

6th Science 5/20/19

EQ: How does flowing water affect earth materials?

CW: Activity 7.1

HW: HW 7.1 pg. 59

Agenda

- 1) Writing Prompt
- 2) Activity 7.1
- 3) Reading 7.1



Does moving water affect the land? How?

Collaborate!

Does moving water affect the land? How?

New Vocabulary

- River—a natural course of water, usually freshwater, flowing toward an ocean, a lake, a sea, or another river.
- River source—the place from which the water in the river or stream begins.
- River channel—a roadway for the river; what gives the river its shape; may be straight or curved.

New Vocabulary

- River bed—the bottom of the river that can be made of stones, pebbles, boulders, rock, and/or mud; water in a river flows over the river bed.
- River banks—the sides of a river, between which the river flow is contained. Rivers have two banks: the right bank and the left bank. If you stand in a river and face the way the water is flowing, the right bank will be on your right-hand side and the left bank will be on your left-hand side.

New Vocabulary

- River mouth—the place where the river meets the ocean, lake, sea, or another river.



Time to Climb

Time To Climb

Colorado River



What made the landforms look the way they do?

Granite Rapids



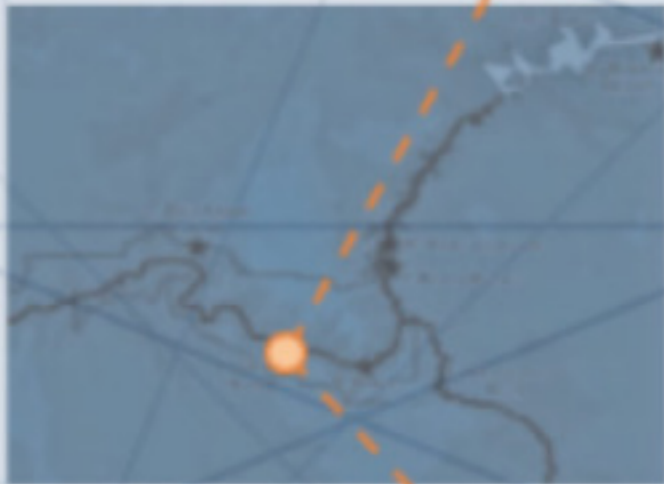
What water reservoirs do you see in the picture?

PI: Oo Crater – Hawaii Site 5



- Is there any way that the water could have affected the shaping of the landform?
 - Is water moving? How can you tell?

Granite Rapids



- What things can you look for to know that water shaped this?





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ACTIVITY 7.1 – HOW DOES FLOWING WATER AFFECT EARTH MATERIALS?

What Will We Do?

We will observe the effect of flowing water on Earth materials on a stream table.

Safety

Be careful of spilled water. The floor may become slippery.

1. Draw a diagram of the stream table model as though you are standing on a ladder looking down at it. Label these parts: river, river source, river mouth, and river banks.



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Predict

2. Predict how the water and the earth materials will change as your teacher pours water into the stream table. Fill in the second column on the chart with your predictions. You will return to this chart to record your observations.

Stream Table Part	My Predicted Changes	Actual Changes I Observed
the river		
the sides of the river		
the end of the river		

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Data Collection/Observation

3. Draw a picture of what the stream table looks like after the water has flowed through. Be sure to label the parts.
4. Record the changes you observed on the chart.

Making Sense

1. Compare your predictions to what actually happened.
2. Does water affect Earth materials in the real world in the same way? Explain.



What did you observe happening in the stream table?

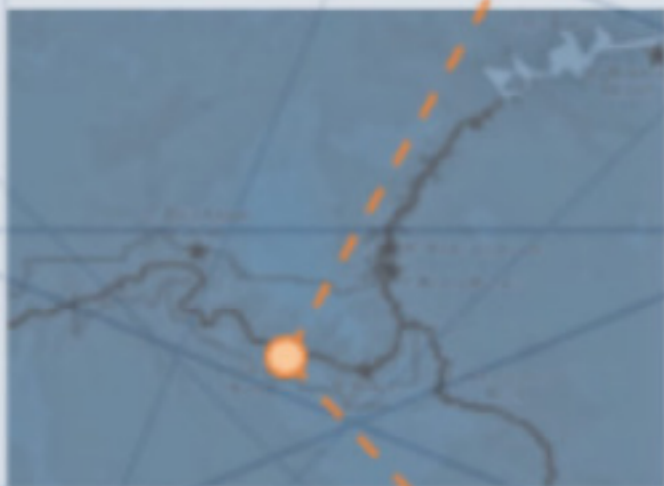
Collaborate!

What did you observe happening in the stream table?

- Flowing water carves a path.
- Some materials were carried away (erosion).
- The materials that were carried away ended up in another part of the model (deposition).

- Did water change the land in the picture the same way as in the model? Explain.
- What evidence in the picture shows how the land changed? What evidence did you see on the stream table?

Granite Rapids



- What evidence do you see of water moving in the Hawaii Volcanoes National Park picture?
- How does moving water change the land in the picture?



LS1:
How Is the Land Shaped Differently?

LS2:
How Does Water Move Through Our Parks?

How Does Water Shape Our World?



LS3:
How Does Moving Water Affect the Land?

- Reservoirs
1. Oceans
 2. Glaciers
 3. Groundwater
 4. Lakes
 5. Atmosphere
 6. Rivers

Plants + Animals

Soil

LS4:
What Is The Role of Rock in Creating Shapes?

Open Ended Question

- What did the stream table help you understand about how water moves on the earth's surface?
- Why did we use the river model (stream table) to learn about how water moves?
- Would scientists use a stream table model to study a real river? Explain.

pg. 60 - Take margin notes and answer questions



Reading 7.1 – How Long Does It Take for a River to Form?

Getting Ready

Even if you do not have rivers near where you live, you have seen them in photos or on the television. When you think about a river, you picture more than just the water. You think about the shape of the land along the banks of the river. In class, you created a model of a river using a stream table. The river formed instantly. How long do you think it takes a real river to form? Explain your ideas.



pg. 60 - Take margin notes and answer questions

Using Models in Science

This photo shows how water creates rivers and moves sand to the end of a stream table. This reading will help you think about stream tables as models of what happens when real rivers flow.

You have learned a lot about models this year. You have also learned that scientists often use models when something is too big or too small to study directly. They also use models when processes are too fast or too slow to observe. You may have created a model of how your eye sees objects (IQWST PS1). Light moves very fast, so you had to model its path in order to make sense of how light allows you to see objects. In the IQWST IC1 unit about odors, you may have created a model of what makes up matter. Molecules are too small to see with the unaided eye, so the particle model you created helped you visualize the molecules in air and in other materials. In the IQWST LS1 unit, you used a computer model to study interactions in an ecosystem. It is impossible to see all the interactions of all the organisms in an ecosystem at once, but a model allows you to do so.



pg. 60 - Take margin notes and answer questions

Stream Tables as Models

Stream tables are another kind of model. They help people study something too large to observe in class, such as a river. To study a river, you need to travel to it or use a model of it. Your stream tables also let you model processes that actually can take millions of years to change the shape of the land. Erosion and deposition are two processes that happen over time. Real rivers take a very long time to change and shape the land around them.

Example of a Real River: The Nile

Imagine that you are a geologist studying how the Nile River in Africa formed. The Egyptians depended on the Nile for food and transportation. Because the river was very wide in some places, it also offered protection. It would have been difficult for enemies to cross the wide river. The Nile is one of the longest rivers in the world. It flows north for more than 4,100 miles from its beginning in Kenya and Ethiopia until it empties into the Mediterranean Sea.

This map shows the two branches of the Nile River that join together to form one river that flows to the Mediterranean Sea. From the beginning of the Nile River in Kenya to the Mediterranean Sea is about 4,100 miles. Look at the map of the United States, which shows the distance from New York to California (A to B) and back to Colorado (B to C). That is about the same distance as the length of the Nile River.



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What might make studying the Nile River difficult?



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Using a Stream Table: Advantages

Rivers develop over a very long period of time. It might seem like all you need to form a river is a lot of water, but to form a river, water has to cut through the land. It has to move small pieces of rock and deposit them somewhere else. It can take millions of years for flowing water to make a river. Think about the pictures of the Grand Canyon that you have seen. This canyon took millions of years to form because the water had to move a lot of rock. If you were a geologist and you wanted to study a river, you would have to wait a very long time in order

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to collect important data about the river as it was forming. In addition, if a river has already formed, it is impossible to study what happened in the past. The stream table can help you recreate the same kinds of things that might have happened in the past.

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You would need to do a lot of traveling to study the river. There may be a lot of different things happening along the river. In some places the river might be wider than in other places. In some places, it might be deeper. There may be more dirt in some places while other places have more rock. A stream table can help people to study these changes without having to visit the real river. It is very helpful that the stream table is small and can be moved around. In class, a river formed quickly. It would take much longer for a river to form outdoors.

Why Study Rivers?

Some geologists study landforms on the surface of the earth and how they change over time. The picture shows a stream table used by scientists at Arizona State University. This stream table is nine meters long.

Scientists fill the stream table with different types of Earth materials to study how the materials move when water is added, just like you did in class. Other scientists might want to study how trees and plants affect the way sediments on the bank of a river move. This might be important for construction workers who build houses along a river. How far from the river must a house be built to protect it from flooding? What if the shape of the river changes over time? How might changes affect the buildings beside the river? How would changes affect the trees and other plants along the river? These are just some of the questions that geologists ask about rivers.



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What Are Some Limitations of Stream Tables as Models of a River?

Think about the Nile River and about the stream table model you created. Just like other models you have used this year, stream tables also have limitations. There are some things that a stream table cannot show.

What are some of the limitations of using stream tables as models for rivers?

