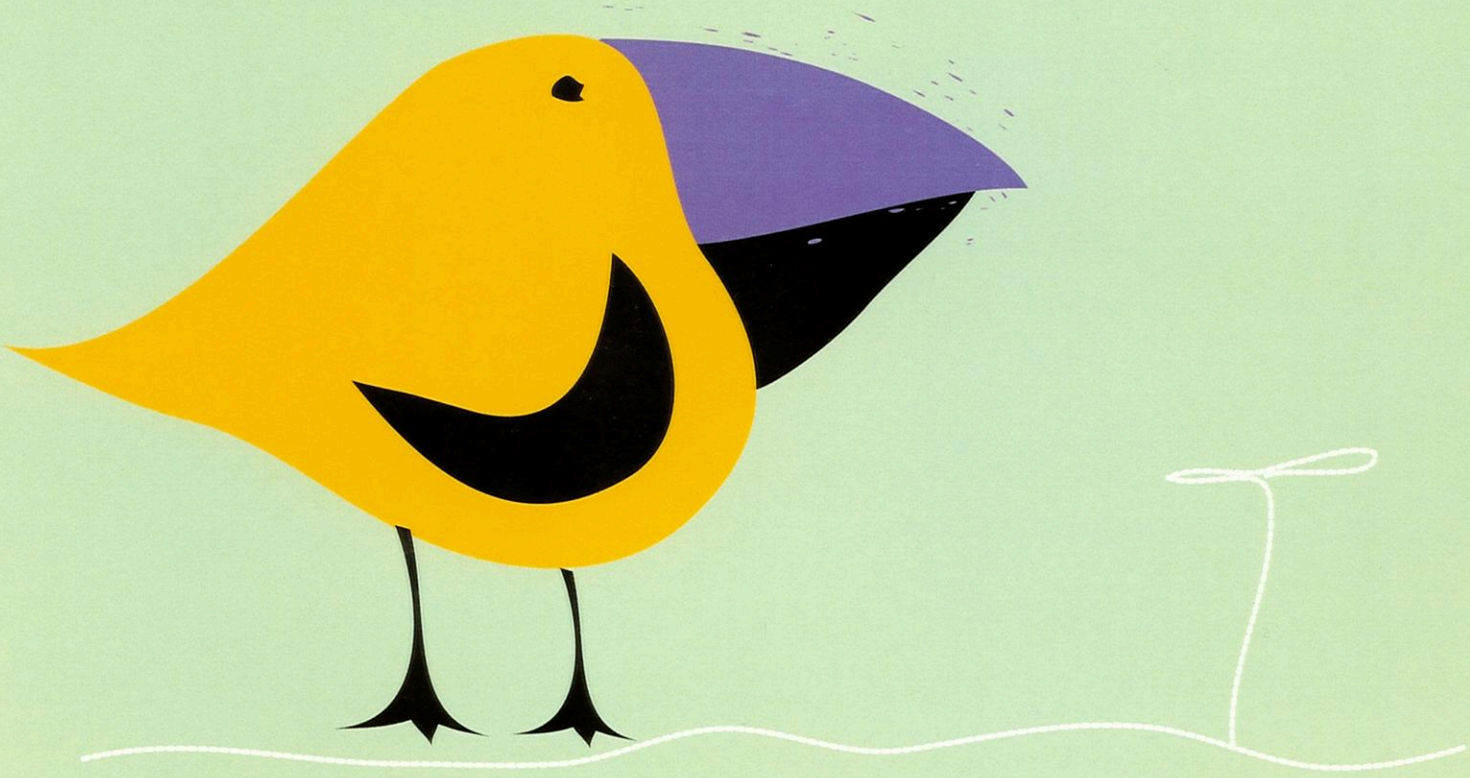
grade 2

Essential Question: How do we come to know and appreciate the river environment and our place in it?

Content Questions: What is a water cycle?

What is the relationship of the river to the life cycles of plants and animals?

How do the seasons affect the river?



Second Grade River Biodiversity Overview

Content Question 1: What is a water cycle?

LESSON 1: Where Is the Water in the World?
- Globe toss
- Water Demonstration

LESSON 2: Water in Rivers
- Read *Follow the Water from Brook to Ocean*
- Introduction to rivers

LESSON 3: River Terrarium
- Build river terrarium
- Journal observations (over 2 weeks)

LESSON 4: Where Does Water in a River Come From?
- Water cycle story telling

LESSON 5: Tyler's Travels: A Water Cycle Game
- Water cycle game

LESSON 8: Final Terrarium Journal Entry
- Final journal observation

Content Question 2: What is the relationship of the river to the life cycles of plants and animals?

LESSON 6: Animal and Plant Life Cycles and the River
- Creating river animal life cycle wheel

Content Question 3: How do the seasons affect the river?

LESSON 7: Seasons at the River
- Creating plant life cycle wheel

LESSON 9: River Field Trip
- Nature observation
- Journaling
- Cycles in nature
- Clean-up

Culminating River Project

LESSON

6 plant and animal cycles at the river

Essential Question: How do we come to know and appreciate the river environment and our place in it?

Content Question: What is the relationship of the river to the life cycles of plants and animals?

Goals

- Students will be familiar with plants and animals that depend on rivers
- Students will understand that all plants and animals go through a life cycle and that there are a variety of different life cycles.

Vocabulary

Life Cycle: the stages an organism goes through as it develops (for instance, egg, larvae, pupae, adult)

Seed: a fertilized ovule from which a plant grows

Egg: the first stage of development for animals (except mammals)

Larva: the second stage of development for insects undergoing complete metamorphosis, this is the feeding stage

Pupa: the third stage of development for animals undergoing complete metamorphosis, this is often the non-feeding, immobile stage

Nymph: the stage of development between egg and adult for animals undergoing incomplete metamorphosis

Complete metamorphosis: the four stage life-cycle, egg to larva to pupa to adult

Incomplete metamorphosis: the three stage life-cycle, egg to nymph to adult

Materials

- Copies of **Animal Life Cycle Wheel** and **Plant Life Cycle Wheel**, one per student
- A collection of non-fiction books about river animals and plants, see **Resource section** under rivers and river plants and animals

- River Animal Cards, make cards of the different stages of various river plant and animals, one life cycle stage per card. You can make the cards by pasting cutouts from magazines or printouts from web sites, one card per student. Here are some web sites with good, printable life-cycle drawings:

  Frog: www.kiddyhouse.com/themes/frogs (click to the frog life cycle worksheet)

  Fish: www.enchantedlearning.com/subjects/fish/printouts/salmon.shtml

  Dragonfly: www.epa.gov/owow/kids/bugshow/slide7.html (this site has life cycle stages of other aquatic insects besides dragonflies)

  Plants: www.enchantedlearning.com/subjects/plants/sequencing/floweringplantlifecycle/

- Crayons, markers or colored pencils

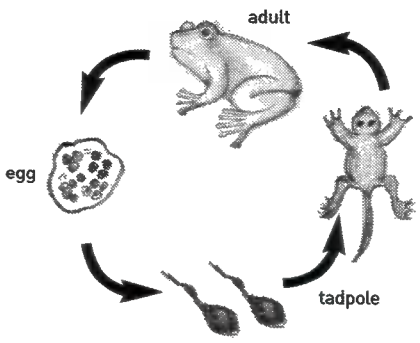
Background Information

A variety of plants and animals spend their lives in the river environment. Like all plants and animals, they go through a life cycle. There are a variety of life-cycles these plants and animals take.

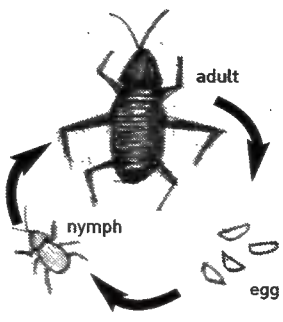
2nd

Some animals go through metamorphosis, specifically amphibians and insects. There are two main types of metamorphosis, complete and incomplete. There are four stages in complete metamorphosis: egg → larva → pupa → adult. Examples of aquatic animals (animals that spend part of their life cycle in the water) that go through complete metamorphosis include: caddisflies, mosquitoes, crane flies and riffle beetles. Many aquatic insects spend the egg, larval and pupal stages of their life under water and then come out of the water to emerge into their adult form (this is true for the caddisfly, mosquito and crane fly). Other aquatic animals spend their entire life cycle in the water (this is true of the riffle beetle).

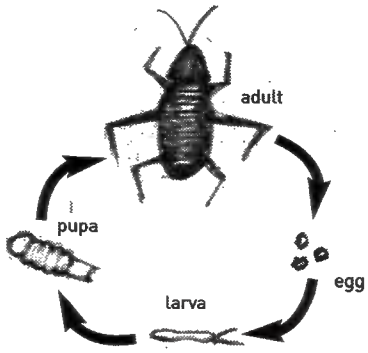
There are three stages in incomplete metamorphosis: egg → nymph → adult. Examples of aquatic insects and amphibians that undergo incomplete metamorphosis include: frogs, salamanders, dragonflies, damselflies and mayflies. These animals spend the egg and nymph stages of their life in the water and then come out of the water to emerge as adults. For more information on complete and incomplete metamorphosis and photos of aquatic insects that go through each of these stages see http://www.epa.gov/owow/nps/kids/bugshow/slide1.html



FROG LIFE CYCLE



INCOMPLETE METAMORPHOSIS



COMPLETE METAMORPHOSIS

River mammals and birds do not go through metamorphosis but give birth to live young or to eggs, respectively. These animals continue to grow in size, but do not change form as they grow.

A variety of plants spend their lives in the river environment. Flowering plants (like tree and wildflowers) produce flowers, which in turn form seeds that then develop into seedlings and plants. Non-flowering plants have a more complex life cycle. For example, adult ferns (called mature sporophytes) release spores which have half the number of chromosomes as an adult (like human sperm and egg). These haploid spores grow into tiny haploid plants (called gametophytes). They then produce male sperm and female eggs. The sperm fertilizes the egg and a new sporophyte grows.

Procedure

Hook

Play matching game:

- Pass out animal and plant cards, one to each student.
- Instruct students to find and group themselves with cards that go together.
- Students will share their groupings with the entire class.
- As the groupings are shared, demonstrate how they form a cycle and highlight the various stages. Also talk about the where in a river environment you would expect to see each of the plants and animals.

If you feel your students need more practice with life cycles before they research and complete the life cycle of a river plant or animal, go through the life cycle of a plant and or an animal. Here is a suggestion:

- Read the book: *Tadpole to Frog* by Wendy Pfeffer or *The Reason for a Flower* by Ruth Heller.
- After reading the book ask students:
  - How does a tadpole/seed change as it begins to grow?
  - Where would you find a tadpole/seed or adult frog/plant at the river?
- Have students identify and name the stages of the frog's/plant's life cycle. Have them draw out the life cycle of the frog/plant.

If you think your students need more of an introduction to plants and animals of the river before they do their own research, read or flip through a book on river plants. See the **Resource section** under rivers or river plants and animals.

Activity

1) Collect a variety of reference books on river plants and animals for students to use to complete their research on river plant and animal life cycles. See the **Resource section** under rivers and river plants and animals for suggestions or visit your school or local library.

2) Have students work in pairs or small groups. Let students peruse the reference books and then select a river animal or plant to research. For their research they will be finding out how the plant or animal completes its life cycle and how the river factors into its development.

3) Have students draw and label the life cycle of their chosen plant or animal on the life cycle wheel. Then have them answer the questions at the bottom of the sheet.

4) Have students share their life cycle wheels with other students.

5) As a class discuss the different ways plants and animals go through their life cycles. From the examples made by students, identify the different kinds of metamorphosis (complete versus incomplete) and highlight how some animals are born from eggs and others are born live.

6) As a class discuss the different ways the river is important to these plants and animals. Some may grow up on the banks of the river. Some may spend part or all their life in rivers. Others may visit rivers on occasion to find food or water.

Reflection & Assessment

Have the students answer the following question in their journals: What have you learned about river plant and animal life cycles?

Use the **3-Point Journal Rubric** to assess.

Reinforcement & Enrichment

Have students write a story describing what they would look like, how they would feel, what they would see, and what they would hear while going through the life cycle of their chosen animal or plant.

State Standards

Illinois

3C1a: Write for a variety of purposes including description, information, explanation, persuasion and narration.

12B1a: Describe and compare characteristics of living things in relationship to their environments.

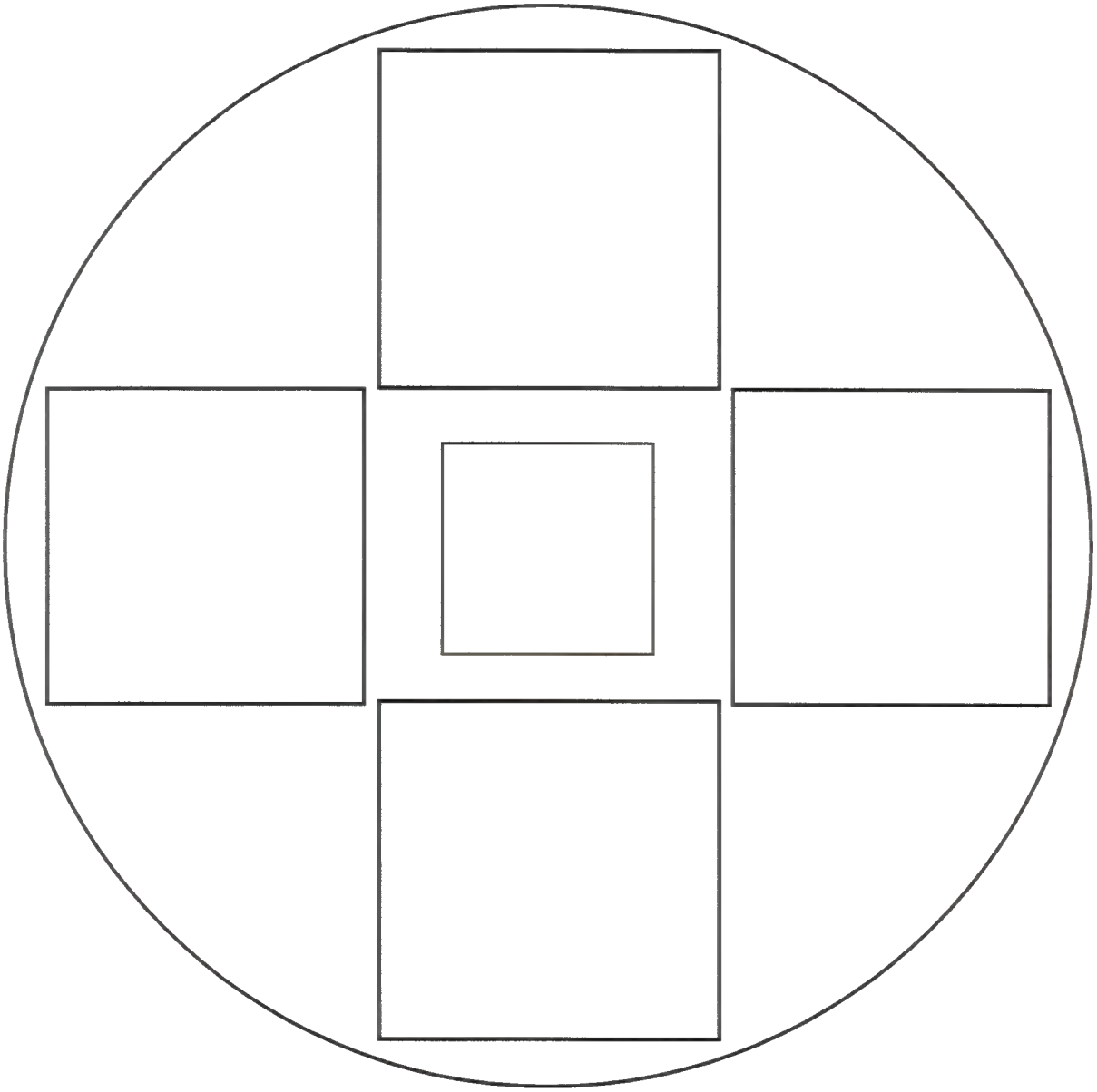
12A2a: Describe simple life cycles of plants and animals and the similarities and differences in their offspring.

Indiana

Science 2.3.1 Investigate by observing and then describe that some events in nature have a repeating pattern such as seasons, day and night, and migrations.

Science 2.4.1 Observe and identify different external features of plants and animals and describe how these features help them live in different environments.

animal life cycle wheel

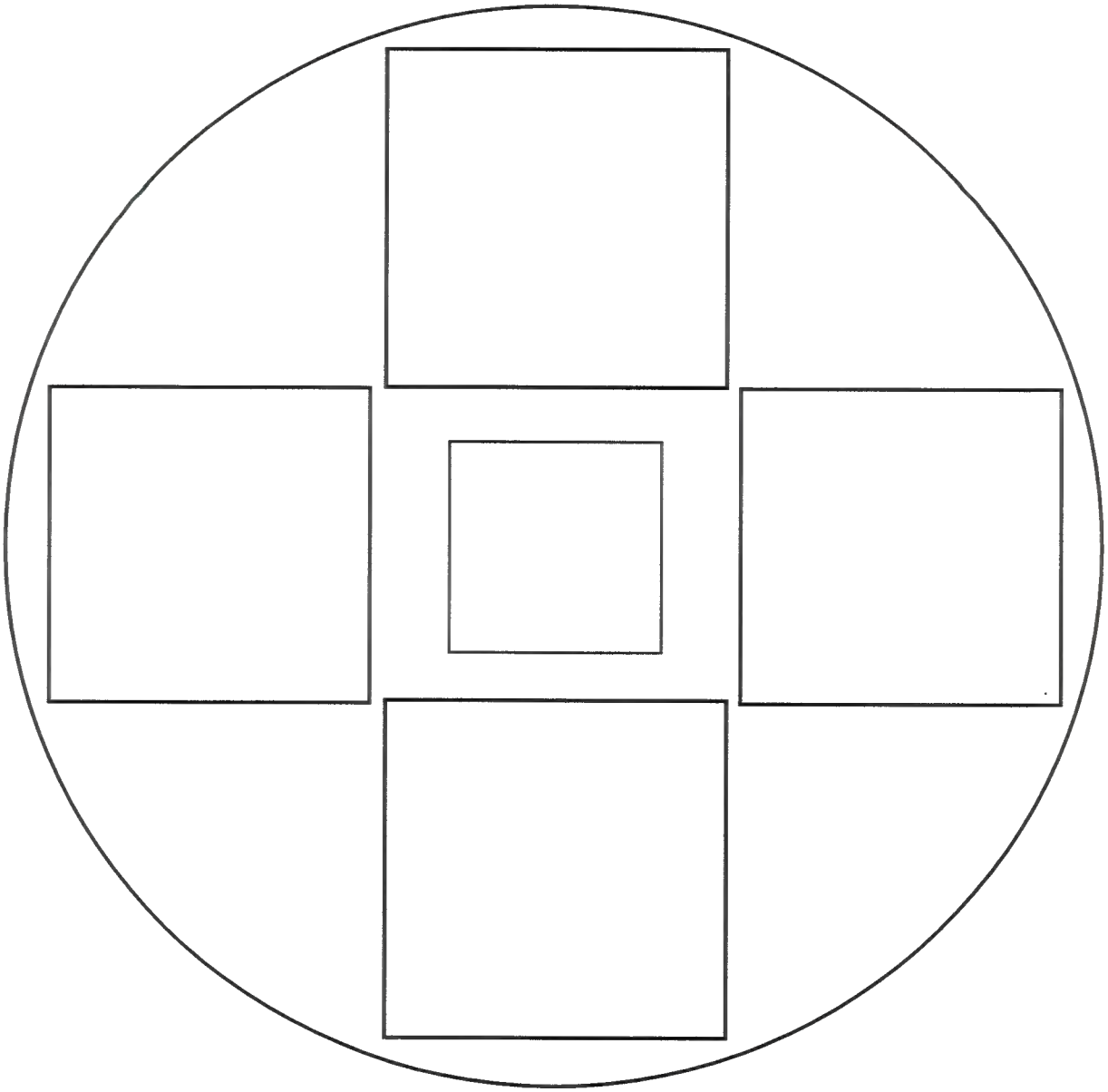


1. **Identify a common river animal.**
2. **Draw a picture of the different stages of the animal's life cycle.**
3. **Label each of the pictures.**
4. **Answer the following question: How does your animal depend on the river during different parts of its life cycle?**

_____

_____

plant life cycle wheel



1. **Identify a common river plant.**
2. **Draw a picture of the different stages of the plant's life cycle.**
3. **Label each of your pictures.**
4. **Answer the following question: How does your plant depend on the river during different parts of its life cycle?**

LESSON

7 seasons at the river

Essential Question: How do we come to know and appreciate the river environment and our place in it?

Content Question: How do seasons affect the river?

Goal

- Students will be able to discuss how the seasons affect the river and the plant and animal life that depends on it.

Vocabulary

None

Materials

- Books on the effect of seasons on the environment. Some suggestions include:
  - *The Complete Book of Seasons* by Sally Tagholm
  - *Forest Year* by Carol Lerner
  - *At the Frog Pond* by Tilde Michels
  - *From Birth to Death* by Irene Yates
- Drawing paper
- Crayons, markers, colored pencils or water colors

Procedure

Hook

Close your eyes and picture yourself at a river. What are you doing? What time of year is it? What does the river look like?

Activity

1) As a class discuss the different activities you can do at the river depending upon the season.
2) Discuss how the changing seasons represents yet another cycle (in addition to the water cycle and life cycles).
3) Ask the class, "If we went to the river during fall, spring, summer or winter what would the river look like? How about the plants? And the animals? Why?" Record the students' thoughts on the board, organized by season.

4) Take a look at the students' list. Have them consider how plant and animal life cycles are related to the changing seasons. When are babies born or new plants sprouting? Why? How many seasons do the plants and animals they researched in the last lesson live for?

5) Take out one of the books on seasons and the environment and show pictures and reiterate and expand on some of the ideas the students came up with.

6) Pose the question: I wonder if the river itself looks any different in the different seasons? If the students aren't sure, have them think about the water cycle and how it might be affected by the seasons and how that might affect the river. (Portions of the river may freeze in winter and the river will tend to be higher and flowing faster in spring because of all the snowmelt reaching it.)

Reflection & Assessment

Have students select a season and do a drawing or painting showing the river and the environment during that season. Challenge students to show the plant and animal life during their chosen season and to include themselves in the drawing.

Use student pictures to assess their understanding of seasonal changes and their impact at the river using the **3-Point Journal Rubric**.

Reinforcement & Enrichment

Students could write a poem or story to go with their seasonal picture.

State Standards

Illinois

12.B1.a Describe and compare characteristics of living things in relationship to their environments.

12.E1.b Identify and describe patterns of weather and seasonal change.

17.C1.a Identify ways people depend on and interact with the physical environment.

Indiana

Science 2.3.1 Investigate by observing and then describe that some events in nature have a repeating pattern such as seasons, day and night, and migrations.

Science 2.3.5 Investigate that things can be done to materials, such as freezing, mixing, cutting, heating, wetting, etc., to change some of their properties and observe that not all materials respond in the same way.

Science 2.4.1 Observe and identify different external features of plants and animals and describe how these features help them live in different environments.

LESSON

8 final terrarium entry

Essential Question: How do we come to know and appreciate the river environment and our place in it?

Content Question: What is a water cycle?

Goal

- Students will use inferential and reasoning skills to make connections between river terrarium observations and the water cycle.

Vocabulary

Condensation: water vapor changes to liquid water

Evaporation: liquid water changing in water vapor

Precipitation: when water condenses in clouds and falls to the earth as rain, snow, sleet or hail

Water Cycle: the continuous cycling of water through the environment

Materials

- Student created river terrariums
- Student journals
- Student worksheets from Lessons 4 and 5 on the water cycle and any other resources that allow the students to revisit what they have learned throughout the unit (these worksheets and entries may help the students form connections across activities)

Background Information

At this point in the unit, the students have explored many aspects of the water cycle and life cycles at the river. They have developed a strong foundation of these concepts and are ready to make connections across and within the unit. The purpose of the Final Terrarium Journal Entry is for the students to demonstrate their understandings of these concepts, using their inferential thinking skills. After completing this reflection, it will be very clear whether or not the students are forming connections and if they have an understanding of the water cycle. Essentially, the students are taking a concrete concept and applying it to another situation, the ones in their terrariums. In addition, this step will guide the students to the greater understanding of how the water cycle can be seen in their world outside the classroom.

The goal is for each student to identify the steps in the water cycle which are occurring in their River Terrariums:

- The water beads that have formed on the underlying part of the plastic wrap demonstrate "condensation."
- When enough water drops collect together, they fall as precipitation onto the soil.
- In order for there to be water collecting on the plastic wrap, students should infer that evaporation from the soil is occurring.
- If the students have planted a plant, they should also be able to identify that the plant is soaking up water from the soil and releasing water vapor (transpiring) through its leaves.

Procedure

Hook

Today they are going to figure out what has been happening in their terrarium that is happening outside their windows all the time.

Activity

1) After the students have taken out their journals. Explain to them that this is their final entry. This entry should follow the format that was implemented in every entry. See lesson 3.
2) Ask the students to take out their river folder or their papers that served as reflections for their river activities. Allow 10 minutes for the students to revisit and reread some of their work.
3) Tell the students that they are going to do a final journal entry. This entry is different from their other entries because you would like them to include vocabulary and ideas that have been explored in other lessons. It is now time to connect what they have learned and explain it in their river terrarium entries.
4) If students are having a difficult time making connections, you can guide them with the following questions:
   - How could the other activities relate to this observation?
   - Are you seeing any examples of what you learned in previous lessons occurring in your terrarium? Pay close attention to the water!

Reflection & Assessment

The entry is the assessment. The students should have been able to demonstrate their understanding of how water cycle is evident in their river terrarium and make the connection to how the water cycle works in the environment. In addition, you are looking for specific vocabulary words incorporated into their entries (precipitation, condensation, evaporation).

Use the **River Terrarium Rubric** (from Lesson 3) to assess.

Reinforcement & Enrichment

After reviewing their journal entries, allow students to share their most developed reflections. You may have students present or share their writing individually. Alternatively, you may want to have an open panel discussion, "piggyback" style, where the students are only allowed to share their ideas if they connect with the person who spoke before them.

If you find a common misconception in their journal entries, you may want to split the students into 2 groups, each group containing students who have and do not have the misconceptions. Then, assign the groups the 2 different conceptions and encourage them to debate how a component of the water cycle works in the terrarium. You could also have the 2 groups discuss their findings and create a "master copy" of how the "ultimate" journal entry would look. Each group could then present their entry.

State Standards

Illinois

1.C.1f Use information presented in simple tables, maps and charts to form an interpretation

3.C.1a Write for a variety of purposes including description, information, explanation, persuasion and narration.

4.A.1c Follow oral instructions accurately

11.A.1a Describe an observed event

11.A.1.b Develop questions on scientific topics

11.A.1f Compare observations of individual and group results

12.E.1a Identify components and describe diverse features of the earth's land, water and atmospheric systems

Indiana

English 2.2.7 Interpret information from diagrams, charts and graphs

English 2.2.8 Follow 2-step written instructions

English 2.5.2 Write a brief description of a familiar object, person, place or event that develops a main idea and uses details to support the main idea

English 2.7.4 Give and follow three and four-step oral instructions

Science 2.1.3 Describe, both in writing and verbally, objects as accurately as possible and compare observations with those of other people

Science 2.2.5 Draw pictures and write brief descriptions that correctly portray key features of an object

LESSON

9 river field trip

Essential Question: How do we come to know and appreciate the river environment and our place in it?

Content Question: What affects the river environment and what does it mean to me?

Goals

- Students will become familiar with the plants and animals at their local river
- Students will make and strengthen personal connections to their local river

Vocabulary

Macroinvertebrates: small animals without a backbone

Materials

IN CLASS

- *Rivers* by Randy Frahm

ON FIELD TRIP

- Paper towels
- Baby wipes
- First aid kit
- Bag or box, 5 to hold the materials for each of the stations

At the river, students will rotate through several stations. Below are the materials needed at each of the stations:

Scientist Center:

- Brown paper lunch bag, one per student
- Magnifying lenses or small plastic microscopes

Community Member Center:

- Disposable plastic gloves, one pair per student
- Garbage bags , 6

Explorer Center:

- Pencils, one per student
- Clipboard, notebook or folder, one per student (optional, they are helpful when writing)
- Box of crayons, one for every 2 students
- Copies of **Outdoor Exploration sheet**, one per student

Artist Center:

- Blank sheets of paper, at least 2 per student
- Box of crayons, as many as the number of students in a group

River Rat:

- Waders, adult sized
- Child size waders or rubber boots if students will be entering the river
- Aquarium sized-nets
- Pans in which to place items collected from the river
- Magnifying lenses or plastic microscopes (available from Nasco www.enasco.com)

Background Information

Choose a site along the river to visit. One preferably near your community.

What you and your students discover at the river depends on the site you visit, the time of year, how quiet and careful you are with your observations and some luck. But, the fact that every visit promises something new and different is part of what makes the outdoors such a fun and magical place.

During the spring migration, the more forested areas along the river are amazing places to watch birds. Encourage your students to be quiet. Break students into small groups with a chaperone if at all possible, so that the students are more likely to see animals.

It is often hard to see animals because they are really quite frightened of us. However, they often leave signs behind. Tree trunks cut off in a way that resembles the tip of a pencil means that beavers have been in the area. Branches and bark that have been scraped indicate that deer are around (male deer rub their antlers on branches and trunks). If it had rained recently, muddy areas are good places to look for tracks, as are areas covered in fresh snow. Birds often move fast or are hidden in the foliage, but if you sit and listen, their calls often come through loud and clear. Scat (feces) is another indicator that animals have been in the area. Scat that looks like that of a small dog, but with fur in it could be that of a coyote. Three-eighth inch pellets are the scat of deer.

One thing you can be certain to find in a river are macroinvertebrates (small animals without a backbone that are visible to the naked eye). As part of your field trip you will be collecting these small creatures. Depending on the cleanliness of the river and the type of habitat available, you will find different types of macroinvertebrates. Midges, aquatic worms and sowbugs are present most anywhere. Dragonfly, mayfly and damselfly nymphs and caddisfly larvae are quite common in the more natural sections of the river. These macroinvertebrates are an important food source for many fish, reptiles, amphibians and birds.

Preparing for a river field trip takes advance preparation, so start planning early. Recruit parent volunteers well ahead of time. During the field trip the students are going to be rotating through 5 stations. At each station they will be involved in a different activity. You can either have one parent assigned to lead each station for all the different student groups which will rotate to the station or you can have all parents lead their own group of students through each of the 5 stations.

If possible prepare your parents ahead of time for the field trip. Unlike other field trips they may have chaperoned, this one is going to require that they lead the students in small group activities. At the very least prepare an information sheet

on the field trip for the parents volunteers. Describe the basic set-up of the field trip. Describe each of the stations in detail and include the responsibilities of the parents (see Activity section for details). Make sure the parents understand what the students are to do at each of the stations and what their role is. In addition, give each parent a list of the students in his/her group and a timetable for the day, including when they should be at each station.

Procedure

Hook

Read and show pictures from *Rivers* by Randy Frahm. The purpose of this activity is to view and discuss the similarities and differences in the rivers pictured. Discuss what the various rivers look like, the rivers' movement, colors, textures, appearances and the season depicted. Include a discussion of where the river may be in the United States. How do they think their local river will look?

Let students know that they will be exploring their own river, in person today. In order to be safe, there are some rules everyone must follow:

- Stay in view of teacher or chaperone at all times
- No eating or drinking while doing work
- If students go in the river or touch river water, hands should be kept away from face and washed before eating

If students are to go in the water, they may only go in when asked to by the teacher or chaperone.

Invite students to "pack" for the field trip. Have one backpack, bag or box for each station that can hold the materials necessary for that station.

Divide students into 5 groups.

Activity

- Students will be visiting various stations (or centers) at the river site, assuming roles as an explorer, a scientist, a community member and an artist. Students will spend approximately 15 minutes at each location.

GROUP INTRODUCTION TO THE RIVER

1) When you arrive have all the students sit in a circle and quietly use all their senses, except for taste, to observe their surroundings. Discuss their findings.
2) Introduce the various roles your students will be taking on during their river trip: scientist, explorer, community member, artist and river rat.
3) Review Safety Rules
4) Divide students and parents into their groups. Make sure the leader of each station, or the first group to visit a station, has the supplies for that station.

RIVER CENTERS

Scientist Center:
Have students collect artifacts from the site, including leaves and interesting rocks. Remind students not to collect any animals or to pull anything out of the ground or off of a plant. Then have a show and tell or guessing game, "Guess my artifact." At the end, have the students return their artifacts to where they found them.

Explorer Center:
Have students explore the natural environment they are in. Give each student an **Outdoor Exploration sheet** and have them fill it out. Have students share their findings.

Community Member Center:
Students will clean up the river to help the environment. Students should only pick up paper and plastic. Glass and metal/aluminum should be picked up by the adult group leader only.

Artist Center:
Students draw a picture of the river. Remind students of the book they read in class. Have students look at the river itself, what the land around it is like, what it looks like far away and what it might look like to a bird flying above. Have students clearly show the season and what the plant and animal life looks like in their pictures.

River Rat Center:
Have adults and students put on the waders. Have one student per adult enter the river. Students will discuss water sensation, temperature, pressure and the feel of the river floor. Students can dip the nets into the water to discover life in the river. Scraping nets along the bottom and banks of the river should turn up the greatest number of macroinvertebrates. Picking up and examining rocks and floating branches can also turn up interesting macroinvertebrates. If students find any animals have them place them in the pans which have been filled with water. Have students observe the macroinvertebrates. Have students draw the macroinvertebrates and note what stage of a life cycle they think the macroinvertebrate is in and why. Back in class, students can use the internet to find out for sure.

If you do not want your students in the water, only have adults enter the water. Have adults collect macroinvertebrates. Have students observe macroinvertebrates as before. You can also fill one of the pans with just water and have the students touch the water, noting its temperature.

Reflection & Assessment

Upon returning to the class have students fill out the **River Field Trip Reflection sheet.**

Assess using the **3-Point Journal Rubric**.

State Standards

Illinois

3.C.1a Write for a variety of purposes including description, information, explanation and persuasion

4.A.1c Follow oral instructions accurately

11.A.1a Describe an observed event

12.A.1a Identify and describe the componenet parts of living things and their major functions

12.E.1a Identify components and describe diverse features of the Earth's land, water and atmospheric systems

12.E.1b Identify and describe patterns of weather and seasonal change

Indiana

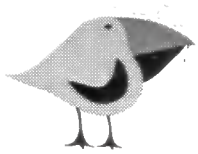
English 2.5.4 Write rhymes and simple poems

English 2.7.4 Give and follow three- and four-step oral directions

Science 2.1.2 Use tools, such as thermometers, magnifiers, rulers, or balances, to gain more information about objects

Science 2.3.1 Investigate by observing and then describe that repeating patterns such as seasons, day and night, and migration

Science 2.4.1 Observe and identify different external features of plants and animals and describe how these features help them live in different environments



outdoor exploration

Can you find?

Draw what you find below.

Something as small as a penny?

Something the exact same size as your hand?

Something just as tall as you are?

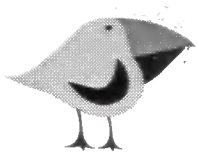
Plants and animals

Draw your favorite seed or flower. What do you like about this plant? As best you can, draw the plant's life cycle.

Do you see any animals or evidence of animal life (scat, tracks, bird calls)? Can you identify the life cycle stage of any animals? Based on the season, what life stage/s do you think the animals are in?

What season is it?

Write down what season it is. Then write down all the clues you see, hear and smell that tell you what season it is.



river field trip reflection

Name: _____ **Date:** _____

What season was it during our visit? What did you notice as evidence?

What plants and animals did you see at the river?

Can you name any stages in the life cycle of these plants or animals that you observed?

What did you notice about the river water? Was it high or low? What color was it? Were there things floating in it?

How does the water cycle affect the river?

culminating river projects

2nd graders will demonstrate their understanding of cycles and an appreciation of the river environment by :

- Work in groups to create a model of a plant or animal cycle and an example of a water cycle found in or around a river.
- Demonstrate how they individually appreciate or enjoy the river environment.

Overview:

Students will work in groups of 3 students. They will select a plant or animal from a river environment. Challenge your students to select a plant or animal that they saw or heard during their field trip. Students will draw a picture for 2 or more stages of the life cycle of their chosen plant or animal, each on a separate index card. On the back of the card they will write a brief description of the pictured stage in the cycle.

Students will also develop a water cycle that involves the river. Students will draw each step in the cycle on a separate index. In the back of the card they will write a brief description of the pictured step.

When all groups are finished, students will position their cycles on a mural depicting a river and its banks. As they position their cycle they will briefly describe each stage.

Each group will conclude their presentation by sharing what each individual student enjoys about the river.

Materials:

- Resource books on river plants and animals
- Index cards (large)
- Markers, crayons, colored pencils
- Mural depicting the river and its banks. Include enough detail so that it looks like the river you visited. However, leave lots of blank space as the students will be adding their cycle cards to the mural.

Procedure:

1. Students are grouped by 3s and roles are assigned:
   illustrator: student who draws the pictures for the stages
   recorder: student who writes a brief description of the stages
   reporter: student who shares information as the cycle is placed on the mural
2. Students select a plant or animal and research their life cycle
3. Students prepare their plant or animal life cycle index cards and decide where they should be placed on the mural
4. Students come up with a water cycle story that involves a river
5. Students prepare their water cycle index cards and decide where they should be placed on the mural
6. Each individual student decides how he/she can connect with the river environment by showing enjoyment or appreciation
7. Students orally share their plant/animal and water cycles and place them on the mural.
8. Each student in the group orally shares how they enjoy or appreciate the river.

Rubric for 2nd Grade Group Project

Student's Name _____ **Date** _____

Criteria	1 point	2 points	3 points
Identification of plant or animal	The plant or animal may not be identified correctly	The plant or animal may be identified correctly but not a clear connection to a river environment	Correctly identifies a plant or animal of the river environment
Plant or animal life cycle	A stage may be missing	2 or more stages correctly identified	2 or more stages clearly identified
Water cycle	Cycle is missing a stage	Cycle only involves 1 or 2 steps	Cycle is correct and creative
Plant or animal position on mural	Incorrectly placed on the mural	The cycle is close to correct placement on the mural	The cycle is placed correctly on the mural
Water cycle position on mural	Incorrectly placed on the mural	The cycle is close to correct placement on the mural	The cycle is placed correctly on the mural
Oral presentation	Unrehearsed	Rehearsed and understandable	Rehearsed, detailed, and easy to understand

Comments: