



Primary Success Publications

Successful Science Lessons **Grade One**



By Jean Roberts

**Practical lessons to teach Science
in this important grade**



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Successful Science Lessons - Grade One
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The Water Cycle

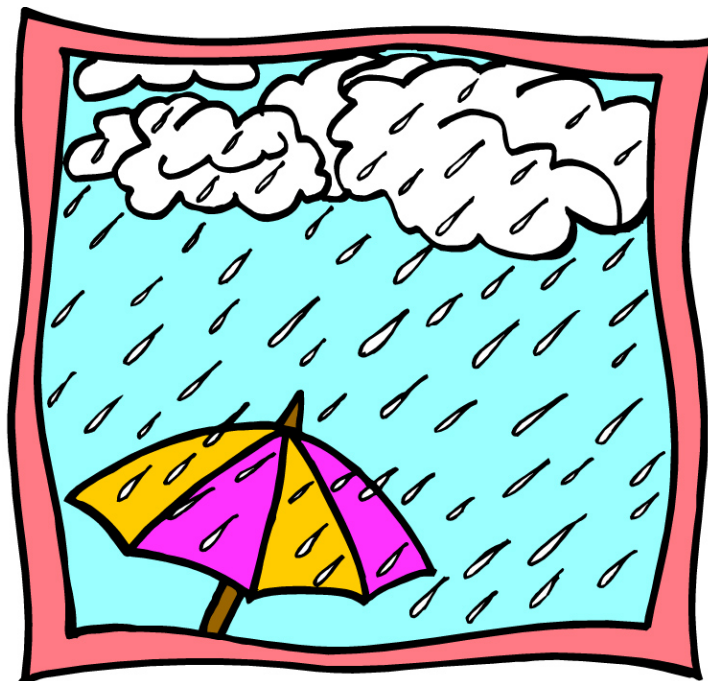


Correlate this unit with the weather unit - rain and clouds.

You can also correlate this unit with the Social Studies unit on physical features of the earth, rivers, lakes and the ocean.

Vocabulary

water cycle, evaporation, condensation, precipitation, lake, ocean, cloud, rain



Lesson 43 - Setting up a terrarium

Review: Review the word 'science' and the meaning of the word 'curious'.

Lesson:

Use a small fish tank or clear glass jar or container where you can seal the lid. Put damp soil in the bottom of the container, and use a shallow can filled with water buried in the soil to the rim to be a lake. Plant some small plants on one side of the container. Make the container air-tight and place it in a sunny place. As you do this with the children, talk about it being like a lake and a forest and fields. Teach the word 'terrarium'.

What happens in the terrarium? You will see water drops on the walls and roof of the container. How did they get there?

Watch it every day to see the different things happening. Water collects on the sides and roof and then drops back into the soil. What about the water in the 'lake'?

Introduce the word 'cycle'. Have the children hear that word before? They would be familiar with bicycle and tricycle. Cycle means to go around. What is going around in the terrarium? This is called the water cycle.

Do the other lessons in the unit, and connect them back to the terrarium and what is happening there.

Follow-up exercise:

Every day write a sentence on a chart to say what the children see and what is happening in the terrarium. The children can draw a picture of the terrarium.

Desired lesson outcome:

Understanding that water goes into the air and drops back to earth.



Additional Ideas

The children could each do a mini-terrarium. Put a bit of soil in a baggie and a couple of fast growing seeds - beans are good. Seal the bags with air inside, put names on them and tape them to a window. They can see the water droplets forming on the inside of the bag.

Talk about the water making the circle. Does the water really disappear? It becomes invisible, but then the tiny drops come together to make bigger drops.



Lesson 44 - What is evaporation?

Review: Review the word 'science' and the meaning of the word 'curious'.

Lesson:

Ask the children about rain. It is water falling from the sky. How did it get there? How can there be water in the sky? Have you ever been curious about it?

Put a shallow dish of water in a warm place. Leave it for a few days, or until it dries up. As this needs to be done before the lesson to be effective - it can be done now and talked about later. Now you can put water into a kettle and boil it. What is coming from the boiling water? What is steam? Put something flat such as a cookie sheet in the steam (carefully!) and see if the children can see what the steam is made of. A cold object like an ice-cube tray is even more effective.

Put the concept as simply as possible. The water is going into the air in very tiny bits. The little bits of water are so small that they cannot be seen. This is called evaporation and the water in the air is now called water vapour. Introduce the words and print them on a chart. Warmth makes it happen more quickly.

Why do we have to water plants? The water evaporates so the soil becomes dry. Why do you have to water a garden? When does your garden dry out the quickest? (When it is warm.) If you put water in the dish, what do you think will happen? The water will go into the air - very slowly in such little bits that you can not see it happen. What is happening in the terrarium? How does the water drops get on the sides and top of the terrarium? What happens if you get water on your shirt? You could put a few drops on each child's shirt so they can see what happens as the spot dries out. Where did that water go? How does your hair dry after a bath?

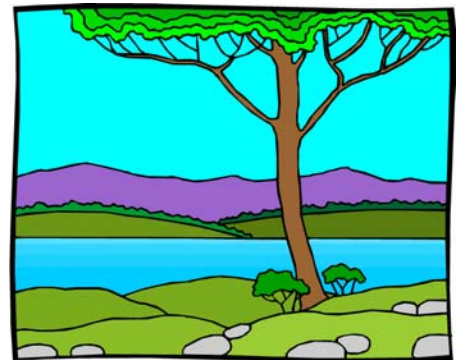
If this happens in a dish or in the terrarium, what do you think happens with a lake or the ocean? Tiny water drops are always going into the air and they become water vapour. What is this called?

Follow-up exercise:

Water is very important to us. Draw a picture of places where water can be found. They could draw a lake, a glass or bottle of water, tap, swimming pool, etc.

Desired lesson outcome:

Understanding the word 'evaporation' and that water goes into the air.



Additional Ideas

Evaporation also comes from plants. There is water in plants. Seal some leaves in a baggie and leave in a warm place.

Is there evaporation from people, too? Do we need water? Talk about sweat when you work or play hard. There is some evaporation from our skin, too. That is why we need to drink lots of water to replace that.

Find a puddle in the playground. Measure how big it is and then go back later and measure it again. Where did the water go?

Where does water go after it forms puddles on the pavement?

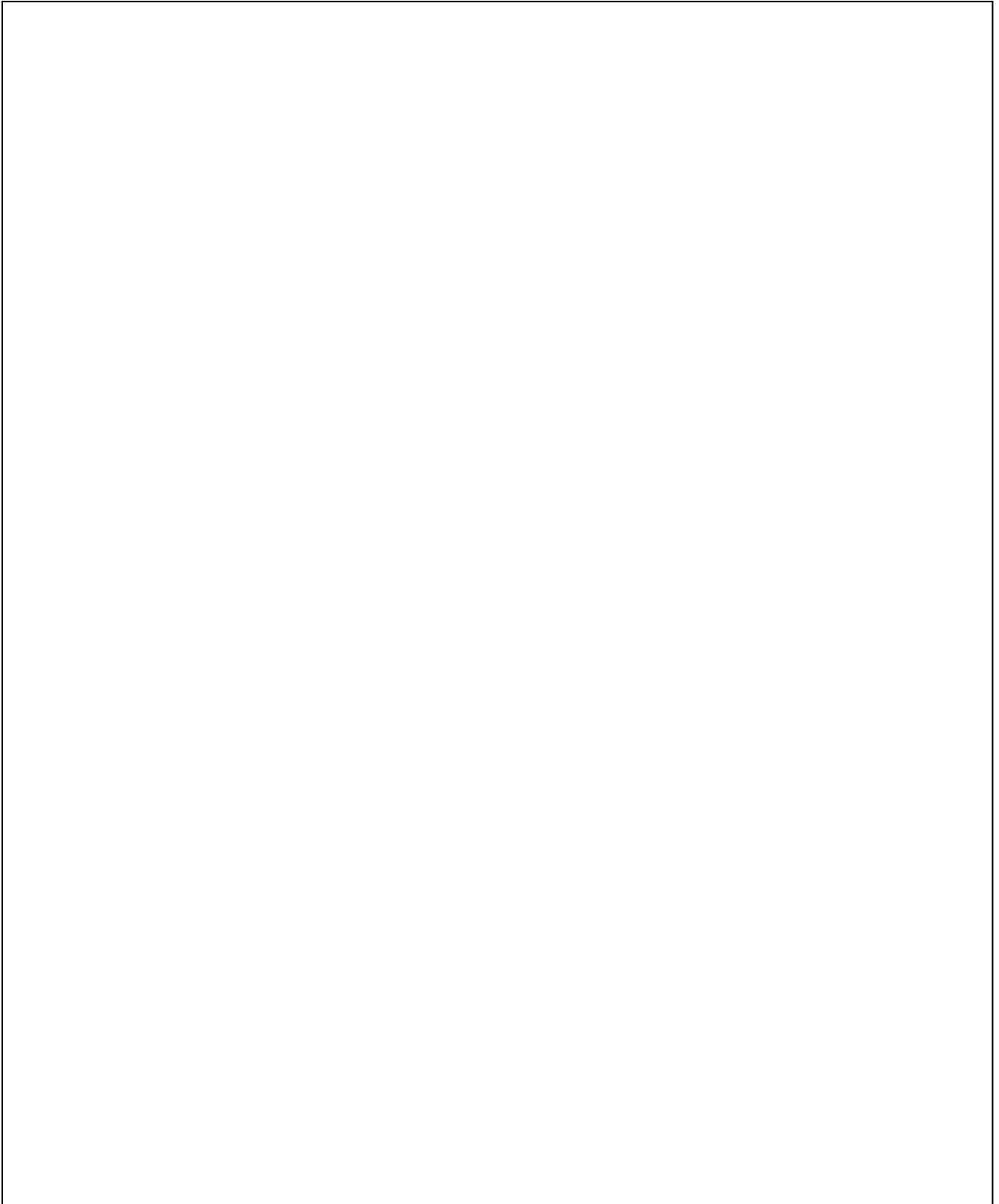
Where does the water go from the clothes you put in the dryer?

Ask students to predict what will happen to water if it is left out overnight in an uncovered dish.

Ask students what will happen if the dishes are covered.



Water is Around Us



Notes:

Lesson 45 - What is condensation?

Review: Review the word 'evaporation' and the meaning.

Lesson:

We can't see the water in the air that has evaporated. This are called water vapour.

But where does rain come from? When these tiny droplets become cold, they join together to become real drops of water. When there are lots of them outdoors they will look like fog. When there are many, many droplets in the air, fog can be 'thick' and we cannot see very far. That is what a cloud is - lots of tiny droplets of water, so small that you still can't see each one, but when there are a lot you can't see through them.

Put some ice cubes in a glass with some cold water. If possible, give a glass to every student or pairs of students. Put these glasses in warm sunshine, if possible. Tell them not to touch the glass and go on to talk about clouds. Discuss walking in fog or flying in an airplane through a cloud. Then after perhaps 10 minutes gently touch the outside of the glass. What do the children feel? There is water there and the glass will be wet. Where did the water come from? It came from the air. Now you can see it. Could you see it in the air before this? When water drops are formed from the air it is called condensation. Introduce the word and write it down. Condensation happens when this warm water vapour gets cold, just like on the cold glass. It is cold up in the sky so the little drops begin to form water drops.

Talk about the words evaporation and condensation. Talk about water evaporating from lakes and the ocean and from plants, and going up into the air and making clouds, and then the tiny droplets coming together.

Follow-up exercise:

Have the children draw pictures or write (if capable) what they did and what they saw.

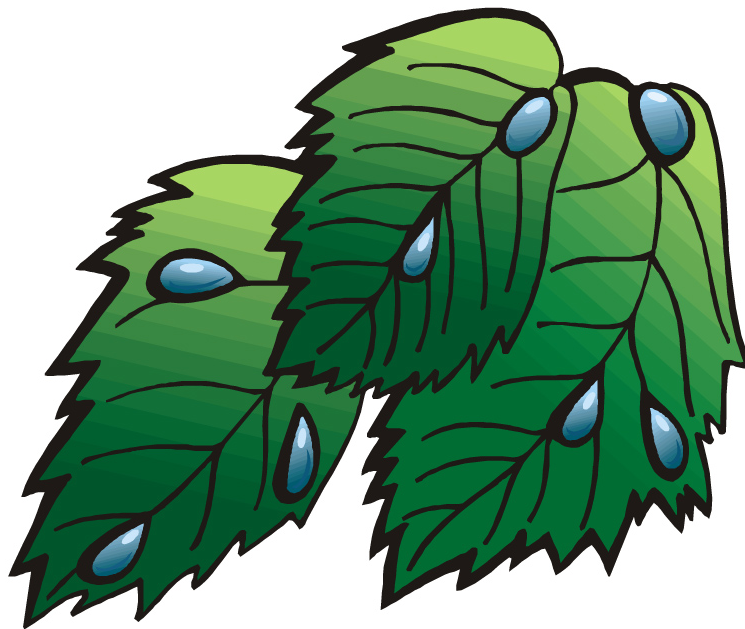
Desired lesson outcome:

Understanding the word 'condensation'.



Additional Ideas

Where else do we see condensation? Dew on the grass on a clear cool summer morning, misting on the car windows are examples of condensation. Go outdoors on a clear spring morning to see the dew on the grass. Did it rain overnight? Where did the water come from?



Condensation

This is what we did.

This is what happened.

Notes:

Lesson 46 - What is precipitation?

Review: Review the words '

Lesson:

Talk about there being tiny water droplets in the air, so small we can't see them. As water evaporates, these tiny bits of water are everywhere. Now what happens to them? Talk about condensation and the water vapour becoming actual drops of water.

Take a spray bottle with a mist adjustment. Spray a mist of water. Tell the children that these little drops are bigger than the ones in the air, but it is just the same. Spray the mist on a window or other surface where the children can see what happens. As you continue to spray, some of the droplets go together to make bigger drops and then bigger and bigger..... until they run down the glass.

Now that the children know what they are looking for, do it again on a different window or surface. Do it slowly and let the children watch the tiny mist drops join with others and finally be big enough that they fall down the surface. Let the children tell you what they saw and what was happening.

For a while the drops were not heavy enough to fall. They stayed where they were on the glass. How did they get bigger? Watch closely how the drops go together. This is what happened up in the sky, and as the tiny drops fall they touch other little drops and go together as one. This happens many times until the drop is a big raindrop and it falls to earth.

This is called precipitation, where the water falls to the earth as rain. Teach the word and write it for the students. Now we have three big words - evaporation, condensation and precipitation. Do hand movements - hands with spread fingers going up as evaporation, circle the uplifted hands for condensation and fall down as precipitation.

Follow-up exercise:

Have the children draw pictures or write (if capable) what they did and what they saw.

Desired lesson outcome:

Understanding that several



Additional Ideas

Learn how snow happens and how hail is formed up in the cold air.

Hold a bowl of ice water over boiling water. This will work best if the bowl has a handle or you use a clear Pyrex or other type container.

Once the water is boiling, hold the bowl of ice over the steam. Hold a plate or pie tin so falling drops will land in it. Write down what you see and share what you see happening.

What do you see happening on the bottom of the bowl?

What do you see happening in the pie tin?

How does the water get on the bowl?

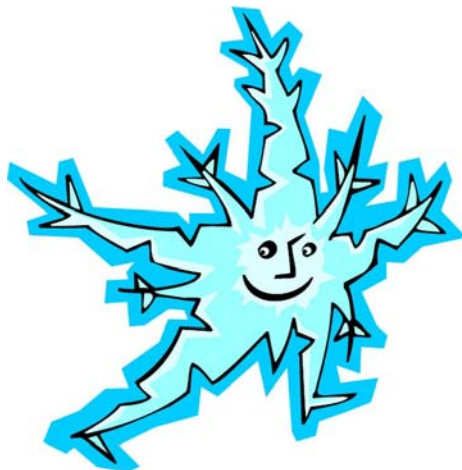
Are the water drops on the side of the bowl the same size? Why?

Which drops are falling from the bowl? Why?

Which drops look like rain?

How are the big drops formed?

Explain that the small misty drops which have condensed onto the side of the bowl of ice represent a cloud. The winds in a cloud blow the small drops around so that they collide with one another. During these collisions, some drops will combine with others making bigger and bigger drops. When the drops become so large that the upward movement of air cannot keep them in the sky, the drops fall as precipitation. If the conditions are not cold enough, the precipitation will be rain. If the temperature is cold enough the drops will freeze as crystals, making snow. If the drops combine first and then freeze the precipitation will be hail.



Precipitation

This is what we did.

This is what happened.

Notes:

Lesson 47 - What happens to the precipitation?

Review: Review the words evaporation, condensation and precipitation.

Lesson:

What happens to the rain or snow that falls? Where does it go? See if the children have some ideas. Some of it evaporates again, some goes into the soil and some runs downhill into little creeks and into rivers and into the lakes and the ocean.

Talk about a river or lake in your area. Where do the children think the water has come from?

Sculpt a terrain. This can be done very simply with books or classroom objects on a table against a wall. The center should be low like a valley and then a 'lake' area at the bottom. Cover this with plastic or aluminum foil. Now take the spray bottle and tell the children that it is going to rain. Spray large drops over your terrain. What do the drops do? Watch what happens as the drops come together and then 'run' down to the lowest part and form a puddle or a 'lake'.

Have the children tell you how this would work when it rains in your area. What happens to the water? Does some rain go into the lake? How are rivers made? Can you see little rivers going together to make larger ones?

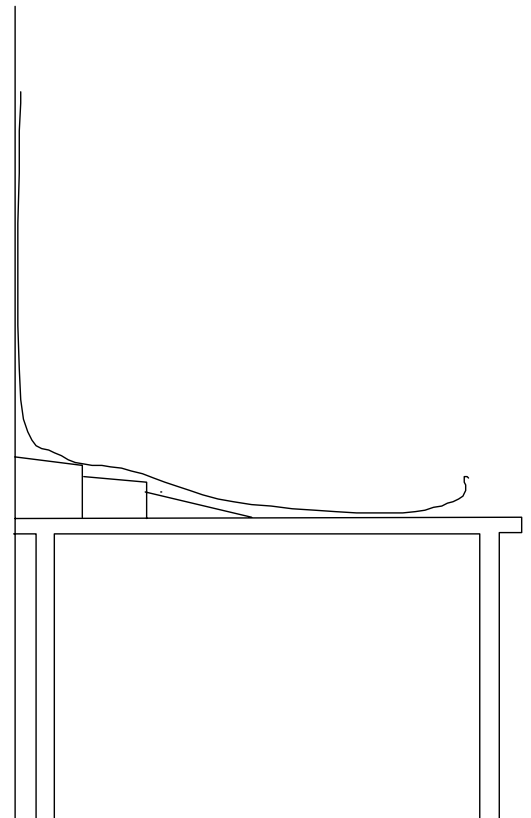
Now, when you have done this, go back and talk about evaporation. Now that the water is in the lake, what is going to happen?

Follow-up exercise:

Draw a picture of what you like to do in the rain.

Desired lesson outcome:

Understanding that precipitation goes downhill and ends in lakes and the ocean.



Additional Ideas

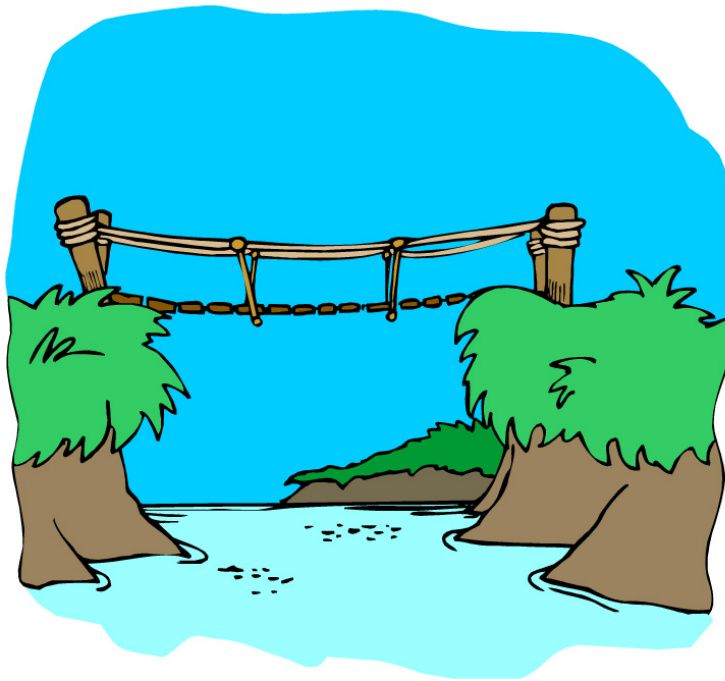
Go out in the rain and watch what happens to the drops as they fall. Does the water gather in places? Does it make small rivers in places? Why?

Make different terrains in a sand box and cover them with plastic to see where the water flows. This could also be done outdoors in a sandy area of the playground or go on a field trip to a beach or to see a small creek or river.

You can also talk about saturation, where the rain wets the soil until it can't get any wetter and then the water runs off into the rivers.

Build a rain gauge and measure the amount of rain that falls each day.

We have talked about evaporation in puddles. Why don't lakes and the oceans evaporate until there is no water left? The rivers and the rain are always adding more water.



It's Raining!

Here I am in the rain!

Notes:

Lesson 48 - The water cycle

Review: Review the words evaporation, condensation and precipitation.

Lesson:

We have been talking about the water cycle. Review the meaning of cycle as something that goes around, circle or is repeated. Water makes a circle.

Teach the following song:

The Water Cycle

(to She'll Be Coming Around the Mountain)

Water travels in a cycle, yes it does *use pointer finger to make a big circle*

Water travels in a cycle, yes it does *repeat finger circle*

It goes up as evaporation *moves two hands up to the sky*

Forms clouds as condensation *make a cloud overhead with arms circling*

Then comes down as precipitation, yes it does!

sprinkle with fingers while bringing hands down in front of you

Talk about the water cycle and make sure the children all understand the concept.

Follow-up exercise:

Make a water cycle bracelet from coloured beads. You could use florist wire or light cord to string the beads. The rain (light blue) falls down on the grass (green). It forms puddles (dark blue). The sun (yellow) comes out and dries up or evaporates (clear) the puddles. The air is filled with moisture and this causes a cloud (white) to form. Then the cycle starts all over again. The beads should be able to move freely around the circle so the bead grouping can start at any place - or you can do several sets of beads in this order. Make sure every student can tell the story of the bracelet.

Desired lesson outcome:

Understanding that water makes the circle through the different stages.



Additional Ideas

Learn 'The Water Cycle' poem by Helen Moore:
http://jefferson.unl.edu/water/water_cycle.htm

More poems:
<http://www.canteach.ca/elementary/songspoems17.html>

And another interesting site:
<http://www.kidzone.ws/water/>

Here is an on-line cartoon book about the water cycle:
<http://www.kimballmedia.com/Drippy/DrippysWorldTrialStories/ToMountainsAndBack/Entry.htm>
(Sorry for the long URL!)

Water is never lost. The same water is on the earth that was there millions of years ago. Maybe a dinosaur drank the same water that you are drinking!

