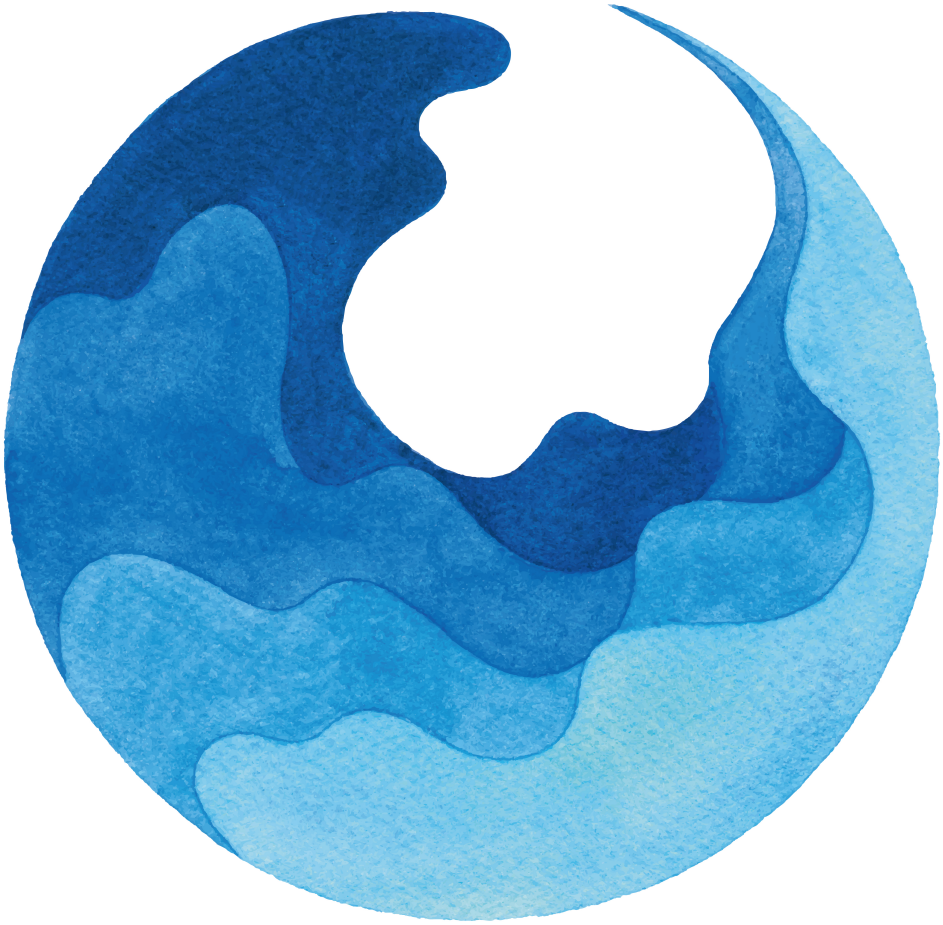

Water World

A K-2 STEM Experience

Created by C.I.T STEM Curriculum Team

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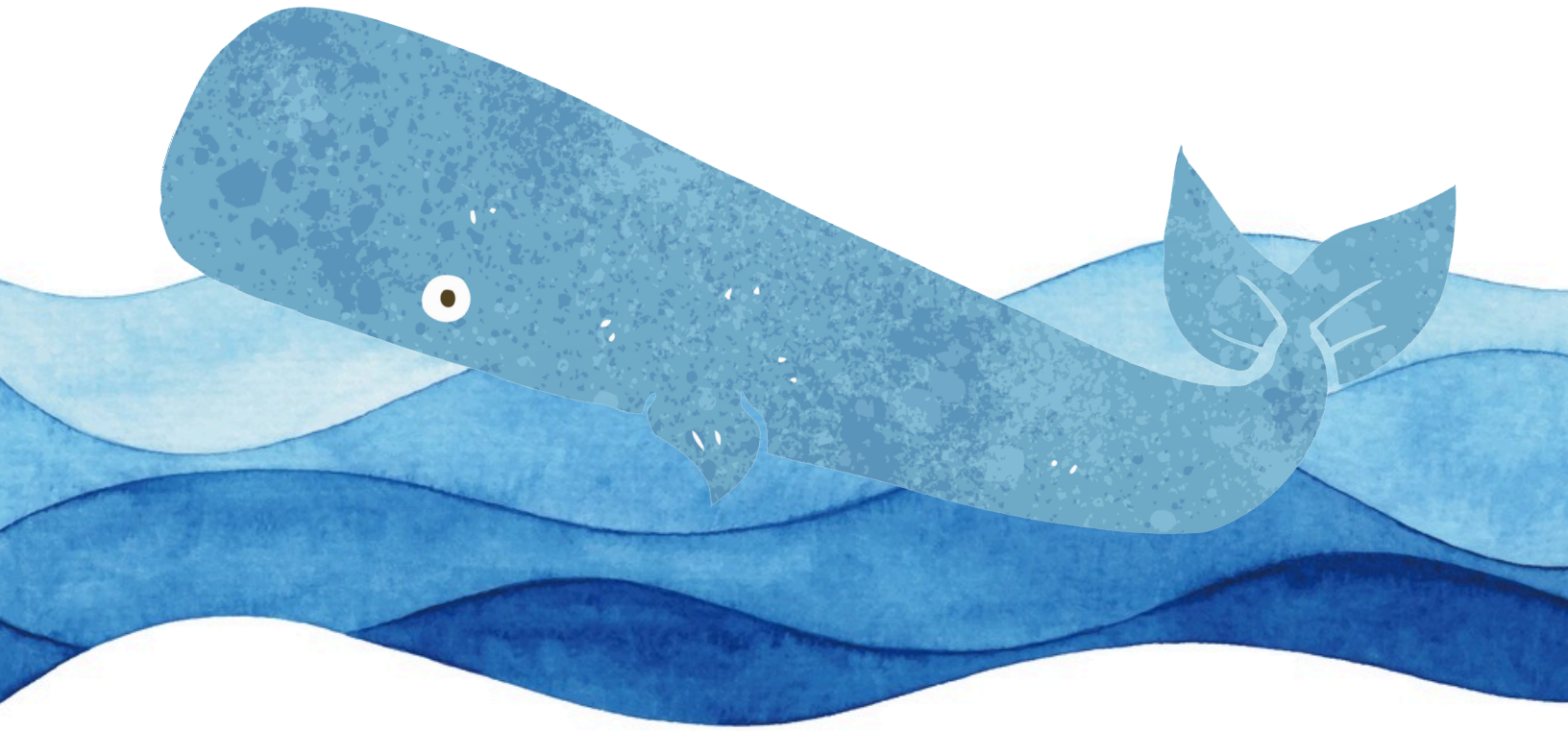
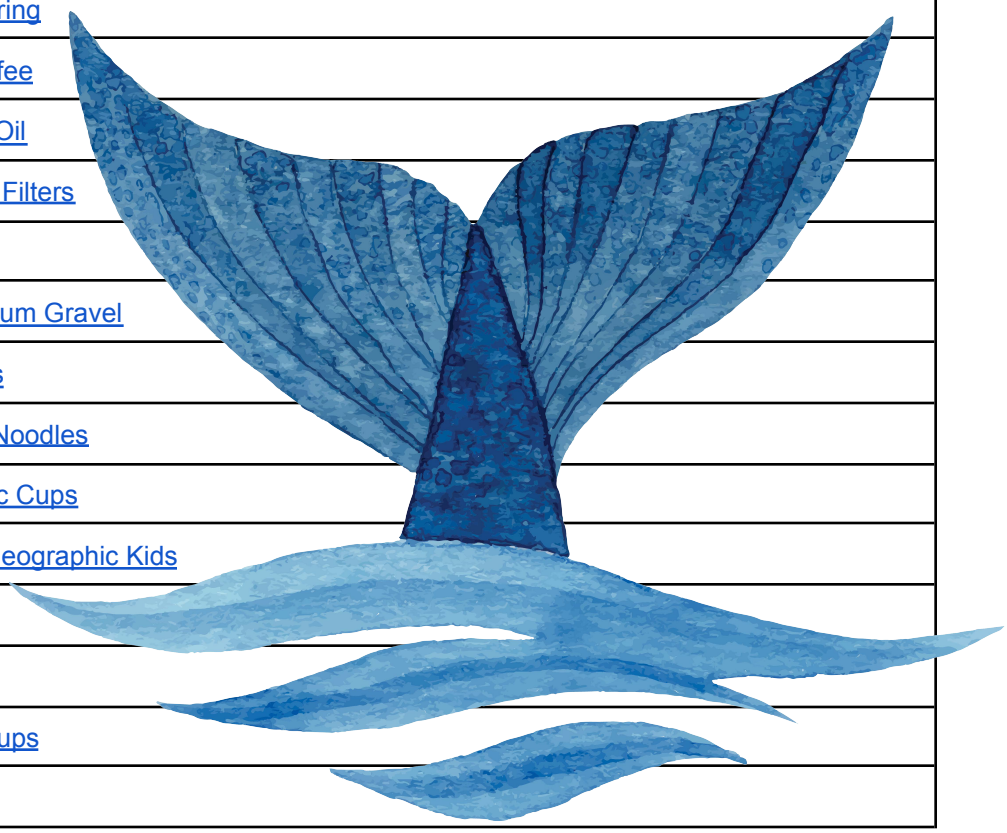


About This Experience

In this experience, students will dive into the fascinating world of water by reading high-quality texts, watching informative videos, and conducting hands-on experiments. They will explore the water cycle, learn how clean water reaches their community, and discover the diverse ways in which living things interact with and depend upon water. At the end of the experience, students will have the opportunity to embark on an immersive field trip and showcase the knowledge and skills they have acquired through a culminating project.

Materials

Quantity	Item
20	Laptops
20	Notebooks
5	Discover Water by Nadia Higgins
5	Hey Water! by Antoinette Portis
5	Water, Water Everywhere by Julie Lundgreen
5	Why Do We Need Water? by Kelley MacAulay
1	Drip Drop: How Water Gets to Your Tap by National Geographic Learning
3	Boxes of Food Coloring
1	Pack of Ground Coffee
1	Bottle of Vegetable Oil
2	Packages of Coffee Filters
3	Containers of Sand
1	Bag of White Aquarium Gravel
2	Bags of Cotton Balls
2	Boxes of Macaroni Noodles
1	Pack of Clear Plastic Cups
1	Water by National Geographic Kids
20	Plastic Plates
20	Pipettes
1	Package of Small Cups
20	Timers



10	White Flowers (need to be bought fresh)
20	Scissors
1	Living Things Need Water by Bobbie Kalman
1	Pack of Computer Paper
20	Sets of Crayons
5	Aluminum pans
5	Bag of pebbles
2	Rolls of aluminum foil
1	Roll of paper towels
5	Spray Bottles
5	Packs of Washable Markers
5	Rolls of Scotch Tape
3	Plastic Tablecloths
1	Rivers by Sara Green
20	Sets of Colored Pencils
20	Glue Sticks
1	Pack of White Card Stock

Note to Activity Specialist

This experience comes with daily lesson plans (below) and corresponding slides for each lesson. A projector is required to share the slides during the lesson as part of the whole class instruction. The slides contain visuals of the Essential Question, daily learning objective, as well as embedded videos, texts, activities, and experiments aligned to each lesson. The first two lesson plans in this experience are scripted to help you acclimate to teaching the experience. The rest of lessons are structured but less scripted to allow room for your unique voice and style.

All lessons are designed to be 45 minutes long. There are two lessons for each week of the seven week summer session.

During week 5 of this Experience, students will take a field trip to the Bronx River. This field trip will help them connect everything they have learned about the importance of water to ways water is used in their own city. The Bronx River Alliance has several field trips that classes can choose from. Please work with your Site Director to plan and book a field trip with the Bronx River Alliance as far in advance of beginning this Experience as possible. Scroll down to the bottom of this webpage to view all field trip offerings and book your trip!

We hope you enjoy teaching this experience to your students and we hope they enjoy exploring the wonderful world of water!

Week	Lesson	Big Idea	Learning Objective
1	1	Water is a natural resource that covers most of the earth's surface. It can exist as a solid, liquid, or gas, and moves between these states.	SWBAT identify things they already know and things they hope to learn about water.
	2		SWBAT describe the three states of water. SWBAT explain why water changes states.
2	3	All people need water to survive. People use it to drink, cook, clean, and for recreation.	SWBAT explain how clean water makes its way into homes and buildings. SWBAT construct a water filter and evaluate its effectiveness.
	4		SWBAT identify ways in which people use water in their daily lives.
3	5	Living things are mostly made of water. Plants need water to make the food they use to grow. People and animals need water to drink and keep clean. Some animals even live in water!	SWBAT explain how water moves through plants SWBAT explain why water is critical to plants' survival.
	6		SWBAT describe a variety of ways that animals use water for survival.
4	7	Rivers are bodies of freshwater found throughout the world. Rivers flow	SWBAT describe the characteristics of different types of bodies of water.

Week	Lesson	Big Idea	Learning Objective
		downhill, they have a beginning and end, and they can change the landscape as they move.	SWBAT construct a model body of water.
	8		SWBAT describe the characteristics of a river.
5	9	Field Trip to The Bronx River	Prepare for the Field Trip
	10		Field Trip
6	11	Culminating Project Work Time	Introduce the Culminating Project to Students
	12		Culminating Project Work Time
7	13	Culminating Project Work Time and Project Showcase	Culminating Project Work Time
	14		Culminating Project Showcase

Family Letter

Dear New York Edge Caregivers,

We are very excited to kick off our next STEM experience: *Water World*! Over the next several weeks, students will explore the fascinating world of water. They will learn about the water cycle, how clean water makes its way to their community, and explore the many different ways that living things interact with and use water.

Over the course of the experience, students will read high quality texts, watch engaging videos, conduct hands-on experiments, and participate in an immersive field trip to The Bronx River. All of these activities will help them answer the Essential Question: *How important is water?* At the end of the Experience, students will showcase the knowledge and skills they gained by completing a project and sharing it with you and other members of the community.

Want to keep the learning going at home? The following questions would be great conversation starters with your child. They are broken down by each week of the Experience:

Week	Question	The "Big Idea" your child will take away from their learning this week
1	What is water and where does it come from?	Water is a natural resource that covers most of the earth's surface. It can exist as a solid, liquid, or gas, and moves between these states.
2	How do people use water in their everyday lives?	All people need water to survive. People use it to drink, cook, clean, and for recreation.
3	How do plants and animals use water?	Living things are mostly made of water. Plants need water to make the food they use to grow. People and animals need water to drink and keep clean. Some animals even live in water!
4	What makes rivers unique?	Rivers are bodies of freshwater found throughout the world. Rivers flow downhill, they have a beginning and end, and they can change the landscape as they move.
5	Field Trip	
6	Culminating Project Work Time	
7	Culminating Project	

We can't wait to begin exploring water with your child! Please do not hesitate to reach out with any questions or concerns!

Sincerely,
[Insert Activity Specialist's Name and Contact Information]

Learning Outcomes

Essential Question	Enduring Understanding
How important is water?	Water is necessary for all living things to survive. Humans, animals, and plants use water in a variety of ways to meet their needs.

Standards

NYS Science Standards:

- **K-LS1-1.** Use observations to describe patterns of what plants and animals (including humans) need to survive.
- **K-ESS3-1** Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.
- **2-ESS22-3** Obtain information to identify where water is found on Earth and that it can be solid or liquid.
- **2-ESS2-2.** Develop a model to represent the shapes and kinds of land and bodies of water in an area.

NYSED ELA Benchmarks:

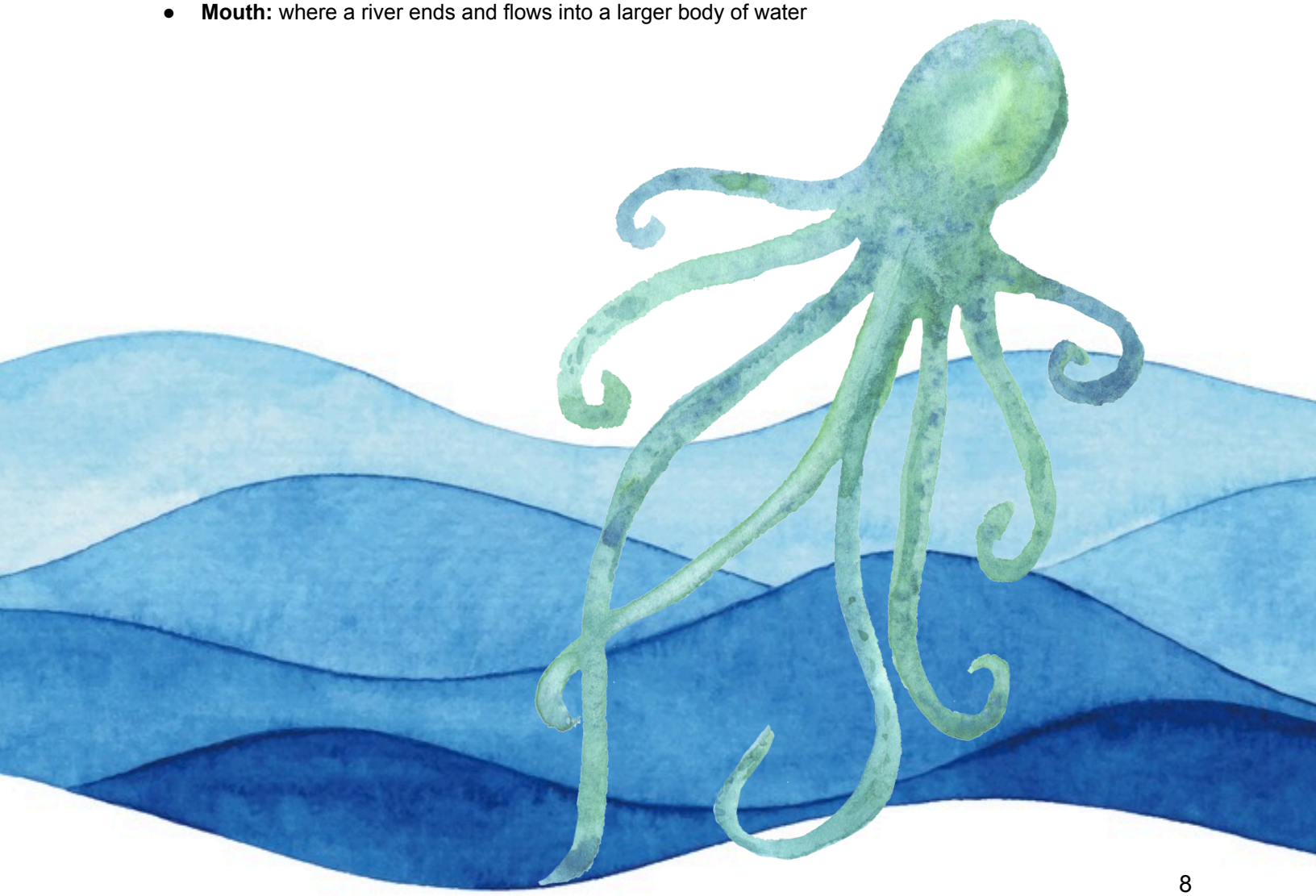
- **KL6:** Use words and phrases acquired through conversations, reading and being read to, and responding to texts.
- **1SL1:** Participate in collaborative conversations with diverse peers and adults

NYSED SEL Benchmarks:

- **3A.1b.** Create, understand, and practice shared classroom expectations that support the well-being of self and others.

Experience Vocabulary

- **Research:** to investigate and collect information about a topic
- **Solid:** a state of matter that holds its shape
- **Liquid:** a state of matter that flows and takes the shape of the container it is in
- **Gas:** a state of matter that moves, expands, and does not have a fixed shape
- **Reservoir:** an artificial lake where water is kept and stored for future use
- **Filter:** a device or material that cleans water or other liquids by preventing contaminants from passing through
- **Dehydration:** not having a sufficient amount of water in your body; occurs when a person loses more liquid than they take in
- **Evaporate:** process by which water changes from a liquid to a gas; occurs when the sun transfers heat and energy to liquid water molecules causing them to speed up and break away and become a gas
- **Roots:** the part of a plant that are usually buried in the soil and soak up water to distribute to the other parts of a plant
- **Stem:** the part of a plant that transports water to the plants leaves
- **Leaves:** the part of the plant where water goes and is used to make food
- **Ocean:** the largest bodies of water on the planet; made up of saltwater
- **Lake:** a body of water that is surrounded by land on all sides; made up of freshwater
- **River:** a body of water that flows downhill and empties into another larger body of water such as a the ocean, a lake, or another river
- **Current:** the part of a body of water, such as a river, that moves continuously in a certain direction
- **Source:** where a river begins
- **Mouth:** where a river ends and flows into a larger body of water



Culminating Project

Goal(s)	Students will communicate what they learned about the importance of water by sharing how living things including people, animals, and plants, utilize fresh water in their environment.
Audience	Community members
Situation	Water is something we use every day in many ways, but we rarely stop to think about how important it truly is. You have been asked to create a work of art to display in your community that will teach people about the importance of water for all living things: plants, animals, and people.
Product	Each student will create one square to be part of a class mural that showcases the importance of water in the lives of all living things. Students will choose a subject, (people, animals, or plants), identify one way that their subject utilizes water, and communicate this information on their square using pictures and words. These squares will be combined into a class mural that tells the story of water, a critical natural resource on which we all depend.

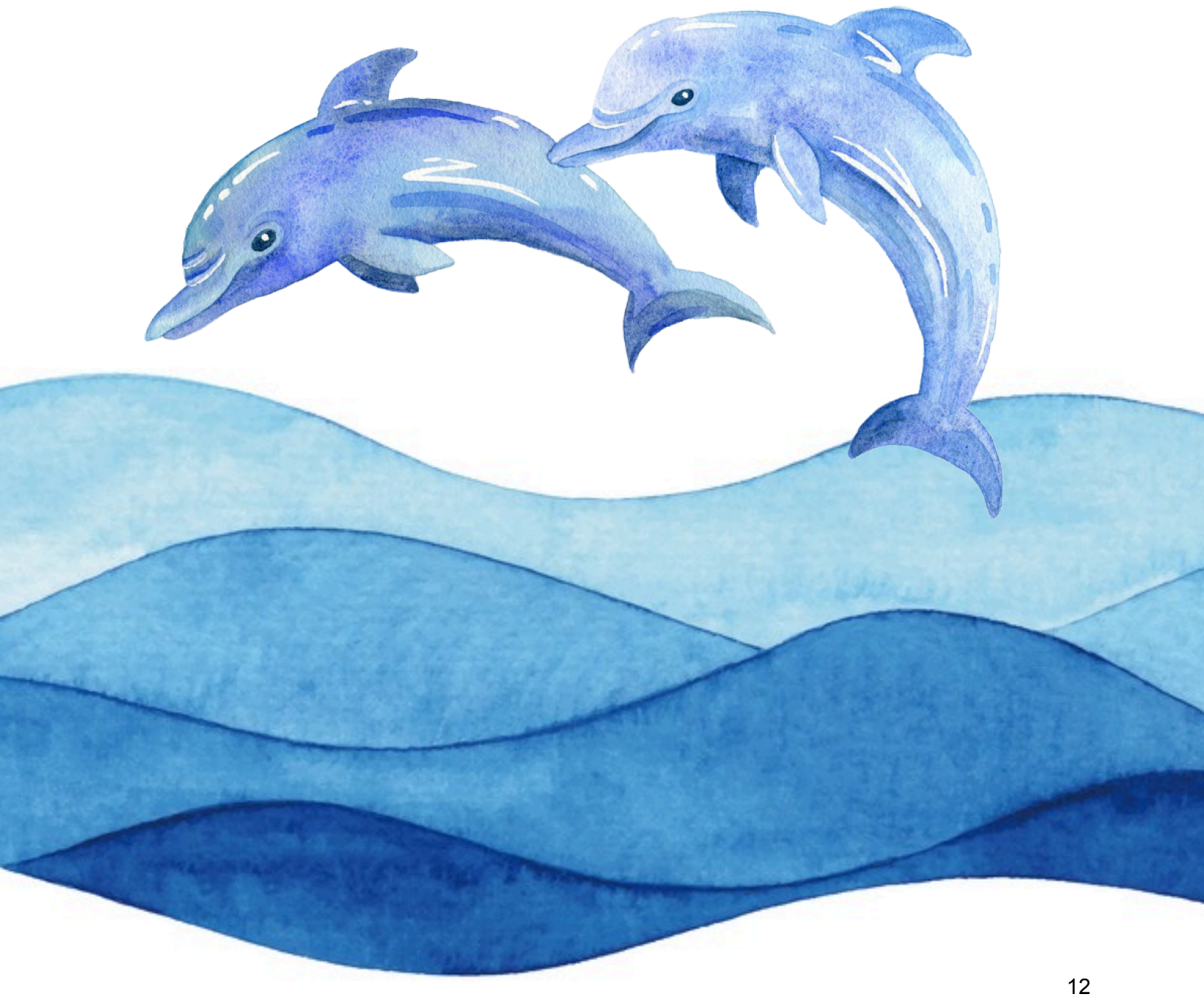
Rubric				
	4	3	2	1
Content	Square has a subject (people, animals, or plants) ***and*** showcases one way that the subject utilizes water. Information includes three or more relevant details.	Square has a subject (people, animals, or plants) ***and*** showcases one way that the subject utilizes water. Information includes two relevant details	Square has a subject (people, animals, or plants) ***or*** showcases one way that water is used.	Square does not have a subject or discuss how water is used.
Design	Square includes words ***and*** images to communicate content. Images and words are well organized and visually engaging.	Square includes words ***and*** images to communicate content.	Square includes words ***or*** images to communicate content.	Page does not include words or images to communicate content.

Lesson 1

Essential Question	How important is water?
Learning Objective(s)	Students will be able to… ● recall prior knowledge about water. ● Identify what they wish to learn about water.
Materials	● Experience Slide Deck ○ Make a copy of the slide deck and save it to your computer so that you can type into it during the lesson. You will use this slide deck to present content to students every lesson. ● Notebooks, one per student ● Books for Research, several copies of each of the following titles: ○ Discover Water by Nadia Higgins ○ Hey Water! by Antoinette Portis ○ Water, Water Everywhere by Julie Lundgreen ○ Why Do We Need Water? by Kelley MacAulay
Vocabulary	● **Research:** to investigate and collect information about a topic
Begin Instruction	
Hook	**Riddle** *Gather students on the carpet.* Today is a very exciting day because today is the first day of a brand new Experience. Whenever we begin a new Experience, we find out the topic we will be studying and the big question that we will be working together to answer. Instead of telling you the topic we will be studying, I want to see if you can guess! *Display the following riddle (in the slide deck or on chart paper)* *What Am I?* *I can help you clean your shirt.* *When I fall I don't get hurt.* *Look for me to beat the heat.* *I run but I don't have feet.* *You will probably use me a lot in the summer.* *If I leak, call the plumber!* *After each line, stop to provide time for students to think. This might sound like, "Hmmm, think, what is something that can help clean a shirt?" Ask students to keep their guesses to themselves until the end of the riddle. At the end of the riddle have students do a microphone share where on the count of three anyone can shout an answer to the riddle.* You all did a fantastic job solving that riddle and figuring out that it is talking about…water! What clues from the riddle helped you know that it was talking about water? Water is the topic of our new Experience. Water is something that we use in our daily lives, but I bet we don't stop to think about it very much. We are going to take some time to do that today.

	Essential Question *Display the Essential Question (in the slide deck or on chart paper)* *How important is water?* This is the big question that we will be working to answer throughout this Experience. To answer this question we are going to read books, watch videos, do experiments, and even go on a field trip! As we learn more about this topic, our answer to this question will grow and change, and at the end of this Experience we will get to show what we have learned by doing a project.
Teach/Demo	A researcher is someone who studies something in order to gain information about it. Researchers observe the thing they are studying closely and they record their observations. Today you will become researchers in order to begin answering our big question, "How important is water?" You are going to research water to gain more information about it. You will observe water closely by looking at books and recording what you notice in a notebook. Watch me show you what this looks like! *Model opening one of the books on water and thinking aloud about what you see on the first page. This might sound like, "Here I see a picture of someone drinking water from a glass and an animal drinking water from what looks like a stream. This shows me that water is something many different living things need. I'll add that to my journal like this." Model recording that fact about water in your journal.*
Independent Practice	**Activity: Research** *Hand out a notebook to each student. Put students in small groups and give each small group a set of books to explore. Tell students to record their observations about water in their notebooks with pictures and words.* *Circulate throughout the classroom as students explore the sets of books. As you circulate look at what students are recording in their notebook and ask questions or provide prompts to support student learning.*
Share	**KWL Chart** *Display a KWL chart (in the slide deck or on chart paper). Transition students from their tables back to the carpet.* Now that you have had some time to observe water, we are going to make a KWL chart, a chart that lists things that we already know about the topic, things we want to know about the topic, and over time we can begin to add things we have learned about our topic. We always make a KWL at the start of every new Experience to help capture our learning. *Facilitate a discussion about what students already know about water (K) and what they want to know about water (W). Record what students share in the appropriate column on the chart (K or W). You will not yet record anything in the third (L) column. At the end of this activity, read the entire chart aloud to the class.* I hope you enjoyed the first day of our new Experience as much as I did! I can't wait to continue learning about water with each and every one of you as we work together to understand how important this resource truly is.
Link	Today we learned the topic of our new Experience and the big questions we will be trying to answer. I can't wait to continue exploring water with you the next time we meet!

Exit Ticket	Ask students to write a response to the following prompt or question in their journal. Collect each student's journal and review their response before the next class meeting. ● *What are you looking forward to learning or doing during this Experience?*
Standards	**1SL1:** Participate in collaborative conversations with diverse peers and adults **3A.1b.** Create, understand, and practice shared classroom expectations that support the well-being of self and others.



Lesson 2

Essential Question	How important is water?
Learning Objective(s)	Students will be able to… ● describe the three states of water. ● explain why water changes states.
Materials	● Experience Slide Deck ● Notebook, one for each student. ● Cans with the label removed, enough to give one can to each small group of 3-4 students in your class. ● Ice to place in each can. ● Water to put in each can. ● Food coloring. One small bottle of a single color is enough.
Vocabulary	● **Solid:** a state of matter that holds its shape ● **Liquid:** a state of matter that flows and takes the shape of the container it is in ● **Gas:** a state of matter that moves, expands, and does not have a fixed shape
Begin Instruction	
Hook	**Essential Question Review** *Gather students on the carpet. Prepare to display the Essential Question (in the slide deck or on chart paper) but keep it covered at the start of the lesson.* Yesterday we started exploring water by looking at books and videos and making observations in our journals. It was the first step on our journey to answer our big question. Who remembers what the big question we are trying to answer? *Have students turn and talk to share what they think with a partner. Then uncover the Essential Question (in the slide deck or on chart paper) for students to see.* That's right! We are trying to answer the question, "How important is water?" Today we are going to continue learning about water. We will learn about the three states of water, solid, liquid, and gas.
Teach/Demo	**Experiment Prep** *Later in the lesson students will be doing an experiment that requires a wait time of 30 minutes. In order to ensure you can accomplish the experiment within the time frame of your lesson, you will set it up now and come back to it later.* Later on in our lesson we are going to do an experiment. This experiment requires some time, so we are going to prepare it now and then we will come back to it later. To prepare for our experiment I am going to take these clean, dry cans and fill each one with ice. Then I am going to pour water into each of these cans along with the ice. Finally, I'm going to put a few drops of food coloring into the water. That's it! We have done what we need to do to prepare for the experiment and now we can begin our lesson. **Video** Let's watch a video that explains the three states of water. *Show this video embedded in the slide deck.*

<table>
<tr><td></td><td>Video Review
Now that we finished the video, let's review what we learned about the states of water!

Advance through the slide deck to review the following key points with students:
Water is unique because it is the only thing on earth that naturally occurs in all three states: as a solid, a liquid, and a gas.
Water occurs most commonly as a liquid. It covers about 70% of our planet.
When it gets cold enough, water freezes and turns into a solid. It becomes ice or snow.
When it gets warm enough, ice and snow melt and water returns to its liquid state.
As liquid water gets warm, it turns into a gas called water vapor and evaporates into the air. The warmer the environment, the quicker water will evaporate.
When water vapor in the air cools down, it turns back into a liquid and falls to earth as rain.</td></tr>
<tr><td>Independent Practice</td><td>Experiment: States of Water
Now we are ready to do an experiment that will help us understand the states of water even better! Let's review what we did to set up our experiment.

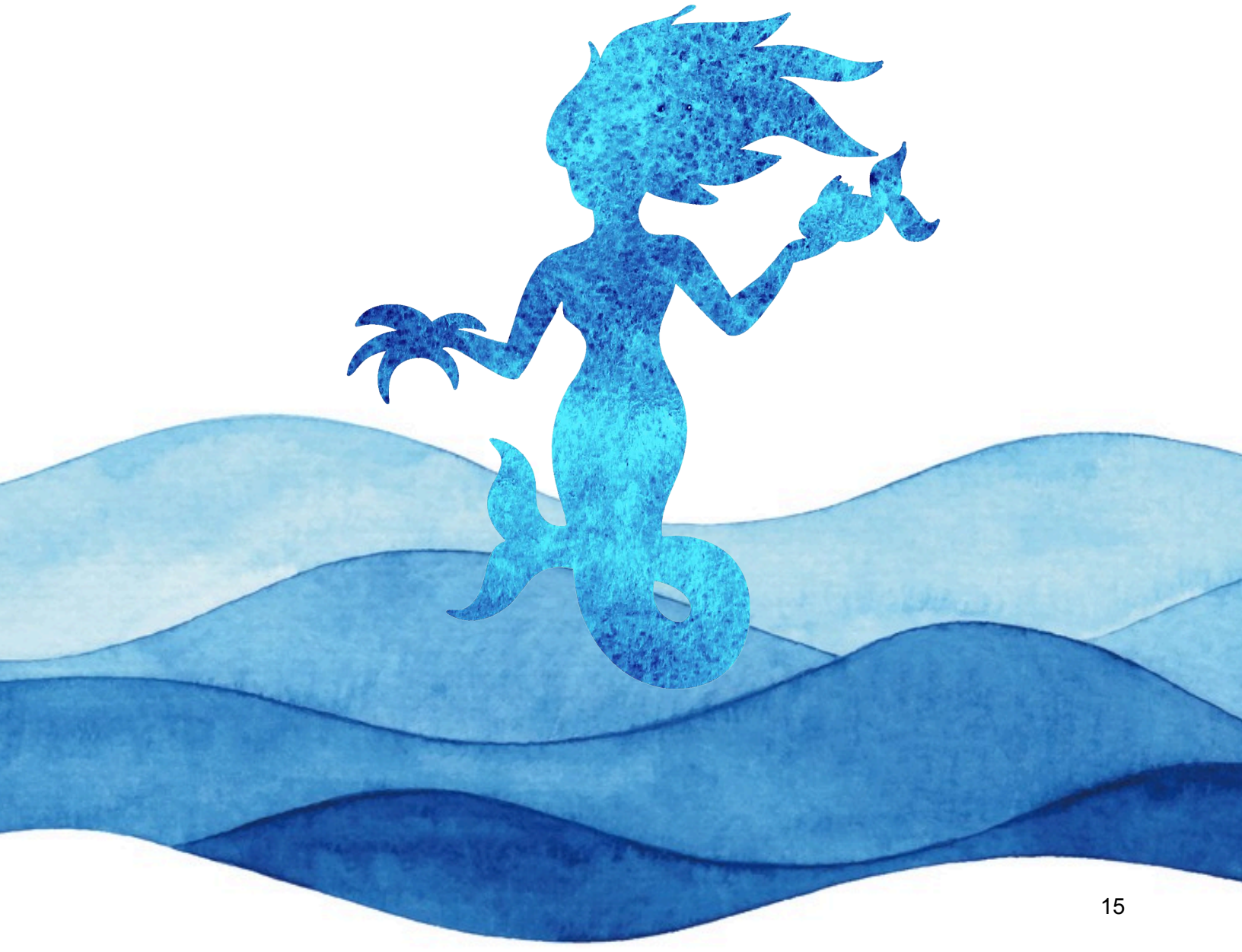
Ask students to remind you of the steps you took at the beginning of the lesson. Students should remember the following steps:
We started with empty, clean, and dry cans.
We filled the cans with ice (water in a solid state!)
Then we filled the cans with water (water in a liquid state!)
Then we let the cans sit.
Great job remembering our steps! Now it is time to observe what happened. When you go back to your table you will observe the can carefully and draw and write about your observations.

Place one can on each table. Pass out student journals. Transition students back to tables. There should be a small group of students at each table so that every student is able to see the can. Set a timer for 5 minutes. Circulate as students draw and write about their observations and engage with students by asking questions to help them explain and extend their thinking.</td></tr>
<tr><td>Share</td><td>Experiment Debrief
Transition students back to the carpet with their journals for a class conversation. Ask students to share what they observed and what they think caused it to occur. Record student ideas in the table provided within the slide deck. Below are the observations and causes that you will want students to share. If students do not identify all of these things, ask questions to push their thinking. If necessary review the content from the video to support their understanding of what occurred in the experiment.

<table><tr><th>What did we observe?</th><th>Why did this happen?</th></tr><tr><td>There are drops of water on the outside of the can. At the beginning of the experiment the outside of the can was completely dry.

The drops of water are clear. They are not blue like the water inside the can. So the water did not leak out of the can.</td><td>The ice water cooled the air outside of the can. When water vapor in the air gets cold enough, it turns back into a liquid. The drops on the outside of the glass came from the water vapor in the air. The water vapor got cold and turned into a liquid.</td></tr></table></td></tr>
</table>

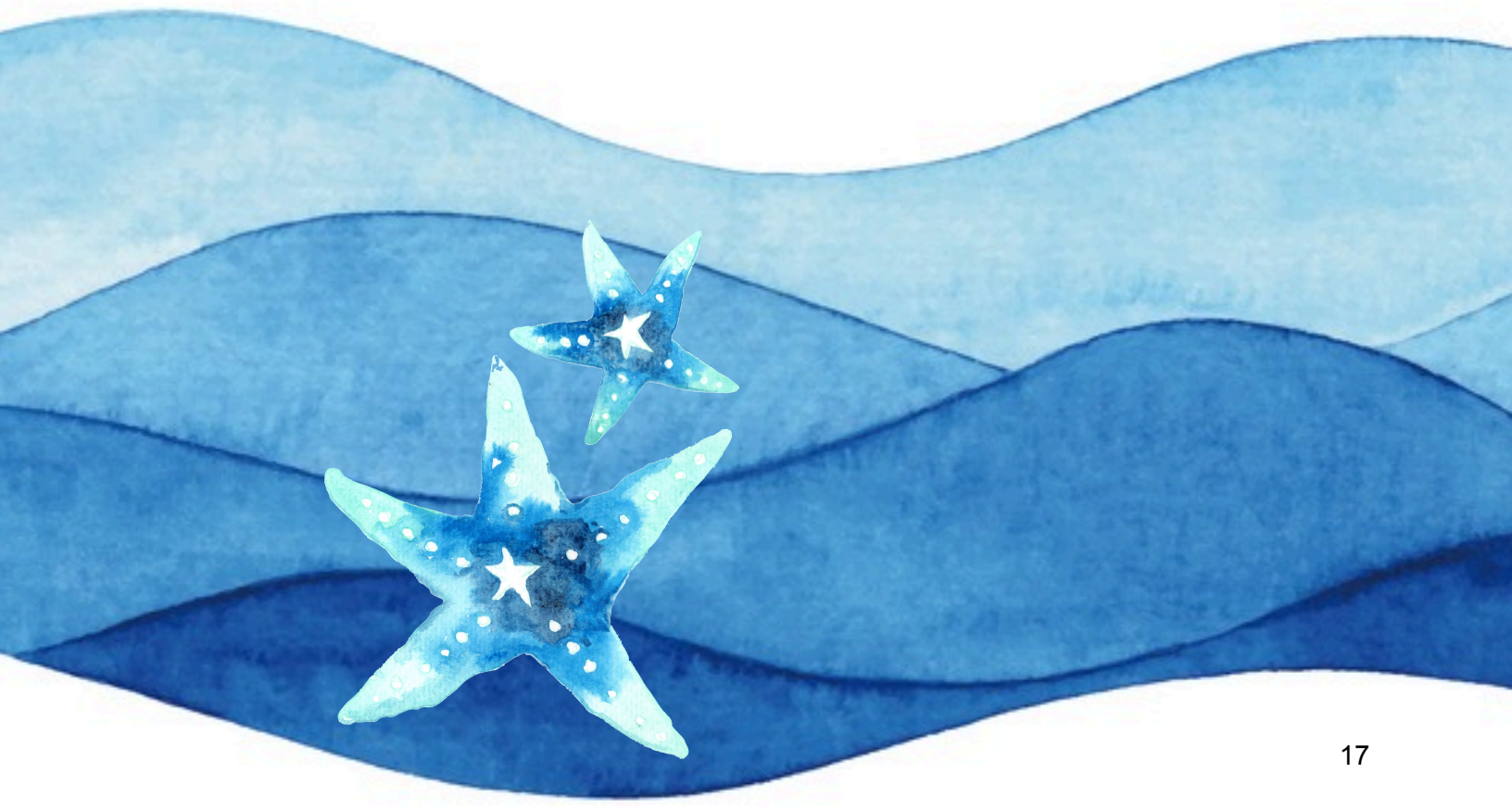
Link	Today we learned that water can exist as a solid, liquid, or a gas and what causes it to move between these three states.
Exit Ticket	Ask students to write a response to the following prompt or question in their journal. Collect each student's journal and review their response before the next class meeting. ● *Draw and label a picture to show examples of where you have seen water in a solid, liquid, and gas state in your own life.*
Standards	**2-ESS22-3** Obtain information to identify where water is found on Earth and that it can be solid or liquid. **KL6:** Use words and phrases acquired through conversations, reading and being read to, and responding to texts. **3A.1b.** Create, understand, and practice shared classroom expectations that support the well-being of self and others.



Lesson 3

Essential Question	How important is water?
Learning Objective(s)	Students will be able to… • explain how clean water makes its way into homes and buildings. • construct a water filter and evaluate its effectiveness.
Materials	• Experience Slide Deck • Notebook, one for each student. • Simulated wastewater (for one gallon add ½ cup of coffee grounds, some cooking oil, grass clippings, shredded newspaper, etc.) • Empty .5 Liter Plastic Bottles (2 per group) • Filter Materials (coffee filters, clean sand, clean aquarium gravel, cotton balls, uncooked macaroni, etc.) • Cups to scoop filter materials.
Vocabulary	• **Reservoir:** an artificial lake where water is kept and stored for future use • **Filter:** a device or material that cleans water or other liquids by preventing contaminants from passing through
Begin Instruction	
Hook	We use water in our homes for so many different things. Imagine you woke up one morning and you went to turn on a faucet and nothing came out! How would your day be different? What wouldn't you be able to do? Turn and talk with a partner. Today we are going to learn about how clean water makes its way into our homes and buildings. This will help us answer our big question: How important is water?
Teach/Demo	**Read Aloud** Today we are going to read a book called Drip! Drop! How Water Gets to Your Tap. Let's see if this book helps us understand where our water comes from! *Read this text aloud, pausing at key moments to pose questions and engage the class in discussion. The text is also embedded in the slide deck.*
Independent Practice	**Experiment: Make Your Own Water Filter** We just learned about how water makes its way from reservoirs, rivers, and streams, into our homes. There are many steps to ensure the water that comes to our taps is clean. Now you will get a chance to explore the process of cleaning water! *Review the question, materials, and procedure for the experiment using the slide deck. Put students in small groups of 3-4. Give each group the materials needed to conduct the experiment and allow them to work on it in their groups. Circulate and provide support as needed.*
Share	**Experiment Debrief** *Project the following questions from the slide deck and facilitate a class discussion:* *Questions:* 1. *Which materials, or order of materials, produced the cleanest water? Why do you think this might be?* 2. *What did this experiment make you think about water in your own life?*

	Answers: 1. *Water slips easily through the filter materials, but bigger gunk, like dirt, gets trapped. It is most effective to layer filter materials so that they get finer and finer toward the end of filtration, so they can catch whatever was missed earlier.* 2. *Student answers will vary. They may say that it makes them think about how important it is to keep rivers and streams clean, or how much work it must be to clean all of the water that flows through their taps, etc.*
Link	Today we learned about where the water in our homes and buildings comes from and how challenging it can be to clean water once it is dirty. It is pretty amazing to think about all the work that goes into the water we drink every day!
Exit Ticket	Ask students to write a response to the following prompt or question in their journal. Collect each student's journal and review their response before the next class meeting. ● *What was something you learned about how water makes its way into your home that you didn't know before today's lesson?*
Standards	**K-ESS3-1** Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live. **KL6:** Use words and phrases acquired through conversations, reading and being read to, and responding to texts. **3A.1b.** Create, understand, and practice shared classroom expectations that support the well-being of self and others.



Lesson 4

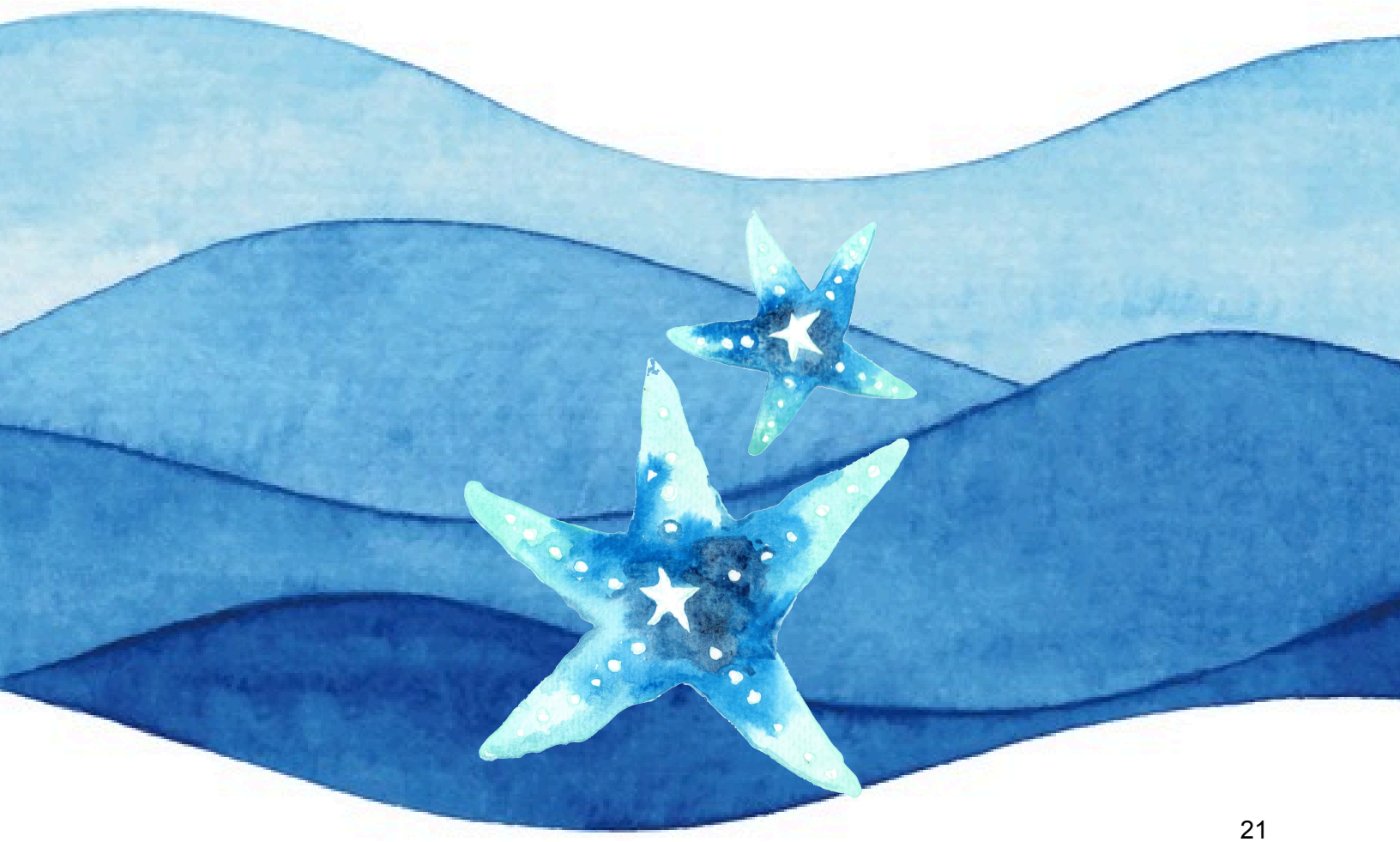
Essential Question	How important is water?
Learning Objective(s)	Students will be able to… • identify multiple ways people use water in their daily lives.
Materials	• Experience Slide Deck • Experiment handout, one per student • Plastic plates, one per student Plastic medicine dropper/pipette, one per student • Small cup of water, one per student • Hot, dry, sunny day • Timer, one per student
Vocabulary	• **Dehydration:** not having a sufficient amount of water in your body; occurs when a person loses more liquid than they take in • **Evaporate:** process by which water changes from a liquid to a gas; occurs when the sun transfers heat and energy to liquid water molecules causing them to speed up and break away and become a gas
Begin Instruction	
Hook	Did you know that more than half of the human body is made up of water?! And babies' and kids' bodies contain more water than adults! Today we are going to learn about how people use water in their daily lives, and why it is so important for people to drink water. This will help us answer our big question: How important is water?
Teach/Demo	**Read Aloud** We are going to read a few pages from a book called *Water*. Let's read to find out how our bodies use water! *Read this excerpted text aloud (it is also embedded in the slide deck). Pause at key moments to pose questions and engage the class in discussion.* **Video Introduction** Your body is about 60-70% water, and it needs a certain amount of water to function properly. As you go about your day, your body loses water from natural processes such as breathing, sweating, and peeing! If you don't replace the water that your body uses, you can become dehydrated. Dehydration is when your body loses too many fluids and it can cause lots of health problems. When you sweat, your body releases fluid through pores on your skin. This fluid evaporates into the air, changing from a liquid to a gas. When the liquid evaporates from your skin, it cools you down. We are going to watch a video that explains why we sweat and how the process of sweating works. Then we will do an experiment to learn more about evaporation. **Video** *Show this video embedded in the slide deck.*

Independent Practice	**Experiment:** Now we will do an experiment to find out what causes water to evaporate more quickly. *Review the question, materials, and procedure for the experiment using the slide deck. Put students in partnerships. Give each student the materials needed to conduct the experiment. Circulate and provide support as needed.*
Share	**Experiment Debrief** *Project the following questions from the slide deck and facilitate a class discussion:* *Questions:* 1. *Did the water evaporate more quickly in the sun or the shade?* 2. *Why might this be?* 3. *How does this relate to what you learned about how and why your body sweats?* *Answers:* 1. *The water evaporated more quickly in the sun.* 2. *Heat makes water molecules move faster and faster. The faster the water molecules move, the faster they are able to break away and evaporate into a gas. (This relates to content learned in lesson 2, students may need some support recalling this learning. You can refer to slides from lesson 2 to support them as needed.)* 3. *We learned that when our brains notice our bodies are getting warm it sends a message to our body to sweat, because sweat cools us down. It is a good think that liquid evaporates faster when it is hot because that means that when it is hot our sweat will evaporate more quickly and cool us down faster!*
Link	Today we learned all about how our bodies need and use water. We can't survive without it!
Exit Ticket	Ask students to write a response to the following prompt or question in their journal. Collect each student's journal and review their response before the next class meeting. • *Draw and label a picture to show examples of where you have seen water in a solid, liquid, and gas state in your own life.*
Standards	**K-LS1-1.** Use observations to describe patterns of what plants and animals (including humans) need to survive. **KL6:** Use words and phrases acquired through conversations, reading and being read to, and responding to texts. **3A.1b.** Create, understand, and practice shared classroom expectations that support the well-being of self and others.

Lesson 5

Essential Question	How important is water?
Learning Objective(s)	Students will be able to… • explain how water moves through plants. • explain why water is critical to plants' survival.
Materials	• Experience Slide Deck • Read aloud • Experiment handout • 2 white flowers per group of 3-4 • Scissors • Food coloring • 2 plastic cups per group
Vocabulary	• **Roots:** the part of a plant that are usually buried in the soil and soak up water to distribute to the other parts of a plant • **Stem:** the part of a plant that transports water to the plants leaves • **Leaves:** the part of the plant where water goes and is used to make food
Begin Instruction	
Hook	Have you ever seen a wilting flower? Maybe it had brown leaves, or its stem was drooping, or maybe the petals were drying out and falling off. What might have caused the flower to wilt? Turn and talk with your partner. Today we are going to learn about how plants use water. This will help us answer our big question: How important is water?
Teach/Demo	**Read Aloud** Now we are going to read a book called *Living Things Need Water*. Let's read to find out how one type of living thing, plants, use water. *Read pages 4-11 of this text aloud (it is also embedded in the slide deck). Pause at key moments to pose questions and engage the class in discussion.*
Independent Practice	**Experiment: How Plants Use Water** We just read about how plants take in and move water. Now we will do an experiment to see this in action! *Review the question, materials, and procedure for the experiment using the slide deck. Put students in small groups of 3-4. Give each group the materials needed to conduct the experiment. Circulate and provide support as needed.* *After setting up the experiment, have students draw and write their observations. On the left side, have students record their observations about the flower in their notebooks with pictures and words. Save the right side for tomorrow's observation. Circulate and look at what students are recording in their notebook. Ask questions or provide prompts to support student learning.*
Share	**Experiment Debrief** *On a large poster paper, write the question or title "Flower Predictions".*

	What do you think will happen to the flower tomorrow? *Record student responses on a large poster or whiteboard. After collecting responses, repeat what you heard students say. Draw the student's predictions with student feedback or have a student draw.*
Link	Today we learned that even plants need water to survive! They use it to make their food. They pull it from the ground through their roots and it travels up through their stems to their leaves.
Exit Ticket	Ask students to write a response to the following prompt or question in their journal. Collect each student's journal and review their response before the next class meeting. ● *Draw and label a picture of a plant that explains how plants get the water they need to survive.*
Standards	**K-LS1-1.** Use observations to describe patterns of what plants and animals (including humans) need to survive. **KL6:** Use words and phrases acquired through conversations, reading and being read to, and responding to texts. **3A.1b.** Create, understand, and practice shared classroom expectations that support the well-being of self and others.



Lesson 6

Essential Question	How important is water?
Learning Objective(s)	Students will be able to… • describe at least one way that a specific animal uses water for survival.

Materials	• Experience Slide Deck
	• Living Things Need Water by Bobbie Kalman
	• Lesson 5 Experiment Handout (continued from yesterday)
	• Parts of a Plant Song Lyrics
	• Printable Images for Class Book Activity:
	  ○ Elephant printable
	  ○ Bird printable
	  ○ Frog printable
	  ○ Hippo printable
	  ○ Tiger printable

Vocabulary	n/a
Begin Instruction	
Hook	**Experiment: How Plants Use Water (Continued from Yesterday)** *You will continue the experiment from the last lesson before diving into today's lesson.* *Remind students about yesterday's experiment and what some of their predictions were. Have students get supplies from yesterday's experiment and have them complete Day 2 observation of their flower.* *Before answering the reflection questions, listen to the Parts of a Plant song in the slide deck. (You may also print out lyrics for students to sing along.)* Let's look back at our book to reread and see why our flowers might have changed color. *Reread a page on the slide deck about plants. Then have students answer the reflection questions from their flower experiment.* Now that we know how plants use water, let's continue to learn how animals use water too! **Start Today's Lesson:** Animals and people have some similarities and some differences. What are some ways that animals are similar to people? Turn and talk to your partner. Just like people, animals need water! Today we are going to learn about the different ways that animals use water in their daily lives. This will help us answer our big question: How important is water?
Teach/Demo	**Read Aloud** Now we are going to read more from the book we started yesterday. Let's read to find out how animals use water! *Continue the read aloud from yesterday. Today you will read pages 12-19. The text is embedded in the slide deck. Pause and pose questions to engage students in learning.*

Independent Practice	**Activity: Animals Need Water** Wow, from this book we learned that animals use water in many different ways. Now you will get a chance to show what you learned about animals and water by doing an activity. *Each student will choose an animal from the animal printables provided in the materials section of this lesson. Students will color their animal, cut it out, and glue it onto a blank sheet of paper. Students will draw the animal's habitat, including a way that animal uses water (e.g. the animal drinking from a river or bathing in a puddle). Students will write a sentence or two describing how the animal is using water in their picture.* *Examples:* *-An elephant drinks water with its trunk. It also uses water to keep clean.* *- Birds drink water with their beaks.* *- Frogs lay their eggs in water. When tadpoles hatch from the eggs they live in the water.* *- Hippos stay in the water all day long so their skin doesn't dry out.* *- Water helps tigers escape the heat!*
Share	**Activity Share** *Put students into small groups and provide time for them to share their work with one another. If possible, display the work around the classroom.*
Link	Today we learned about many different ways that animals rely on and use water in their everyday lives.
Exit Ticket	Ask students to write a response to the following prompt or question in their journal. Collect each student's journal and review their response before the next class meeting. • *What is one way that animals and people use water that is the same? What is one way people and animals use water that is different?*
Standards	**K-LS1-1.** Use observations to describe patterns of what plants and animals (including humans) need to survive. **KL6:** Use words and phrases acquired through conversations, reading and being read to, and responding to texts. **3A.1b.** Create, understand, and practice shared classroom expectations that support the well-being of self and others.

Lesson 7

<table>
<tr><td>Essential Question</td><td>How important is water?</td></tr>
<tr><td>Learning Objective(s)</td><td>Students will be able to…
describe the characteristics of different types of bodies of water including oceans, rivers, and lakes.
construct a model body of water.</td></tr>
<tr><td>Materials</td><td>Experience Slide Deck
Activity Handout
Materials for Activity:
Pictures of water bodies (source: Science Buddies)
5 Aluminum pans
Sand
Pebbles
Water
5 Cups to pour the water
Aluminum Foil
Paper towels</td></tr>
<tr><td>Vocabulary</td><td>Ocean: the largest bodies of water on the planet; made up of saltwater
Lake: a body of water that is surrounded by land on all sides; made up of freshwater
River: a body of water that flows downhill and empties into another larger body of water such as a the ocean, a lake, or another river</td></tr>
<tr><td colspan="2">Begin Instruction</td></tr>
<tr><td>Hook</td><td>The earth has different bodies of water. There are oceans, rivers, lakes, and streams. Each of these types of water bodies exist in and around New York City! Picture one of these bodies of water. What does it look like? Sound like? Feel like? Turn and talk with a partner.

Today we are going to learn about what makes different bodies of water unique. This will help us answer our big question: How important is water?</td></tr>
<tr><td>Teach/Demo</td><td>Video
Now we will watch a video about different types of water!

Watch this video about water bodies found in the slide deck. Pause occasionally to prompt students with questions to engage them in the learning.

Video Review
Read the characteristics of oceans, lakes, and rivers found in the slide deck.

<table>
<tr><td>Oceans</td><td>Oceans are the largest bodies of water on the planet.
They are made up of saltwater.
Oceans are very deep.
Oceans contain large stretches of water without land.</td></tr>
<tr><td>Lakes</td><td>A lake is surrounded by land on all sides.
Lakes can range in size from a few square miles to thousands of square miles.
Most lakes are formed when rain or water from underground finds its</td></tr>
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<tr><td></td><td>
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<tr><td></td><td>way into lower parts of the land called basins.
● There is not much movement of the water in lakes.
● Lakes are not nearly as deep as the ocean.</td></tr>
<tr><td>Rivers</td><td>● A natural flowing body of water that runs toward and ocean, sea, lake, or another river.
● Rivers are formed from rain or from melting snow that flows downhill through the landscape.
● A river has beginning (the source) and an end (the mouth)
● Rivers change the land as they flow through it. Scientists even believe the Colorado river created the Grand Canyon!</td></tr>
</table>
</td></tr>
<tr><td>Independent Practice</td><td>Activity: Create a Body of Water
Now you will get to learn more about how bodies of water are similar and different by creating a model of an ocean, river, or lake.

Review the question, materials, and procedure for the activity using the slide deck. Put students in small groups. Give each group the materials needed to conduct the experiment and allow them to work on it in their groups. Circulate and provide support as needed.</td></tr>
<tr><td>Share</td><td>Activity Debrief
When students are finished, group the models by type of water body (e.g. put all the rivers together). Then facilitate a class discussion using the following reflection questions found in the slide deck

Reflection Questions:
1. How do you know these are all models of a [ocean, lake, or river]?
2. What was challenging about modeling this body of water?
3. What similarities and differences do you notice across the different models?

Answers:
1. I know this is a lake because it is small, shallow and it has land all around it. I know this is an ocean because it is deep and large. I know this is a river because it is moving and has a beginning and end.
2. Student answers may vary. Some might say it was difficult to predict where the water would go. Some may say that they couldn’t get the materials to form how they sketched.
3. Similarities might be how the students planned creating their land. Differences might be where they poured the water (or the other way around).</td></tr>
<tr><td>Link</td><td>Today we learned about different bodies of water and what makes each one unique.</td></tr>
<tr><td>Exit Ticket</td><td>Ask students to write a response to the following prompt or question in their journal. Collect each student’s journal and review their response before the next class meeting.
● If you could live close to an ocean, lake, or river, which would you choose? Why?</td></tr>
<tr><td>Standards</td><td>2-ESS2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area.

1SL1: Participate in collaborative conversations with diverse peers and adults

3A.1b. Create, understand, and practice shared classroom expectations that support the well-being of self and others.</td></tr>
</table>

Lesson 8

Essential Question	How important is water?
Learning Objective(s)	Students will be able to… • describe the characteristics of a river.

Materials	• Experience Slide Deck
	• Experiment Handout, one per student
	• Materials for Experiment (one set of materials per each partnership)
	  ○ 2 pieces of blank computer paper (keep one of these pieces flat for the land)
	  ○ 1 thick, washable marker
	  ○ 4 small pieces of tape
	  ○ Spray bottle
	  ○ Plastic table cloth to cover tables (if doing the experiment inside)

Vocabulary	• **Current:** the part of a body of water, such as a river, that moves continuously in a certain direction • **Source:** where a river begins • **Mouth:** where a river ends and flows into a larger body of water
Begin Instruction	
Hook	Yesterday we learned about different bodies of water, including rivers. Can you remember one thing you learned about rivers from our last lesson? Turn and tell your partner! Wow! You remember a lot about rivers from our last lesson. Today we will learn even more about the characteristics of rivers. This will help us answer our big question: How important is water?
Teach/Demo	**Read Aloud** Now we will read a book to learn more about rivers! *Read aloud the text (also embedded in the slide deck). Pause at key moments to pose questions and engage the class in discussion.*
Independent Practice	**Experiment** Now we will do an experiment to learn more about why the water in rivers flows. *Review the question, materials, and procedure for the experiment using the slide deck. Students will work in partners. Handout the materials needed to conduct the experiment and allow students to work. Circulate and provide support as needed.*
Share	**Experiment Debrief** *Project the following questions from the slide deck and facilitate a class discussion:* ***Reflection Questions:*** *1. What happened when it rained on your land?* *2. Why do you think the water went where it did?* *3. Did you make anything that looks like a river? What does this tell you about why rivers flow?* ***Answers:*** *1. The water ran in different directions. It picked up color from the marked lines along*

	the way. 2. *The water went where it did because the ridge were taller than the other parts of the paper.* 3. *I saw a river flow with color and it went down a wrinkle in the paper. This tells me that they flow where the land is the lowest.*
Link	Today we learned even more about rivers. I am excited to visit a local river with you soon!
Exit Ticket	Ask students to write a response to the following prompt or question in their journal. Collect each student's journal and review their response before the next class meeting. ● *What is something you learned about a river that you hope to see or experience in real life when we take our field trip to The Bronx River?*
Standards	**2-ESS2-2.** Develop a model to represent the shapes and kinds of land and bodies of water in an area. **1SL1:** Participate in collaborative conversations with diverse peers and adults **3A.1b.** Create, understand, and practice shared classroom expectations that support the well-being of self and others.

Lessons 9-14

The last three weeks of the Experience revolve around a culminating field trip and project. The table below outlines the sequence of activities as well as a suggested structure.

Lesson #	Activity	Suggested Structure / Notes
9	Prepare for the Field Trip	Use today's lesson time to prepare students for the field trip they will go on later this week: ● Review field trip expectations and safety guidelines established by your site. ● Show this video (also embedded in the slide deck) ● Engage students in an activity or discussion to generate a list of the following; ○ Things they are excited to see. ○ Things they are excited to do. ○ Things they want to learn or find out. ○ Specific questions they want to pose to their host or guide at the trip site.
10	Field Trip to the Bronx River	Students will take a field trip to the Bronx River. This field trip will help them connect everything they have learned about the importance of water to ways water is used in their own city. The Bronx River Alliance has several field trips that classes can choose from. Please work with your Site Director to plan and book a field trip with the Bronx River Alliance as far in advance of beginning this Experience as possible. Scroll down to the bottom of this webpage to view all field trip offerings and book your trip!
11	Introduce the Culminating Project to Students	Introduce the culminating project to students by explaining the project goal, audience, situation, and product. Then share and give each student a copy of the project rubric so that they know the criteria for their work. All of this information can be found in the slide deck and in the section of this Experience titled, "Culminating Project". Engage students in a brainstorming and planning session for their project where students walk away with the following questions answered: ● What information do we want to communicate? ● How do we want to communicate it? (e.g. individual posters, a large mural, artifacts with descriptions like in a museum) ● Who will be responsible for creating the things that we need for our exhibit? (e.g. will students each create something independently, will they work in small groups or teams on different components?)
12	Culminating Project Work Time	Provide students with structured time to work on their culminating project. Circulate and support students as they work.
13	Culminating Project Work Time	Provide students with structured time to work on their culminating project. Circulate and support students as they work.
14	Culminating Project Showcase	Identify a date, time, and location for students to share their culminating project with an audience. You may want to rehearse elements of the showcase with students in advance.