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Lesson Plan- Climate #13

Grade: 1st grade

Focus: Problems that could arise from sea level rising and rising temperatures

Materials:

-A few ice cubes

-3 cups- one filled with warm water, cold water, and room temperature water.

-Paint trays (has to be pant trays that have a slant to them, similar to the slant of a beach)

-Paper

-Tape or glue

-Rulers

-Containers for water

-Websites:

<https://coast.noaa.gov/slr/> - has world map that you can change to show how landscape will change with sea level rising by feet.

<https://climate.nasa.gov/vital-signs/sea-level/> -shows current sea level change, has a nice graph for a visual

My 1st grade class has a unit on climate that we did this year as well as a unit on Antarctica where we did a lot of discussion on glaciers and icebergs. My plan is to teach this lesson after students have learned about the water cycle. So if your students do not have an understanding of where water comes from, the cycle it goes through, and the states of matter (liquid, solid, gas) you may want to do that first.

Start the lesson off by having a review of the water cycle and where water is located on our planet in its various states (oceans, rivers, streams, lakes, cloud, water vapor, icebergs, glaciers, etc.); you may want to write out a list or a chart to refer back to. Then let students know that globally our surface temperatures around the world have been rising, ask ‘What do you think will happen to all of these different sources of water on our planet?’ and have a discussion and let students make their predictions.

Show students the 3 cups of water, you may want to let them feel the water temperature or even take the temperature of the water if you have thermometers. Then let students put an ice cube (helps to get ice cubes of similar sizes) in each cup. Let students observe which melted the fasted and let them share what they noticed. Then refer back to the list of our water sources and how after the experiment they think warmer temperatures will affect things (especially the glaciers). Ask such questions as:

-How will the rising temperatures affect the glaciers?

-How will rising temperature effect animals?

-How will rising temperatures affect us?

-How does rising temperatures affect the ocean?

After having a discussion show them the world map (attached at end of lesson plan) with the 40 largest metropolitan areas of the world. Let students share what they notice about these cities. Once they have realized that most of these cities are near a body of water discuss how rising temperatures could affect them? Why do so many people want to live near water? The goal is to guide them to realizing that if surface temperatures raise then glaciers will melt causing the ocean sea levels to rise. If they do not come to this realization, no worries because the next experiment will show them!

Explain to students that today in groups they will be building their own cities near a beach. Show them the paint trays and explain that at the top of the paint tray is where they will build their cities. Fill up the paint tray part way with water and explain that this is the ocean. Ask them what factors do you need to consider? What do you need to do to keep the people in your city safe? Let them work in groups to build and design their cities using paper, glue, tape, scissors or whatever materials you have available.

Once students have made their cities let students share their designs. Then have a discussion about what will happen to their cities if the sea levels continue to rise. Let them make predictions. Have students use a ruler to measure the current sea level in centimeters or millimeters depending on the size of your paint trays.

Then ask students what will happen if the sea level raises 1 cm? Let them make predictions. Then have them hold the ruler while you pour in enough water to raise the water 1 cm. Let them notice what happens. Then predict what will happen if we add another cm? Continue adding centimeters of water until the water starts to flood their cities.

After the experiment let students discuss what happened. Ask such questions as:

How did the sea level rising effect your city?

How does the experiment relate to the cities that are near bodies of water?

How could this affect our cities if sea levels continue to rise?

What could you do in the engineering in your cities to keep the city from flooding? (You could even continue the project to let them build a structure to protect the city)

If you have time you could explore this website, <https://climate.nasa.gov/vital-signs/sea-level/>, where you can look at a map of the world and see how it will affect the world as sea levels rise.