture.
3. Label the page: An ant can _____.
Activities:
march build carry dig cut

climb eat groom take out trash

fight sleep babysit cut leaves

help others listen milk aphids
4. Create a cover and bind all the pages together.

Small Motor Activities

1. Use Model Magic to sculpt an ant. Remember to have three body parts.
2. Use markers to paint it.

Family Connections

- Invite students to begin to look for different insects that may be in their backyard. Have them bring them to school in appropriate containers.
- Have students practice writing words that use the “an” family (e.g., fan, can, man, etc.).

Assessment Plan:

As students engage in each activity observe their understanding of how ants live. Math activities assess counting, one-to-one correspondence, and number recognition. Writing skills and beginning sounds can be assessed as students make and read the class book.

Author:

[Utah LessonPlans](#)



Summary:

Students will learn the characteristics of an insect and use their newly discovered knowledge to invent their own insect.

Time Frame: NA

Main Curriculum Tie:

Science - Kindergarten

Standard 4 Objective 2

Describe the parts of living things.

[Supplemental Materials](#) (pdf)

Materials:

- [My Bug Hunt](#) (2 per child)
- Pencils
- Magnifying glasses
- Bug collection/viewing containers
- Large chart paper
- Insect tweezers
- Laps boards or clipboards
- Drawing paper
- WHAT DO INSECTS DO?, by Susan Canizares and Pamela Chanko
- WHAT IS AN INSECT?, by Susan Canizares and Mary Reid
- INSECT SONG, by Susan Canizares and Mary Reid
- Colored butcher paper
- Found objects- (bolts, washers, chenille pipe cleaners, ornament hangers, paperclips, fabric, paper, googly eyes, and beads)

Additional Resources

Books

- *Insects: A Guide to Familiar American Insects*, by Herbert S. Zim and Clarence Cottam;
- *What Do Insects Do?*, by Susan Canizares and Pamela Chanko; ISBN 0-590-3979-X
- *Science Tools*, by Susan Canizares and Betsey Chessen; ISBN 0-439-04603-3
- *What Is An Insect?*, by Susan Canizares and Mary Reid; ISBN 0-590-39790-7
- *Where Do Insects Live?*, by Susan Canizares and Mary Reid; ISBN 0-590-39793-1
- *Bug Dictionary*, by Jill Bailey; ISBN 0-439-57296-7
- *A Pill Bug's Life*, by John Himmelman; ISBN 0-516-26798-1
- *Big Bugs*, by Seymour Simon (this is a Scholastic book)
- *Rookie Read-About Science: It's a Good Thing There Are Insects*, by Allan Fowler; Scholastic Item # NTS411343

CDs

- *Kiss Your Brain*, by Dr. Jean Feldman (drjean.org)

Additional Media

- How Many Bugs In A Box, software on CD-ROM from Scholastic.com; Item # NTS356402

Attachments

- [bug_hunt.pdf](#)

Web Sites

- [Pest World for Kids](#)
- [Bugs Caught in the Web](#)
- [Virtual Insects](#)
- [eNature: America's Wildlife Resource](#)
- [Dr. Jean: Songs and Activities for Young Children](#)

Background for Teachers:

Animals include many different kinds of creatures including insects. Insects are invertebrates, which lack backbones. Ninety-five percent of all animals are invertebrates. Some, like worms, have soft bodies with no bones at all. Others, like snails, have soft bodies, but carry a hard shell for protection. Soft-bodied invertebrates that live in water or on land are grouped as mollusks. Those invertebrates that have tough coatings on the outside of their bodies (exoskeletons), jointed legs, and a segmented body are called arthropods. Insects, spiders (arachnids), centipedes/millipedes, and sow 'bugs', shrimp, lobster, and crabs (crustaceans) are all arthropods. There are over 900,000 species of insects, which makes them the biggest group of arthropods. Insects have distinctive features, which include: three body parts (head, thorax, and abdomen), eyes, mouth, antennae, six legs, and most of the adults have wings. The young do not look like the parents.

Intended Learning Outcomes:

6. Communicate clearly in oral, artistic, written, and nonverbal form.

- a?
- b?

Instructional Procedures: Invitation to Learn

How many of you have ever played with sow bugs (also called pill bugs, or roly-polies)? Have you ever kept one for a pet or had races with them? Have you ever caught a butterfly or trapped a spider in a jar? Do you know which ones of those are insects?

Instructional Procedures

1. Once the invitation to learn has been extended ask the children to share what they already know about insects. Record this information on a KWHL (Know, Want to know, How, and what was Learned) chart. Keep this chart available for the children to see and refer to throughout the activity.
2. After letting the children know they will be going on a bug hunt, explain that first they need to learn how to use the tools that are needed. Demonstrate the correct way to use a magnifying glass and how to use the insect tweezers. Once the children have practiced using both in class, collect the equipment to be redistributed outside. Explain to the children that they will not be collecting insects to keep; they will be looking for them and recording what they look like.
3. Provide each child with a lapboard or clipboard and a pencil. Time should be taken to show the children how to walk with these materials held safely. If the location you have chosen is far enough away, consider other options for getting these materials to the site. If you have a field reference guide include that with your supplies.
4. At the site pass out the **MY BUG HUNT handout** and other supplies. Remind the children that as they look for bugs they should not touch any of them. They should look at and then draw all of the bugs they find. Ask the children to include all the details that are noticed. Encourage the children to draw any items they think are important. Even though snails, worms, pill bugs, and spiders might be drawn, don't correct the children at this time. Hand out the materials and let the children look. At first it will be hard to see any bugs. Encourage the children to look closely and use their tweezers to turn over leaves, small rocks, and pieces of bark.
5. Teacher suggestions will encourage some children to look in places where they might find insects. Point out insects that are noticed by the teacher or parent helpers.
6. When 10-15 minutes have passed have the children regroup and turn in their supplies.
7. After returning to the classroom, ask the children how many different kinds of insects they found. At this point ask them how you can tell if everything they found was an insect. Some children will name the type of insect and other children will simply refer to the size or a specific characteristic of the insect.
8. As the children name characteristics that they noticed, create a mind map and a list as these questions are answered. Does an insect have a head? What does it look like? As the children name a feature of an insect draw that shape in an exaggerated way on chart paper or a white board. Does it have a body? Does it have legs? How many legs does it have? Once all of the key features are named and drawn, add a large circle a different color around your insect so it becomes the center of an idea web.
9. Read the book **WHAT DO INSECTS DO?** by Susan Canizares and Pamela Chanko. Now record the responses the children give when you ask them to tell you what else they know about insects and what they do. Examples could include: they eat leaves, some have cocoons, some can sting you, etc.
10. Ask the children about other things they found that were not insects, but were interesting.
11. Hang up the children's drawings so everyone can see them before you read the next day.

Day two

12. Read the book **WHAT IS AN INSECT** by Susan Canizares and Mary Reid (or other similar book) with the children. After reading refer to the KWHL chart and add details that the children have noticed from their drawings and the story.
13. Go on a second bug hunt. This second time, ask the children to check how many legs their insects have. If there are wings or long legs these details should be drawn. This time the spiders, snails, and pill bugs should not be drawn since none of those are insects.
14. After this second bug hunt ask the children to use their drawings to help them create a large drawing of the most interesting insect they found. Be sure to have a range of drawing supplies available. Have the children cut these drawings out and put them into the bulletin board that has stylized grass and plants on it. The idea is that the insects are partially hidden. Give the mural a cute title like "Look what we found on our bug hunt!"
15. Before returning to the KWHL chart teach the children Dr. Jean's Insect song.
16. Assess the child's newly discovered knowledge of insects by asking each to invent their own insect. These can be done with paper or with found objects to create a sculpture. A large bolt, chenille pipe cleaners, paper, paperclips, beads, and fabric all can be used to create great insect sculptures.
17. In small groups create a large chart on lined chart paper with each child's response to the prompt: Insects have _____ (Insects can _____). Or Insects cannot _____ (Insects do not _____).
18. Each child will then illustrate a page or two for the double flip book the class will assemble. The chart will be cut up into strips with each child's sentence (from #17 above) given to use as a reference when adding his or her own copy to artwork. Once assembled this book can be read to the whole class. The encouragement of humor on the second sentence will make this book a class favorite.

Extensions:

Curriculum Extensions/Adaptations/ Integration

- Some advanced learners may choose to learn about specific insects. The Internet is replete with insect sites for children of different ages. Some advanced learners may choose to share an insect collection or ant farms. A story about a day in the life of an insect would give the reading and writing child a chance to stretch. The advanced learner could also use a field guide taken out on the bug hunt.
- Small viewing jars with insects in them can be shared with children with limited mobility. Deaf students will need interpreters that can expand their language to include relevant vocabulary.
- Math- Totals can be figured using tally marks. Insects can be sorted by size (small, medium, and large) or other characteristics.
- Language- A small book can be written and drawn which tells about the bug hunt. An acrostic poem could be created with the word insect.

Family Connections

- Flashlight bug hunt using the same recording sheet.
- Bug report
- Bug collection

Assessment Plan:

- Assess the child's newly discovered knowledge of insects by asking each to invent their own insect. It needs to have all the body parts that every insect has, but may be a colorful and as big or small as the child chooses. These may be drawings or watercolor resists.
- A variation of the drawn or painted insect is to construct a three-dimensional model of the chosen or invented insects. A broad range of supplies should be made available. The supplies may be set up in a center or provided for the whole group. Large bolts wrapped with yarn and chenille stems make a wonderful armature for an insect.

Bibliography: Research Basis

Stein, M., McNair, S., & Butcher, J. (2001). Drawing on student understanding. *Science And Children*, 38(4),18

Using artistic expression as a tool for learning supports the standards by enhancing students' abilities to communicate science explanations, engage in science as a means for explanation, and communicate their ideas to the public and to their classmates.

Reyner, A. (2005). Art influences learning. *Early Childhood News*, 17 (5), 21.

Art is an outstanding tool for teaching ... academic subjects such as math, science, and literacy. When children study any given concept, they learn it better and retain it longer if they do an art activity that reinforces that learning.

Author:

[Utah LessonPlans](#)



Summary:

This 3-day activity reinforces what students have learned about animals. The activities focus on farm animals: cows, pigs, hens and ducks.

Time Frame: NA

Main Curriculum Tie:

Science - Kindergarten

Standard 4 Objective 2

Describe the parts of living things.

[Supplemental Materials](#) (pdf)

Materials:

- [Cow](#)
- [Three Little Pig Houses](#)
- Hay or raffia
- Pretzel sticks
- Red construction paper
- Tubs
- Drawing paper
- Crayons
- Pencils
- Craft stick
- [Animal Badges](#)
- Paper vest
- Science Journals
- Student lab coats
- Black Bingo marker

- Cow models
- Large jar
- Marble
- Whipping cream
- [Mrs. Wishy Washy Characters](#)
- Brown paint
- Crisco
- Feathers

Attachments

- [Mrs_Wishy_Washy_Characters.pdf](#)
- [Three_Little_Pigs_Houses.pdf](#)
- [Cow.pdf](#)

Background for Teachers:

Camp Paws and Claws is a three-part activity that reinforces what students have learned throughout the year about animals. For this particular activity, students will learn about farm animals. They will learn about cows, pigs, hens, and ducks. Camp Paws and Claws provides several activities for students to earn badges for each animal. As the teacher, you can decide if students should complete all activities or only some.

Camp Paws and Claws can be done as a whole class or broken up into centers. If camp activities are broken up into centers, you should thoroughly explain each activity to the children. Also, you should provide written or picture instructions based on the needs of your students.

Prior to teaching Camp Paws and Claws, teachers should give an overview of the farm animals—ducks, pigs, cows, and hens. Students should be able to discuss realistic and unrealistic behaviors of farm animals, what adult and baby animals are called, identify and discuss various parts of farm animals, identify which animals live on a farm, and identify initial sounds of words.

Intended Learning Outcomes:

1. Observe, describe, draw, and compare familiar animals.
2. Describe how young animals are different from adult animals.
3. Observe and imitate the sounds and movements of animals with songs, dances, and storytelling.
4. Distinguish between real and make-believe animal behaviors.

Instructional Procedures:

Invitation to Learn

Sing *Old McDonald Had A Farm* as a class. Discuss the various animals that can be on a farm and the sounds they make.

Instructional Procedures

Group students into four small groups or complete activities as a class. Each animal will have a tub with all materials necessary to complete the activities to earn the badge. Explain all activities to children prior to allowing them to go to the centers. In each tub keep an example so that students know what to do.

Cows

1. Have the students read the book *Click, Clack, Moo: Cows That Type*.
2. Make a cow puppet. On cardstock, print the Cow master and have students cut it out. Using a black Bingo marker, put the black spots on the cow. Attach the cow to a craft stick or a paper bag. When puppet is finished, have a group orally tell a story using their cow puppets. The story can have realistic and unrealistic cow behaviors.

3. Read, *Animal Babies*, the section on cows. In the tub have three-dimensional models of a mother cow and her baby. Have the students draw a picture of a cow and calf in their Science Journal.
4. When they are finished, they may cut out and color the cow badge and glue it to their vest.

Pigs

1. Have the students read the book, *Three Little Pigs*. Have the students as a group orally sequence the events in the story. Make sure they discuss the order in which the homes were built in and what materials were used to build the houses. The teacher or another adult should be rotating the room and listening to the discussion of students to determine level of understanding.
2. The Little Pig House Activity. Decorate the three houses the pigs made and write what material the house was made from. The first house is made of hay and students use hay or raffia to cover the house. The second house is made of sticks and students will use pretzel sticks to cover the house. The third house is bricks and students will use red construction paper rectangles and a triangle to cover the house. In the pig tub the teacher should include the words: hay, sticks, and bricks on cards. Students will practice using initial sounds to determine which word goes with what house.
3. In *Animal Babies*, read the section on piglets. Have students orally identify the various parts of a piglet with a friend.
4. When all activities are complete, the children may color and cut out their pig badge.

Hens

1. Read the book, *Little Red Hen*. Orally discuss with a friend ways they can be helpful at home and school.
2. Make butter. This activity needs an adult present and should be done as a whole class. Have the students put on their "lab coats". Lab coats are men's long sleeve dress shirts (or even short sleeved will work). Have the students use their science journals to determine what would happen if they mix cream and a marble in a jar. Have the students either draw a picture or write in their science journals what they predict will happen. Discuss with the students what cream is and where it comes from. The process of making butter takes 20-30 minutes. When the butter is finished, you will need to add salt to taste. Have the students all take turns and shake the jar. Explain that you need everyone to help in order for it to be successful. If one person tried to do it their arms would get very tired. Then, discuss as a class how the little red hen could have had an easier time if all the animals had helped her.
3. Give students a piece of white and wheat bread to use to sample the butter with. Graph which they liked better using their name on a yellow post-it note. The graph can be drawn on the board and as a class discuss the results of your graph.
4. Have the students write a post card home telling their parents about making butter. Give each student a quarter sheet of construction paper. On one side they will draw a picture about farm animals. On the other side they will tell their parents about making butter. Have them fill out their science journals again with their results if they were right or wrong about their predictions. This can be done with words or pictures depending on the ability of the student.
5. Students can then color and cut out their hen badge.

Duck

1. Read *Mrs. Wishy Washy*. As a group review the order of the animals in the story orally and with pictures.
2. Create a craft stick puppet for each animal. The puppet will be two sided. On one side the animal will be clean and on the other side the students will finger paint brown mud on the animal.
3. Have the students retell the events of the story with their puppets. They should show the correct side of the puppet while retelling the story.
4. Feather Science Experiment. This is an activity for the whole class and an adult is needed. If possible, collect feathers from ducks. Place the feathers in water and show how the feather does not absorb water. In the science journals have the students write or draw the reason they feel a ducks' feathers do not get wet when in water. Tell the students that duck's feathers have a special coating that allows them to stay dry. Take regular feathers and place them in water. The feathers get very wet. Allow the students to use Crisco to cover the regular feathers to simulate the protective coating and place the feathers in water. Allow them time to explain what they learned to you. Have them record their results in the science journal.
5. When finished, have the students color and cut out their duck badge.

Extensions:

Curriculum Extensions/Adaptations/ Integration

- Have them write sentences or phrases in their science journals instead of just pictures.
- Pair up an advanced student with a student who struggles to provide them assistance.
- Each animal includes several activities. As a teacher you can decide to do all activities or select one that you feel would be best for your students.

Family Connections

- Have the parents write a postcard to their child to bring back to school the next day. The children will be taking home a postcard about making butter, and their parents write them a note and bring it to school the next day.
- Retell the story of Mrs. Wishy Washy.
- Have them tell their parents about ducks' feathers and the coating that protects them from getting wet.

Assessment Plan:

- Collect and assess science journals at the end of the day.
- Have the students retell the story of Mrs. Wishy Washy using their puppets.
- Observe students and their reactions as you complete the Duck Feather Experiment. Ask questions to determine understanding and thinking during the process.
- Discuss various farm animals with the students and have them tell you what they have learned.

Bibliography: Research Basis

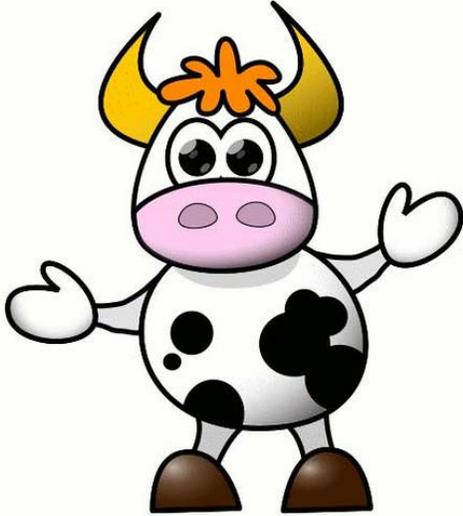
Church, E. (2003). Scientific thinking: step-by-step. *Scholastic Early Childhood Today*. 6(4) 35-41.

In the primary grades, children are learning about science and the world. Science skills—observe, compare, sort, organize, predict, experiment, evaluate and apply are essential to their learning. It is important for students to understand the process involved with experimenting in science.

LeVine, J. (2002). Teaching ideas: writing letters to support literacy. *The Reading Teacher*. 56 (3) 232-239.

The more students write the more proficient they become. A simple daily message can include daily activities or another message to the students will enable children to read some of the message early in the school year.

Author:
[Utah LessonPlans](#)



Summary:

This activity focuses on physical movements. Students will make the same movements that different animals would make.

Time Frame: NA

Main Curriculum Tie:

Science - Kindergarten

Standard 4 Objective 2

Describe the parts of living things.

[Supplemental Materials](#) (pdf)

Materials:

- [Pictures of Animals](#) (pdf)
- [Pictures of Actions](#) (pdf)
- *From Head to Toe*, by Eric Carle

Additional Resources

BOOKS

- FROM HEAD TO TOE, by Eric Carle; ISBN 0694013013
- CLAP YOUR HANDS, by Lorinda Bryan Cauley; ISBN 0399237100
- HOW CAN YOU DANCE, by Rick Walton; ISBN 039923229X
- I CAN DO IT TOO!, by Karen Baicker; ISBN 1929766831
- SILLY SALLY, by Audrey Wood; ISBN 015019901

Attachments

- [actions.pdf](#)
Pictures of Actions
- [animals.pdf](#)
Pictures of Animals

Web Sites

- [Games Kids Play](#)

Background for Teachers:

We can make all kinds of movements with our bodies. We can make some movements like animals.

Intended Learning Outcomes:

4. Develop physical skills and personal hygiene.
6. Communicate clearly in oral, artistic, written, and nonverbal form.

Instructional Procedures:

Invitation to Learn

Place Pictures of Animals and Pictures of Actions around the room or on a table. Ask how these items go together.

Instructional Procedures

This activity focuses on physical movements. Students will make the same movements that different animals would make.

1. Read FROM HEAD TO TOE.
2. Recall the story by asking questions about what actions the animals do.
3. Reread the story, imitating the actions.
4. Ask students their favorite actions and why.
5. Students can make up a pattern by performing the different actions.

Extensions:

- Sing I CAN DO IT! (Tune: "Where is Thumbkin")
I can do it!
I can do it!
Yes, I can!
Yes, I can!
Everyone can do it!
Everyone can do it!
Yes, we can!
Yes, we can!
- Imitate their favorite animal movements.
- Draw a self-portrait and identify the different body parts.
- Sing HEAD, SHOULDERS, KNEES, AND TOES.
- Graph the favorite actions of the students.
- Make pencil streamers.

Family Connections

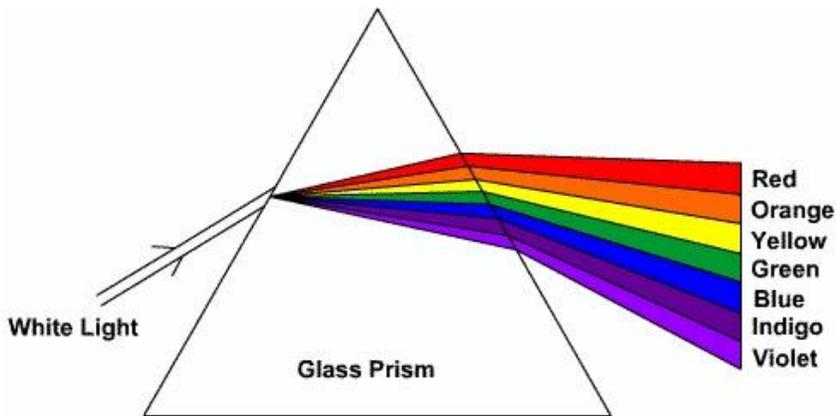
- Send home matching game.
- Sing Head, Shoulders, Knees, and Toes.

Assessment Plan:

- Match animal to the correct action.
- Identify different body parts.

Author:

[Utah LessonPlans](#)

**Summary:**

Students use diffraction glasses to explore the colors found in the visible spectrum of light. They mix the primary colors using color paddles and liquids to make orange, green, and purple. Finally, students observe the 'dots' used to make colored pictures in magazines.

Time Frame: 1 class period that runs 45 minutes

Main Curriculum Tie:

Science - Kindergarten

Standard 4 Objective 2

Describe the parts of living things.

[Supplemental Materials](#) (pdf)

Materials:

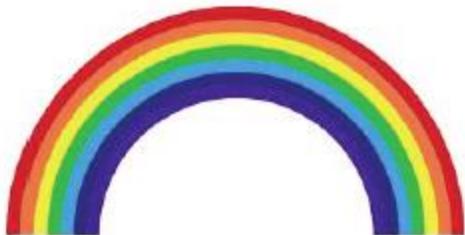
- Rainbow/diffraction glasses – Carolina Biological 755225 \$9.50 for 6
- lamp – any desk lamp will do
- color paddles – Carolina Biological 956028 \$10.25 for 3 sets of 6
- magnifying lenses
- colored magazine pictures
- test tubes or any small clear cup
- food coloring – red, blue and yellow
- 100 ml beakers or small bowls
- plastic pipettes or medicine droppers
- picture of a rainbow

Attachments

- [kindergartenprimarycolorassessment.pdf](#)
Mixing primary colors.

Background for Teachers:

Visible light separates into the spectrum red, orange, yellow, green, blue, indigo and violet. These colors can be memorized in order using the saying 'Roy G. Biv'. Diffraction or rainbow glasses separate visible light. Water droplets in the air can also separate visible light creating rainbows.



Red, yellow and blue are the primary colors. The secondary colors are red and yellow to make orange, yellow and blue to make green, and blue and red to make purple. Colored magazine pictures are made using separately colored dots placed very closely next to each other. When looking at pictures with our eyes alone, we see one solid color but when pictures are looked at with magnifying lenses the individual dots of colors can be distinguished.



Intended Learning Outcomes:

1. Framing questions. Conducting investigations. Collecting data.
2. Sharing ideas with peers. Connecting ideas with reasons.

Instructional Procedures:

Pre-lab discussion: Ask students about the 5 senses and explain that today they are studying their sense of sight. Show students the rainbow picture and recite the color names in order. Show students a picture from a magazine and then using the baby picture of the dots explain how magazine pictures are formed. Use the color paddles to demonstrate the primary colors and the mixed secondary colors.

Instructional Procedures:

1. **Diffraction glasses:** Look through the diffraction glasses. Study the colors of the rainbow seen. Recite the color names in order: red, orange, yellow, green, blue, indigo and violet. Notice that the colors always occur in this order. Have students look out the window, up at the ceiling lights and at a lamp with the glasses on to see the bright effect.
2. **Color paddles:** Have students try mixing the secondary colors of orange, green and purple with the color paddles. Students can then each take a paddle and take turns mixing their color with the color paddle of the other students in their group. When they have seen the combinations they can make, let them look at different objects in the room through the paddles.
3. **Magnifying lenses:** Have the students use a magnifying lens to look at colored pictures in a magazine. Notice how it seems like one color to our eyes without lenses; however, with magnifying lenses they see all the dots that are used in printing colored pictures.
4. **Make a rainbow:** In 100 ml beakers or small bowls, prepare the solutions of the three primary colors using food coloring. Make the solutions fairly dark for the best results. Have each student make the color orange, green and purple by putting in one pipette full of the primary color needed into test tubes. After the three main color combinations are made, allow the students to experiment with different amounts of the colors to see what new colors they can make.

Assessment Plan:

Attachments

- [image_magnified.png](#)
- [rainbow.png](#)

Bibliography:

Rio Tinto Hands-on Science Curriculum Team

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Author:

[Utah LessonPlans](#)



Summary:

Students will learn to distinguish between different things using their senses.

Time Frame: NA

Main Curriculum Tie:

Science - Kindergarten

Standard 4 Objective 2

Describe the parts of living things.

[Supplemental Materials](#) (pdf)

Materials:

- [Blackline of Mr. Potato Head for teacher and each student](#) (pdf)
- Mr. Potato Head
- [Picture cards depicting senses](#) (pdf)
- Body parts of Mr. Potato Head cut out for pocket chart.
- Small manipulative to place on Mr. Potato Head
- Pocket chart

Books:

- *Look! Look! Look!* By Tana Hoban, ISBN 0-590-42908-6
- *5 Senses*, by Tacey West, ISBN 0-590-13112-5
- *Look, Listen and Learn*, by Susan Canizares and Pamela Chanko, ISBN 043904605x
- *My Five Senses*, by Margaret Miller, Aladdin Paperbacks, ISBN 0-689-82009-7
- *What Joe Saw*, by Anna Grossnickel Hines, ISBN 0-590-63740-1
- *My Five Senses*, by Alike, ISBN 0-440-84354-5
- *Your Five Senses*, by Bobbi Katz, ISBN 0-590-66121-3
- *Look Inside Your Brain*, by Heather Alexander, ISBN 0-448-40186
- *Your Five Senses*, by Melvin and Gilda Berger, ISBN 0-439-56688-6

Media:

- (CD) Jack Hartmann, *Math In Motion*
- (CD) Dr Jean, *Keep on Learning*

Attachments

- [senses.pdf](#)
- [mr-potato-head.pdf](#)

Web Sites

- [A to Z Teacher Stuff](#)
- [KinderPlans](#)
- [Five Senses](#)
- [Internet4Classrooms](#)

Background for Teachers:

Kindergarten students are eager to explore their world. Students will learn to distinguish between different things using their senses. This lesson will introduce the five senses and give literacy and exploration connections. An activity for each of the senses is included in the "Additional Activities" portion of this lesson.

Instructional Procedures:

Invitation to Learn:

Launch (Introduction) (20 minutes)

1. Ask this question: "Can anyone tell me what they think the five senses are?"
2. List predictions on the board.
3. Ask, "What do we use our five senses for?"
4. Introduce the five senses by reading the poem *A Light in the Attic*, by Shel Silverstein (pg. 134). Ask the following questions:
 - What senses are mentioned?
 - What are some problems with this poem?
 - Can an ear talk? Why or why not?
 - Can an eye or a nose hear? Why or why not?

Instructional Procedures:

Explore (Individual and Small Group Work): (5 minutes)

Students will explore the body parts that help us with the five senses. Given a blackline of Mr. Potato Head (see attached blackline). Students work in small groups at their tables.

Give the following scenarios, and the students will identify the part that you are referring to by placing an object on that part of the blackline.

1. I can smell flowers
2. I see a blue sky.
3. I hear a train.
4. I touch a soft blanket.
5. I taste ice-cream
6. Observe for misunderstanding and re-teach as necessary.

Discuss (Whole Group Discussion): (10 minutes)

Have a pocket chart with pictures representing the five senses from Mr. Potato Head (see attached blacklines). Hold up a picture card and have students sort the cards (see attached blacklines) to match the correct sense. Accept answers that cross-connect the senses.

Solidify (Closure): (5 minutes)

Have students return to their tables. They will each have a blackline of Mr. Potato Head and small items to place on the appropriate body part. Ask the questions, and students will respond by placing their small item on the body part that would be used.

Questions:

I ate an old, squishy banana, and I didn't like it. What sense did I use?

A loud noise woke me in the night. What sense did I use? I love to snuggle when I read a story. What sense did I use?

The burnt popcorn stinks. What sense did I use?

The painting is very colorful. What sense did I use?

Practice (Review): (15 minutes)

Have students use writing notebooks to write a descriptive sentence on each sense to share with a partner.

Writing may include sentences such as, "Yesterday I saw a yellow daisy." Encourage students to include a descriptive word in each sentence.

Additional Lesson Activities:

Sound by Tape Recorder:

Introduce the sense of sound by asking the students to listen to a pre-recorded tape and identify sounds in their world. Sounds included on the tape might be the sound of a car honking, thunder, rain, a dog barking, a baby crying, an alarm clock going off, a piano, a school bell, and children laughing.

Play a sound, stop and record the students' guesses on the board.

Create Your Own "Gong Chime":

Have each student bring a wire clothes hanger from home. At school, cut string into one-foot lengths. (Each student will need two strings.) Students tie each string in a knot to the bottom portion of the hanger. The strings should be on the opposite sides at the bottom of the hanger. Have students hold onto the string so the hanger goes upside down and wrap the string around their pointer finger several times. With the string still on their pointer fingers, have students put their pointer finger into their ear. The students will then use their body to swing the hanger so that it hits a solid object (a table, a chair, a wall, a door, a cabinet, etc.)

This makes the sound vibrate through the string, and students will hear a unique "gong" noise.

You Can't Judge a Book by Its Cover:

Students will sort four to five book covers by how they appeal to their sense of sight. After students have sorted, ask the following questions:

1. What did you see first?
2. What colors did you notice?
3. What was your favorite part of this cover?
4. Were there small parts you noticed, or did you just see the big parts?

Bubble Art:

For this activity you will need one 8"x11" piece of white cardstock per student. You will also need one straw per student and several different colors of watered-down paint. Drop a small amount of paint on the paper. Each student will create his/her own painting by carefully blowing through the straw. This will move the paint and create "bubble art."

Name That Smell:

For this activity you will need scented markers. Cover up the bottom portion of the marker with painter's tape so students cannot identify the marker by sight. Students will smell the marker and color the [matching picture](#) (pdf). Discuss their favorite scent, and how some scents are similar to others.

Garbage Stinks:

For a literacy connection, students will go outside on a trash pick-up and collect a garbage sack full of trash. After discarding the trash, they will return and engage in an interactive writing activity on chart paper. They will list the trash items found on the school yard and describe the smell. Yuck!

Feely Box:

For this activity, you will need a box or sock with various items that are smooth, hard, soft, bumpy, sharp and cold. Students will take turns putting their hands into the box or sock and describing the object (without naming it) to the class. Record their describing words on a chart, and then display the list in the classroom to be used for a reference in writing.

Glurch Gloop:

For this activity, you will need a two-quart container of Elmer's Glue, a small amount of borax (this can be found in the laundry section of the grocery store), and food coloring. As you prepare the Glurch, students will have a copy of the recipe and they will read to you the ingredients and amounts needed as you mix it. Give each student a small amount of the Glurch, and let them explore with their sense of touch. Students will describe how it feels as they mold it into alphabet letters. As students describe it, record their descriptive word onto an alphabet chart, under the beginning sound of their descriptive word. For example: "squishy" would be recorded under "S."

Descriptive Guessing Game:

For this activity, you will need a sentence word strip sheet and a large piece of construction paper folded in half horizontally and taped at the seams. Present a descriptive scenario-for example: "I went out to eat last night, and tasted something crunchy and dipped into ranch dressing. What was I eating?" Write the answer to your scenario on the sentence word strip and slide it into the folded construction paper so students cannot see the answer. As students try to guess the answer, uncover the first letter. Students will then guess again, but their guess must have the same beginning sound as the uncovered letter. Continue until you have uncovered the word.

Taste and Write:

Students will explore their sense of taste by eating something sweet, sour, salty, and bitter. They will describe in writing which taste they preferred and why.

Attachments

- [senses-center.pdf](#)
- [name-scent.pdf](#)

Extensions:

- To challenge higher-level students, ask them to find out the parts of the brain that contain sight, sound, smell, taste and touch. Ask them to identify the parts of the eye and the function of each. Ask them to identify the part of the tongue that tastes sweet, salty, bitter, and sour. They could research how the brain can quickly respond to our senses.
- Struggling students may need to be re-taught and given extra help doing sense activities with a parent helper.

Family Connections:

Assignments to do with parents:

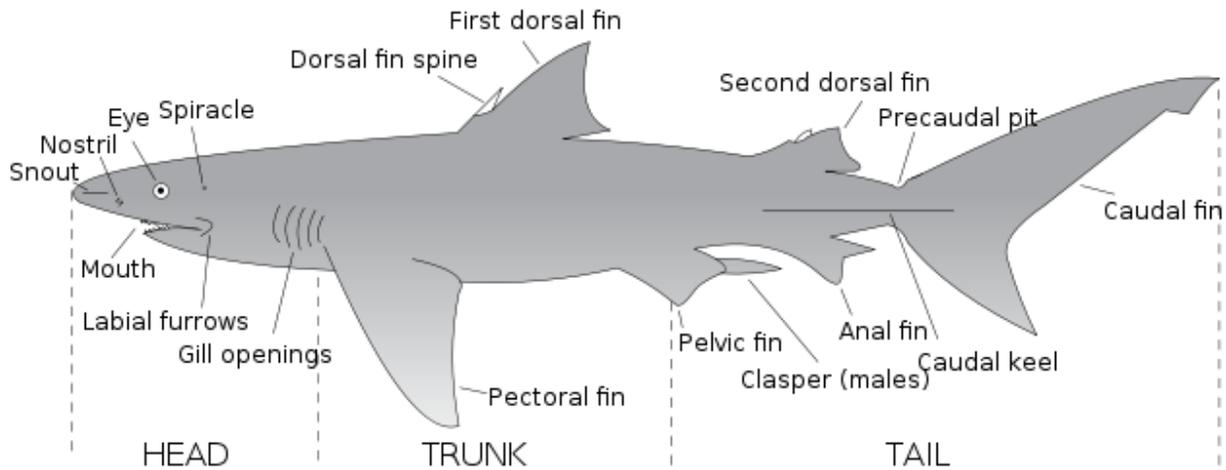
- Ask students to explore their senses at home. When they help do chores, what sense are involved? What smells can they identify as Mom cooks? Have their Mom give them something they have never tasted and write down how it tasted and if they liked the taste.
- Send home a literacy bag with a fun sense story to read with parents, and ask the students to write down an experience that used every sense. Explain each sense and what happened in a “sense notebook” to bring back to school and share.

Assessment Plan:

- Informal assessment will consist of observation of the students as they place the manipulatives on the body parts.
- Formal assessment will be the student’s writing.

Author:

[Darlynn Menlove](#)



Summary:

Students will learn about the parts that make up animals.

Time Frame: NA

Main Curriculum Tie:

Science - Kindergarten

Standard 4 Objective 2

Describe the parts of living things.

[Supplemental Materials](#) (pdf)

Materials:

- Several live animals to observe and discuss
- [Black line of animal parts](#) (pdf) to be placed under headings on the board
- Chart paper to list animals and animal parts
- Writing Books for students
- The game, "Snorta," (or use any small plastic animals to follow the directions for "Snorta")
- Whiteboard

Books:

- *Baby Animals in the Wild*, by Gallimard Jeunesse, ISBN 0-4392-9722-2
- *Whose Toes are Those?*, by Joyce Elias and Cathy Sturm, ISBN 0-8120-6215-9
- *Duckat*, by Gaelyn Gordon, ISBN 0-5907-2846-6
- *Whose Nose and Toes*, by John Butler, ISBN 0-670-05904-8
- *Hello Baby!*, by Mem Fox, ISBN 978-1-4169-8513-6
- *Oodles of Animals*, by Lois Ehlert, ISBN 974-0-15-206274-3

Media:

- *Going to the Zoo* (CD), Tom Paxton
- *Day At the Zoo* (CD), NorthSound Music Group

Attachments

- [animal-parts.pdf](#)

Web Sites

- [Animal Study](#)

Background for Teachers:

Students should have been introduced to the animal groups of birds, fish, mammals, insects and reptiles. These are all animals that would be a part of a child's world through books, observations, and pets. The teacher may want to read several books about animals and discuss the parts that make up each animal. Vocabulary: skin, fur, feathers, scales, hands, wing, flipper, fin.

Instructional Procedures:**Invitation to Learn:**

Launch (Introduction): 30 minutes

1. Arrange with a few parents of your kindergarten students to bring a pet to observe in the classroom, or out on the lawn. The pets should be mammals (dog), birds, fish, reptiles, and an insect in a jar.
2. As the students observe each animal, one at a time, ask the students to touch the part of their body that hears, touch the part of their body that sees, touch the part of their body that walks, and eats.
3. Ask the students this question, "What part of a dog can hear, see, walk, and hold food? Repeat this question with a bird, a fish, a reptile and an insect.
4. Compare and contrast the difference in the answers.

Instructional Procedures:

Explore (Individual and Small Group Work): 15 minutes

1. In the classroom invite several students to come up to the board and place an animal part (see attached blackline) that they observed under one of the heading: See, Hear, Eat, and Move. Each student will have a different attribute of an animal and will place it under the current heading. The students may work together in small groups to agree on where to place the parts.
2. Compare and contrast what is alike and what is different with the parts placed on the board by making a circle on a chart paper. Write the words, "body parts" in the circle. Then make another larger circle, thus creating a circle map. Inside the outer circle, write the body parts the children name from their observations.
3. Ask the children to choose a part of one of the animals and use their writing books to explain what the part is and how it is used. The students may share the writing with a partner and compare what they have learned.

Discuss (Whole Group Discussion): (5 minutes)

At the carpet, discuss with the children the following questions:

1. What body parts do mammals use to move, to hear and eat?
2. What body parts do birds use to move, to hear and eat?
3. What body parts do fish use to move, to hear and eat?
4. What body parts do reptiles use to move, to hear and eat?
5. What body parts would an insect use to move, to hear and eat?

Solidify (Closure): (5 minutes)

Turn and tell a partner something you learned about animal parts. Each student will sort the correct animal part under an animal picture (see attached blackline).

Practice (Review): (20 minutes)

Introduce and model for the children the rules for playing the game "Snorta" (found at WalMart).

Divide the students into small groups and give each one a small plastic animal. The student chooses what sound the animal says. Each student also has a small plastic barn. The students in a given group will try to memorize what each animal sound is. Then the students place their animal into the barn so that it cannot be seen. Next, each student will take an animal card from a deck of animal cards. The student turns his/her card face up, and the next student does the same. They continue doing this quickly until a new card is turned that matches the previous card's animal. Each student tries to be the first one to say the animal sound. If he/she is first, he/she gets to keep the card. The object of the game is to gather the most cards. Once everyone has had a chance to enjoy this game for a time, you may change the rules of the game so that each student identifies with a skin type of his/her animal. Once the animals are hidden in the barn, the students that match a card will try to be the first to say the skin of that animal. Then play this on subsequent days changing the rule to saying nose type, or how many legs or what type of feet, or hands. The students will really enjoy this.

Additional Lesson Activities:

Mixed Up Animals

Teacher will hand out an 8 1/2" x 11" sheet of white art paper to each student. Students fold the paper into thirds horizontally, so that they have three parts of the paper. The student draws the head of an animal on the first part, a body of the same animal on the second part, and the legs and feet of the same animal on the bottom part of the paper. The students color the animal's skin the correct color. Gather the papers and bind them into a book. Cut through the lines on each paper, leaving about an inch from the binding. The students can enjoy reading the book and changing the parts of each animal into creative creatures.

Animal Poems Read several poems from the book, *Animals, Animals*, by Eric Carle. Discuss the different styles of the many poetry authors contained in the book. Discuss the rhyming and descriptive words that make up each poem. Have the students brainstorm a poem about an animal and its parts. Write an interactive writing piece that the children compose. Hang it in the Reading Center. Then have the students try to write their own poem about an animal including its parts. Display their poetry in the room.

Animal Classifying

Type several short **word lists** (pdf) of animal parts that would fit a particular animal. Place each word list in a sheet protector. Place four or five animal pictures on the tables in your room. Divide the students into small groups and ask them to read the word list and place it under the correct animal. Tell them that you want to see how quickly they can read and identify the animal.

Language/Writing About Birds

Have the students draw a picture of a kind of bird. Compile the pictures into a class book. Stack the pictures upside down so that children must turn the page to see each picture. On the back of each picture write: "Who has a beak? Take a peek!" Turn the page and write the following below the picture: "A _____ is a bird. A _____ had a beak!" Be sure to put the name of the bird in the blank.

Animal Math

Have the students look at **pictures of an animals** (pdf) and determine how many legs each animal has.

Have the students sort the pictures according to the number of legs each animal has.

Have the children write the number that tells how many legs the animals in each group have on an index card and then order the groups by the number of legs.

For an extension, have the children add the number of legs in one picture with the number of legs in the next picture and write that on an index card. This could be done in centers (**see attached blackline** (pdf)).

Animal Movement

Ask the students these questions:

- How do you move inside?
- How do you move on the playground?
- How do you move at the pool?
- How do you move as a baby?

Show the children a variety of animal pictures. Be sure to use animals that move in various ways.

Ask the children to move like each animal in the picture. Classify the movement by whether they walk/run, fly, swim, or hop/leap/jump. Ask the students whether the animals move in water, land or air.

Animal Eating

Begin a discussion by asking the children what body parts they use to eat. Ask them how they eat these kinds of foods:

- A milkshake (sucking through a straw)
- Corn on the cob (front teeth)
- Chewing gum (back teeth)
- A glass of milk (drinking through lips)
- An ice cream cone (licking with tongue)
- Hard candy (sucking in mouth)

Show children a variety of animal pictures, being sure to include animals that use many different types of body parts for eating (for example, elephants, hummingbird, parrot, bear, fish, frog, butterfly, giraffe, cat, snake, alligator). Ask the children how each animal would eat using words like sucking, licking, using teeth, etc.

Animal Match-Up: "I Have – Who Has"

Students will each be given an animal part card (see attached blackline). They will stand in a circle. Each student has a turn to walk up to someone else and say (for example): "I have a leg, who has a tail?" They will continue asking each other until they find all the parts of an animal. The first group to complete his/her animal wins.

Hokey Pokey (Animal Style)

Students can enjoy movement activities with the Hokey Pokey with a twist. Sing the song, with the students in a circle, but tell them to do this in "bird style," such as, "Put your right wing in, your left wing in and shake it all about, do the Hokey Pokey and you fly yourself around. That's what it's all about." Continue with your beak in, beak out, your tail feathers in, your tail feathers out, your webbed feet in, your webbed feet out. Then switch to fish style (with fins, gills, bulging eyes, and swim all about). Create other ways for a reptile, a mammal and an insect.

Attachments

- [animals.pdf](#)
- [animal-legs.pdf](#)
- [word-list.pdf](#)

Extensions:

- To challenge students to higher-level thinking, have them draw an animal and label each body part. Ask them to add the words that describe the sounds the animal makes. Advanced students may have a homework assignment to pick an

animal that they are unfamiliar with and research the animal and its parts, putting together a presentation with the pictures and writing to be shared in class

- For a math connection to higher-level thinking, ask questions such as: If there was a dog, sheep and a cow in a barn, how many legs would there be in all? If you saw a duck, a bird, and a goose, how many wings in all? How many beaks? How many webbed feet?
- Children who need more practice may work on puzzles of animal parts with a parent helper or peer tutor. Then do so again and practice saying what the function of the body part is.

Family Connections:

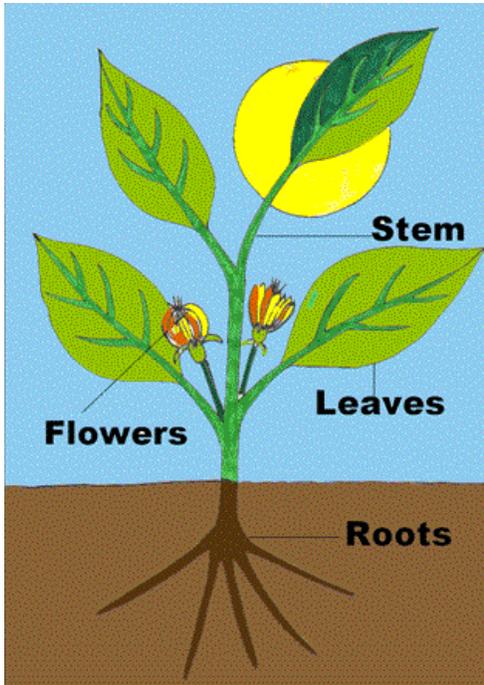
Send home an activity sheet instructing the students to identify animal parts as they take a walk with their parents and observe animals that they see. They could buy some animal crackers and put frosting on several, then stripe them with chocolate syrup, and say the sound that the animal makes as they eat them. Have the students draw their favorite pet at home and label the parts of its body.

Assessment Plan:

- Informal assessment will consist of checking the student's writing books and observing as they place animal parts under proper heading.
- Formal assessment will consist of the individual student sorting the correct animal part under an animal.

Author:

[Darlynn Menlove](#)



Summary:

The students will identify the parts of a plant and label them as a whole class. The students will construct their own model and discover real-life examples of plant parts they see and eat every day.

Time Frame: NA

Main Curriculum Tie:

Science - Kindergarten

Standard 4 Objective 2

Describe the parts of living things.

[Supplemental Materials](#) (pdf)

Materials:

- Book: *From Seed to Plant*, by Gail Gibbons, ISBN-10: 0823410250 OR isbn-13: 978-0823410255
- Book: *Tops and Bottoms*, by Jane Stevens ISBN-10: 1874371873 OR isbn-13: 978-1874371878
- A plant model
- Alene's Tacky glue or hot glue gun (for teacher use)
- Construction paper (blue or brown)
- Green pipe cleaner
- Colored tissue paper
- Green foam
- Sunflower seed (or other flower seed)
- Live plant (with many small flowers and leaves)
- Newspaper

- Labels or small white paper
- Markers

Background for Teachers:

This lesson is to help children discover and use concrete examples in order to better understand the parts of a plant and what they do. This lesson is best taught as a unit, spending adequate time on each plant part to enable the students to have experiences with each. The teacher needs to read about the plant parts and what they do prior to the lesson in order to help the children understand the importance of each. The lesson begins with a direct teaching segment in which the teacher reads the book "From Seed to Plant" by Gail Gibbons. The students will then identify the parts of a plant and label them as a whole class. The students will construct their own model and discover real-life examples of plant parts they see and eat every day. They will be able to break apart a real plant and discover what each plant part looks like. Displaying many types of plants as well as pictures and model throughout the unit will help solidify the children's learning.

Instructional Procedures:

Invitation to Learn:

Launch (Introduction): (10-15 minutes)

Begin this lesson by showing the students a model of a plant and discussing with them that just as your body has parts to help you live, grow and do certain things, a plant has parts to help it live and grow. Read "From Seed to Plant" aloud.

Instructional Procedures:

Explore: (30 min)

1. Take down the plant model and put each part up one at a time as you discuss with the students each part of the plant and what it does for the plant.
2. Have the students help you one at a time place the part of the plant on the board. As you do, ask the students to help you place the label near the plant part to show what each is called.
3. When all of the parts have been labeled and discussed, have the students move to their tables or desks and give them supplies to make their own model.
4. Using the included [blackline](#) (pdf) as a guide, provide the materials for each child to create his/her own model.
5. Have them glue the [labels](#) (pdf) (use blackline or have the students write their own words) where they belong.

Discuss: (10 min)

1. Students will return to the carpet, where the teacher has a real plant.
2. The teacher leads the discussion as the students recall each plant part and what it does for the plant.

Solidify: (10 min)

1. Discuss with the students why each plant part is important to the plant.
2. Quickly review that every plant contains these important parts, regardless of the leaf color, petal shape, or length of the stem. Some children may have difficulty understanding that even though plants look differently, most contain the same basic important structure.

Practice: (20 min)

1. Place newspaper and a real plant, preferably one with many small flowers and leaves, at a table for each small group.
2. Divide children into small groups and have them take apart the plant. As they do, they glue an example of each part in their [Plant Parts Book](#) (pdf).

Additional Lesson Activities:

Eating the Parts of a Plant

In this activity, the children will have already looked in detail at the parts of plants in a previous lesson. They will have learned what each plant part does to help the plant live and grow. The teacher can use this lesson to connect parts of the plant to food the children eat almost daily. The teacher will choose items for the children to eat that represent each of the plant parts. Some ideas include the following:

Roots – carrots
Stems – celery
Leaf – lettuce
Flower – broccoli
Seed – peas

After giving the children a chance to eat the different plant parts, read the story *Tops and Bottoms* and do interactive class writing about the parts of the plants in the story that are edible and non-edible. Discuss with the children whether the edible parts are roots, stems, leaves, flowers, or seeds.

Attachments

- [plant-parts.pdf](#)
- [plant-part-labels.pdf](#)
- [plant-book.pdf](#)

Extensions:

- Advanced learners may be able to see and discuss how water and nutrients travel through the plant. They may also do additional research to discover what enhances plant growth and what diminishes growth.
- Formal assessment of non-typical learners could include verbal communication of plant parts and their function.
- Writing integration: Students can write the plant part labels. They can also use their *Plant Parts Books* to glue in each part and to write about what it does.

Family Connections:

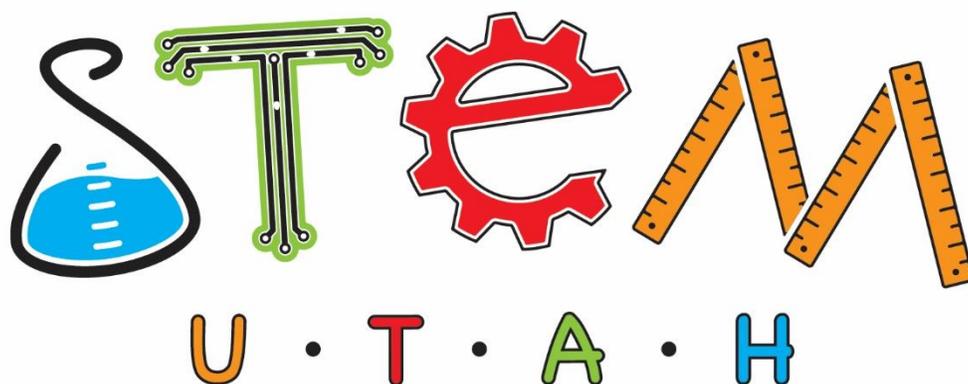
Assignments to do with parents:

- Students can show their Plant Parts Book to their parents and read about the functions of each plant part.
- Students can go on a nature walk with their families and look at various plants, paying special attention to the parts they have learned.

Assessment Plan:

- Informal assessment will consist of teacher observance of the answers to the guided questions.
- *Plant Parts Book*

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<http://www.playdoughtoplato.com/category/kindergarten-science/>

<http://www.livebinders.com/play/play?id=124344>

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