NEBRASKA AGRICULTURE IN THE CLASSROOM
NEBRASKA FARM BUREAU FOUNDATION

Literature Guide

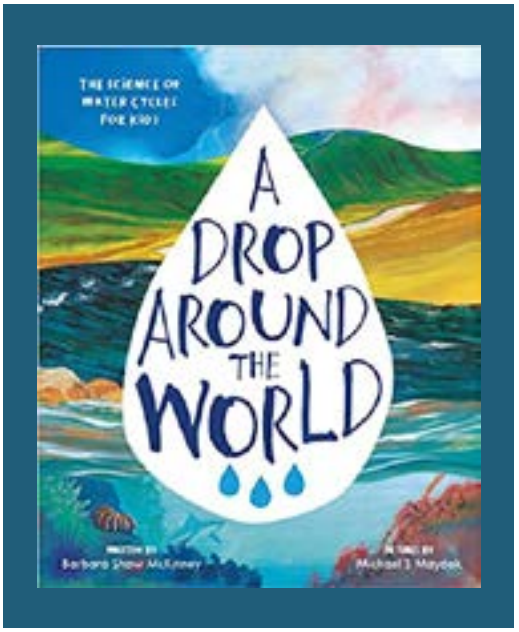
A Drop Around the World

By: Barbara Shaw McKinney

Activity Level: Intermediate

PURPOSE

Students will interact with the story by exploring the water cycle through a creative writing or informative writing activity.



NEBRASKA STATE STANDARDS CONNECTION

LA.3.W.3/LA.4.W.3
Write creative and/or expressive pieces that describe a well-developed event or experience.

LA.3.W.5/LA.4.W.5
Write informative/explanatory pieces to examine a topic or text and convey ideas and information.

LA.3.V.2/LA.4.V.2
Interpret an author's use of figurative, connotative, and technical language in grade-level literary and informational text.

LA.3.RI.2/LA.4.RI.2
Analyze an individual, event, scientific idea or concept, or steps in a process.

LA.3.SL.2/LA.4.SL.2
Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details.

WHAT'S THE CONNECTION TO AGRICULTURE?

One of the most important natural resources that covers the earth's surface is water. All living things depend on water for survival. Water is extremely important for crop production because crops (plants) need water to grow. A good crop of corn or soybeans needs at least 20 inches of water a year. Farmers rely on rainfall throughout the growing season as well as irrigation systems to ensure their crops receive an adequate amount of water.

MATERIALS

- Book, *A Drop Around the World* by Barbara Shaw McKinney
- Water in Agriculture Photos
- Creative Writing Anchor Chart
- Informative Writing Anchor Chart

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VOCABULARY

Accumulation – the collection of precipitation into rivers, lakes, and oceans
Cirrus – cloud forming wispy filamentous streaks at high altitude
Cumulus – cloud forming rounded masses heaped on each other above a flat base at fairly low altitude
Condensation – water that collects as droplets on a cold surface when humid air is in contact with it
Droplet – a very small drop of water
Evaporation – the changing of a liquid into a gas
Fog – a thick cloud of tiny water droplets suspended in the atmosphere
Gas – a state of matter where a substance (such as oxygen or hydrogen) is like air and has no fixed shape
Liquid – a state of matter in which a substance exhibits ability to flow freely like water; not a solid or a gas
Moisture – water or other liquid diffused in a small quantity as vapor, within a solid, or condensed on a surface
Precipitation – moisture in the form of rain, snow, sleet, or hail that falls to the ground
Purified – having had contaminants removed; cleansed
Reservoir – a large natural or artificial lake used as a source of water supply
Solid – a state of matter where a substance has a definite shape and volume; not liquid or gaseous
Vapor – a substance diffused or suspended in the air, especially one normally liquid or solid
Water – a transparent, odorless, tasteless liquid, a compound of hydrogen and oxygen

BACKGROUND AGRICULTURAL INFORMATION

As the world population continues to grow, more and more people, plants, animals, and other living creatures need water to live. Water is a renewable resource used over and over through evaporation, transpiration, and precipitation. The water that is on earth now is the same water that has always been here. No "new" water is being made. The water cycle is continuous. Plants will take up some of this water through their roots, and some water will move down through the soil to become groundwater. Some of the water from the rain and snow will run off the land into streams, marshes, lakes, and oceans. The water that remains on the earth's surface is called surface water. The surface water will return to the atmosphere through evaporation. Then water vapor may form clouds that cause precipitation—rain or snow—to occur again. The precipitation will return to the surface of the earth, and the cycle will continue. The water cycle is when water moves through evaporation, precipitation, and transpiration—the journey of water all around the earth! Through different stages of the water cycle, water can be liquid, solid, or gas.

INTEREST APPROACH

- Project or pass out copies of the *Water in Agriculture* photos.
- Ask students to identify what is similar in each photo.
  - Students should recognize water in each picture.
  - Ask students to find commonalities about the plants and animals in the pictures.
    - *They are all food products.*
- As a class, or in smaller groups, have students take turns sharing a response to the questions listed below. Each student should think of a response that has not already been shared. Continue sharing until students run out of responses.
  - How do I use water in my daily life?
  - Who or what needs water?

- Discuss and summarize the information found in the **Background Agricultural Information**. Remind students that all living things need water to thrive and that plants and animals use water differently.

PROCEDURE

Read *A Drop Around the World* aloud.

1. Discussion
   Choose some or all literal comprehension questions from the list below for discussion:
   - ▫ From what point of view, or perspective, is the story written?
   - ▫ Where does Droplet start its journey?
   - ▫ Why is Droplet waiting to rain?
   - ▫ Whose cape does Droplet fall on?
   - ▫ What happens to Droplet in the heat?
   - ▫ What form of water freezes to make a snowflake?
   - ▫ What country does Droplet become snow in?
   - ▫ What does the warmer weather do to the frozen Droplet?
   - ▫ What is a man-made lake called?
   - ▫ Who is satisfied by the filtered water?
   - ▫ What kind of water drop pours out the spout?
   - ▫ What animal laps up the water from the trough?
   - ▫ Where did the drop of water go in the cow?
   - ▫ Who drops the glass of milk?
   - ▫ What kind of clouds are in the sky of the Sahara?
   - ▫ Why do the sand dunes fold their hands in prayer?
   - ▫ What kind of air do the rainforests have?
   - ▫ When Drop quickly changes from warm to cool—what does it turn in to?
   - ▫ How does Drop get "over the falls?"
   - ▫ Where do the monsoon winds storm?
   - ▫ What causes the force on Raindrop to flood the gutter?
   - ▫ How many items does Raindrop sweep away in the flood?
   - ▫ Where does Drop flow back to after flooding the street?
   - ▫ What does the author compare a submarine to?
   - ▫ How is Drop needed by the fish?
   - ▫ What happens to the temperature of Drop as it goes deeper in the ocean?
   - ▫ Where are the children from that play by the water's edge?
   - ▫ What does Seadrop fill on the children's castle?
   - ▫ What happens to Drop as it warms up?
   - ▫ What kind of rock does Drop pass through in the ground?
   - ▫ How does Drop exit, after it has been swallowed?

- What does Drop turn into after it "hangs on line?"
- What causes Drop to freeze?
- What keeps the tiny cubs warm during the storm?
- When Drop seeps into the earth—what does it find?
- Why do the tourists "moan and groan" at Yellowstone?
- What ingredients does Drop dissolve?
- How does Drop get food to the aspen tree?
- What is it called when Drop escapes from the hole in the leaf?
- What does the raindrops do to each ray of sun? It makes them look like what?
- What is Drop's wish for the future of mankind?

2. Creative Writing Activity
   - Refer the students to the **Creative Writing Anchor Chart** to capture and organize their thoughts. Encourage students to write a short story from the perspective of a water droplet about the "life of water."
   - Challenge students to include as many vocabulary words from the vocabulary list as possible.
   - Provide students the opportunity to share their presentation with the class.
3. Informative Writing Activity
   - Refer students to the **Informative Writing Anchor Chart** to help organize their research on the states of water. Instruct students to research the states of water, thinking about the specific temperature changes, molecule speed and density, and what each state of water can be used for. Using the information the students learn, challenge the students to write a 1–2-minute informative speech.
   - Challenge students to include as many vocabulary words from the vocabulary list as possible.
   - Provide students the opportunity to share their presentation with the class.

FOLLOW-UP QUESTIONS

Choose some or all of the follow-up questions below to lead a discussion with the class.

- In what forms does water exist?
  - *Solid, liquid, and gas; (or ice, liquid, and vapor).*
- What is the water cycle?
  - *The water cycle is when water moves through evaporation, condensation, precipitation, and accumulation – the journey of water all around the earth!*
- How does water change from liquid to water vapor?
  - *Heat makes water molecules move faster. The faster the molecules move the more space is between them creating a vapor.*
- How does vapor change into liquid?
  - *Cooler temperatures slow down the molecules to condense to a liquid. Sometimes the vapor freezes in mid-air if the temperature is cold enough! This makes snowflakes.*

- How does water change to ice?
  - *Cold temperatures slow down molecules until 32 degrees Fahrenheit when the molecules group together in a solid state.*
- What is the water that remains on earth's surface called?
  - *Surface water.*
- Using inference from the author's words: How does Drop grow to be big enough to rain?
  - *The moisture builds in the clouds and the clouds combine with the wind to create heavy drops.*
- How do plants use water?
  - *Their roots suck up the water to provide food and nutrients to the leaves.*
- After exploring *"A Magic Show—Starring H2O"* at the back of the book, explain the differences and similarities of the different types of clouds.
- **Share our thoughts:** How do you think the snow keeps the polar bears warm, when snow is very cold?
  - *Lead students to the conclusion that multiple layers of snow create insulation.*
- **Share our opinions:** How do you think we can conserve water?
  - *Answers will vary but could include: shutting off the faucet while brushing teeth, taking shorter showers, watering the lawn/garden when the temperature is cooler, etc.*
- **Share our opinions:** Why is water conservation important to agriculture?
  - *Answers may vary but could include ideas such as: water is a renewable resource that is used over and over again. No new water is being "made" so the only water available is the only water we can use.*

EXTENSION ACTIVITIES

Lesson Plan: The Earth's Water Supply
Students observe the change of water states as it moves through the water cycles.

- *agclassroom.org/matrix/lesson/225/*

Lesson Plan: Water Cycle
Through the use of creativity, music, and an experiment, students will grasp an understanding of the basic stages of the water cycle: evaporation, condensation, precipitation, and accumulation. Students will also gain an understanding of the different states of water and the effects of heating and cooling water. At the end of the lesson, students should understand the terms related to the water cycle and be able to relate the water cycle to their own experiences.

- *www.benedictine.edu/Assets/uploads/Benedictine-Site/import/www.benedictine.edu/sites/default/files/lesson_plans_art__music.pdf*

Activity: Water Cycle in a Bag
Students can see the water cycle happen in front of them with this simple and engaging activity.

- *www.agintheclassroom.org/media/annlu14n/water-cycle-in-a-bag.pdf*

Cranberry Harvest

Soybean Field

Onion Field

Corn Field

Rice Field

Cattle

Chicken

Informative Writing

I — Introduce your topic in your opening paragraph!

N — Name all your facts and details in your body paragraphs!

F — Follow your facts with supporting details and explanations!

O — Organize your writing by using linking words and phrases!

R — Refer to your topic and include key vocabulary!

M — Make a concluding statement related to your topic and leave the reader thinking!

Creative Writing

- Focus on specific moments in time
  - Use I, me, my, mine, us, and we
- Zoom in and tell the most important part
  - For example: Who, What, When, Where, Why, How
- Describe people, places, and things
  - Show don't tell! *"The rain drop squealed with excitement."*
- Use feeling and emotions
  - Happy, excited, sad, nervous, anxious, or angry
- Use dialogue