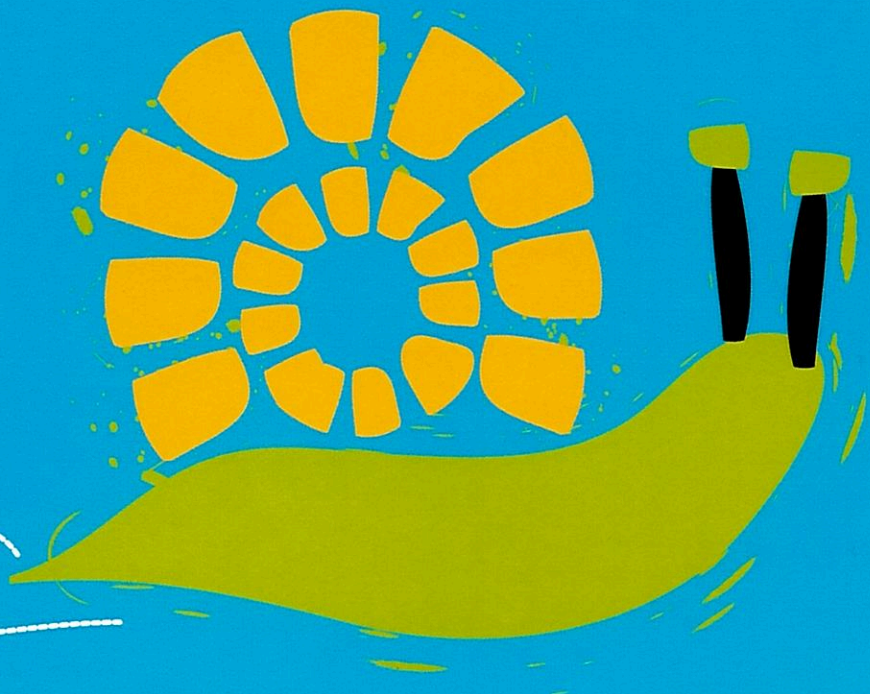


# K

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

Content Questions: What is a river?  
What lives in and around a river?  
How can we classify the living things that depend on a river?



# Kindergarten Exploring Rivers Overview



## **Content Question 1:** What is a river?

### LESSON 1: What Is a River?

- Students listen to the sounds of a river
- Students watch a video about rivers
- Students draw pictures of a river

### LESSON 2: Let's Make a River

- Students experiment with water and sound to learn how rivers flow and form

## **Content Question 2:** How can we classify the living things that depend on a river?

### LESSON 3: Who Depends on the River?

- Students listen to and discuss stories about rivers
- Students list and classify river plants and animals

## **Content Question 3:** What lives in and around a river?

### LESSON 4: Helping the River by Cleaning Up Trash

- Students investigate the effects of trash in the environment
- Students clean up their schoolyard
- Students measure the amount of trash collected

### LESSON 5: Re-Using Trash to Create River Animals

- Students use clean trash to create realistic models of river animals

### LESSON 6: River Field Trip

- Students observe the river environment using their senses
- Students build a deeper understanding and connection to their local river

## **Culminating Activity**



# what is a river?



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

**Content Question** What is a river?

## Goals

- Students will gain an understanding of what a river is and express this understanding through pictures.

## Vocabulary

**River:** A path of freshwater that is always moving and has land on both sides.

**Flow:** The movement of liquid

## Materials

- River sounds (downloaded sounds from [www.naturesongs.com](http://www.naturesongs.com))
- Video tape *Freshwater Ecosystems* (Schlessinger Media 2001)
- Journals
- Crayons and color pencils

## Background Information

Rivers are moving bodies of water. They begin in high areas of the landscape, like hills or mountains, or where natural springs flow to the surface of the ground. They flow downhill towards larger rivers and eventually flow out to lakes or oceans.

Rivers provide a rich habitat for plants and animals. The waters of the river support many floating uni- and multi-cellular plants and animals, small crustaceans like *Daphnia*, as well as larger animals such as fish. The bottom of the river supports rooted plants like cattails and is home to many mussels, clams, insects, worms and crayfish. The banks of the river are also home to many plants and animals. Trees like sycamore, willows and birch and water loving plants like arrowhead often line rivers. Animals like mink and beaver make their homes on the banks of rivers. Rivers are also important to a variety of animals like ducks, geese, turtles, deer and raccoons that visit the river for food and/or water.

## Procedure

### Hook

Play the sounds of the river and discuss with the students what they heard. After students speculate that it is water, ask where the water would be and what it would look like. Discuss running water and still water.



Have students run as if they were river water. Have them stand and sway as if they were water in a lake.

Then have students draw what they think a river is. While they are drawing have the CD playing so they can be inspired by the music and so they can feel free to draw in animals that they hear.

### **Activity**

- 1) Show river video.
- 2) Pause to point out how the river begins in the mountains and then flows downhill.
- 3) As a whole group, compare the students' first drawing of a river with how the river looked in the video.
- 4) Have students draw a new picture of what a river looks like adding more detail and new information.

### **Reflection & Assessment**

The students' two drawings of a river are their reflection

#### **Assessment Rubric**

- 1pt. First and second drawing are identical
- 2pts. Second drawing includes some extra detail
- 3pts. Second drawing includes many extra details

### **Reinforcement & Enrichment**

Show students how rivers are represented on maps. Show a map of your local area that includes your local river. You can use a city map or draw a simple map by hand showing the school, the river and some other landmarks. If you have one, show students a photo of your local river.

### **Optional Activity**

Invite the students to experiment with musical instruments and/or make their own to recreate the sounds of a river. Students may work together to compose, perform and record a song with their own instruments.



## State Standards

### Illinois

**11.A.1a** Describe an observed event

**12.D.1a** Identify examples of motion

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

**13.A.1c** Explain how knowledge can be gained by careful observation

**17.A.1b** Identify the characteristics and purposes of geographic representations including maps, globes, graphs, photographs, software, digital images and be able to locate specific places using each.

**26.B.1d** Demonstrate knowledge and skills to create visual works or art using manipulation, eye-hand coordination, building and imagination

### Indiana

**English K.7.1** Understand and follow one and two step spoken directions

**English K.7.2** Share information and ideas, speaking in complete, coherent sentences

**English K.7.3** Describe people, places, things, locations and actions.

**Science K.5.1** Draw pictures and write words for a specific reason

**Social Science K.3.2** Identify maps and globes as ways of representing the Earth and identifying map symbols for land and water

## 2

## let's make a river



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

**Content Questions** What is a river?

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**Goals**

- Students will build their experimentation, reasoning and thinking skills
- Through experimentation, students will discover that rivers flow downhill and that they move the earth (erode the soil).
- Students will be able to express their understanding of rivers through words and pictures.

**Vocabulary**

**River:** A path of freshwater that is always moving and has land on both sides.

**Slope:** When something is not flat, but tilted at an angle

**Downhill:** When something moves down a slope to a lower location

**Materials**

- Aluminum backing trays (about 20" X 16"), as many as the number of student groups you would like to have
- Blocks or thick books, to prop up trays
- Sand, enough to fill the trays one-half to two-thirds full
- Buckets, one for each tray, filled half full with water
- Plastic cups with small holes punched in the bottom, one per tray
- *River Story* by Meredith Hooper and / or *Where the River Begins* by Thomas Locker
- Journals
- Crayons
- Butcher papers
- Art supplies to make mural of river
- Masking tape



## Background Information

A river, like all water, only flows downhill, from high areas to low areas. Rivers begin in higher areas of the landscape and then flow down towards lakes and oceans. Rivers flowing over steep terrain will flow faster than rivers flowing over flatter terrain. As the river flows, it erodes the land along its banks and along its bottom. The faster a river flows the more energy it has and the more it will erode its banks and bottom.

Water in a river comes from its watershed. A watershed is the land that drains into a body of water such as a stream, lake or wetland. Because water flows downhill, watershed boundaries are always located on the top of hills or mountains. Water falling on one side of the hill will flow into one water body, while water falling on the other side of the hill will flow into another water body. Though some of the water in a river is from the rain falling on the river itself, most of the water in a river has drained from the land around it.

For more information on erosion and rivers look in the Resource section under rivers and watersheds.

## Procedure **Hook**

Tell students that today they have a challenge – to create a river, right here in their classroom.

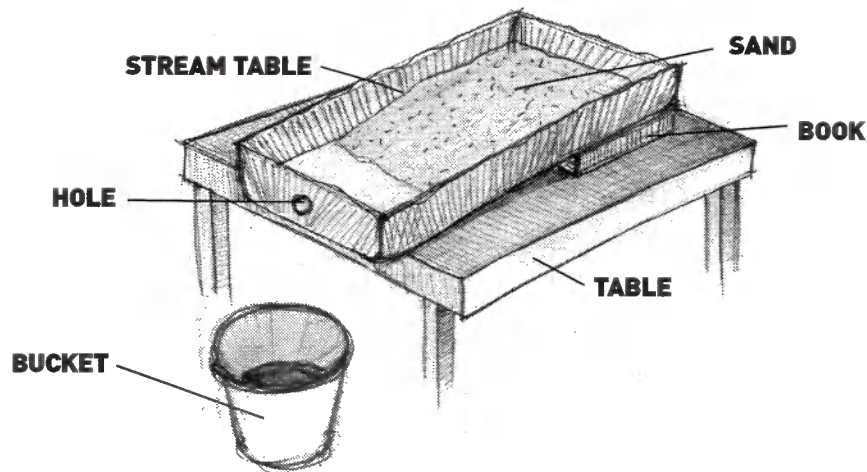
Share the books *River Story* and/ or *Where the River Begins* with your students.

Discuss how rivers are formed. What do they look like? Where do they start? How do they flow? What does the land need to look like in order for water in a river to flow?

## Activity

- 1) Before the beginning of class set up the stream table station/s. How many stations you create is up to you. You can set up one station and call small groups to work with or you can set up stream tables around the room for students to work at in small groups.
- 2) Build the stream table (see drawing on next page):
  - punch a hole, about half inch diameter, about half an inch from the bottom of the narrower side of the aluminum pan. This is where the water will drain.
  - Add sand to fill the top (the side opposite the hole) one half to two thirds of the pan.
  - Place the tray on a table, with the hole hanging over the edge of the desk and with a block or book propping up the other end.
  - Place a bucket filled half-filled with water under the hole in the stream table to catch the draining water.





- 6) Explain the stream tables to the students. The sand represents the land and the water in the cup represents rain.
- 7) Demonstrate to your students how to use the stream tables. Dip the plastic cup into the water, plug the hole with your finger and then let the water rain over the sand. Remind students of their mission – to create a river and of the fact that they need to record their observations by drawing pictures and writing or dictating what they have seen and learned.
- 8) Have students experiment with the water and sand with the goal of creating a river. As students experiment, ask questions about what they are seeing and what they think would happen if they did various things.
- 7) Have groups present their findings to the entire class.
  - Ask students to recall what happened to the sand next to the river when the river was flowing.
  - Ask students to tell you what the land looked like – was it flat or was it sloped?
- 8) Pose the question to the students: Do you think you would still get a flowing, moving river if we removed the block? Let students give their answers. Then have them return to their stream tables to find out. (Water should stagnate and create more of a lake because of the lack of incline.) Discuss student findings.

## Reflection & Assessment

As a class create a mural depicting a river. The mural should illustrate the fact that rivers flow down hill and the fact that rain supplies the water in rivers. The mural should include the river itself, the land around the river, rain and perhaps the sun and clouds.

You can be as creative as you would like with the mural. Use just markers and paint or create a more 3-D representation with cotton balls (for clouds) and blue seran wrap (for the river).

Later students will be adding plants and animals to the mural so make sure that it is large enough and has space for students to add animals both in and around the river.





## Reinforcement & Enrichment

Use the **Making a River Rubric** to assess students.

Allow students to experiment further with the stream tables.

- Can they ever stop the river? Give them blocks, craft sticks, etc. to try to block the river.
- Where should they place houses so they are not flooded by the river in a big storm. Give them small blocks to represent houses.

Have students add their results to their journal to show their findings.

## State Standards

### Illinois

**11.A.1a** Describe an observed event

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

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

**12.D.1a** Identify examples of motion

**12.D.1b** Identify observable forces in nature

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

**13.A.1c** Explain how knowledge can be gained by careful observation

### Indiana:

**Science K.5.1** Draw pictures and write words for a specific reason

**English K.7.1** Understand and follow one and two step spoken directions

**English K.7.2** Share information and ideas, speaking in complete, coherent sentences

**English K.7.3** Describe people, places, things, locations and actions.

## Rubric for Making a River



Name \_\_\_\_\_

	Beginner	Explorer	River Expert
<b>Questioning</b>	<ul style="list-style-type: none"> <li>• Did not participate in questioning activities</li> <li>• Had difficulty understanding activities</li> </ul>	<ul style="list-style-type: none"> <li>• Asked questions</li> <li>• Displayed reasoning skills</li> <li>• Explained activities</li> </ul>	<ul style="list-style-type: none"> <li>• Asked thoughtful questions</li> <li>• Displayed excellent reasoning skills</li> <li>• Good explanation of activities</li> </ul>
<b>Handled materials</b>	<ul style="list-style-type: none"> <li>• Careless handling of supplies and clean up</li> </ul>	<ul style="list-style-type: none"> <li>• Worked carefully</li> <li>• Cleaned up supplies</li> </ul>	<ul style="list-style-type: none"> <li>• Worked carefully</li> <li>• Cleaned up supplies</li> <li>• Organized supplies when completed</li> </ul>
<b>Worked as a team</b>	<ul style="list-style-type: none"> <li>• Had difficulty working with the group</li> </ul>	<ul style="list-style-type: none"> <li>• Worked well with others most of the time</li> </ul>	<ul style="list-style-type: none"> <li>• Worked well with others</li> <li>• Demonstrated good leadership skills</li> </ul>

**Comments:**

## 3

# who depends on the river?

**Essential Question**

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

**Content Questions**

What lives in and around a river?

How can we classify the living things that depend on a river?

**Goal**

Students become familiar with some of the plants and animals that depend on rivers

**Vocabulary**

Student generated list of river plants and animals

**Materials**

- *My River* by Shari Halpern
- *EyeWitness Rivers and Ponds*
- Student journals
- Crayons and/or color pencils

**Background Information**

When we think about plants and animals that depend on rivers, we often just think of what lives in the river. But many plants and animals that do not live in the water, depend on the river as a source of water or food.

Animals, such as deer and raccoons, come to the river to drink. Raccoons and herons visit the river to find food such as frogs and fish. Trees, such as red maple, sycamore and green ash, can be abundant along rivers because they can withstand the occasional floods that can kill other types of trees. Aquatic plants like cattails and arrowhead also grow along the edges of rivers.

Above the surface of the water, ducks paddle by feeding on algae and aquatic plants. Waterstriders also skim the surface of the water. In the water itself, fish such as carp, bluegills and sunfish swim about as do tiny microscopic animals like daphnia and copepods. Uni- and multi-cellular algae also float in the water. In the sediment, on the rocks at the bottom of the river and on submerged logs live a wide variety of macroinvertebrates (animals without backbones that are visible to the naked eye) such as crayfish, caddisfly larvae, dragonfly nymphs and aquatic worms.



## Procedure **Hook**

Read *My River*.

## Activity

- 1) Go back through the book and discuss each of the plants and animals.
  - Is it a plant or animal?
  - What does it look like? Does it have fur? Feathers? Wings? Leaves? Flowers? What color is it?
  - Have you ever seen it or something that looks like?
  - Why does it need the river?
- 2) If students have questions or you want to share more information about any of these plants or animals, use the *Rivers and Ponds* book as a reference. (Additional reference books are listed in the Resource section under rivers and river plants and animals.)
- 3) Make a list of all the plants and animals. As a class come up with different ways they could be categorized and then categorize the plants and animals.

## Reflection & Assessment

Have students choose one plant and one animal to draw in their journals. Students should include not only their plant and animal, but also the river. Have students write or dictate a sentence about how the plant and animal needs the river.

## Assessment Rubric

- |        |   |
|--------|---|
| 1 pt.  | Student draws the river and a plant or animal without description   |
| 2 pts. | Student draws the river and a plant or animal. Student describes the plant or animal and its needs.   |
| 3 pts. | Student draws the river and a plant or animal. Student describes the plant or animal and its needs. Detail is given to both the illustration and explanation. |

## Reinforcement & Enrichment

Students can make up a story about their river plant or animal. They can then either share their story with the class, write it next to their picture or dictate it to the teacher.

As a class you can make up a story about visiting a river and all the plants and animals that you would encounter. Begin the story with one sentence and then ask students to build on the story, giving each student the opportunity to add one sentence at a time.





## State Standards

### Illinois

**1.C.1a** Use information to form questions and verify predictions

**4.A.1b** Ask questions and respond to questions from the teacher and from group members to improve comprehension

**11.A.1a** Describe an observed event

**12.A.1a** Identify and describe the components of living things and their major functions

**12.A.1b** Categorize living organisms using a variety of observable features

### Indiana

**English K.2.3** Connect the information and events in texts to life experiences

**English K.5.7** Draw pictures and write words for a specific reason

**English K.7.2** Share information and ideas, speaking in coherent sentences

**Science K.4.1** Give examples of plants and animals

**Science K.4.2** Observe plants and animals, describing how they are alike and how they are different in the way they look and in the things they do