**5E Template- Science**

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| **Name: Danny Cole** | | **Date: 7/18/2011** |
| **Content Area: Earth Science** | **Grade Level(s):7-9 especially geared towards special needs students** | **Topic(s):**  **The earths water content** |

**Standards (SOL)**

ES.1 The student will plan and conduct investigations in which

1. volume, area, mass, elapsed time, direction, temperature, pressure, distance, density, and changes in elevation/depth are calculated utilizing the most appropriate tools;
2. scales, diagrams, maps, charts, graphs, tables, and profiles are constructed and interpreted;

ES.7 The student will investigate and understand the differences between renewable and nonrenewable resources. Key concepts include

1. fossil fuels, minerals, rocks, ***water***, and vegetation;

**Objectives (UKD’s)**

*To Become familiar with the amount of water on the earth and a comparison of the amount of water that is a usable resource.*

**Materials & Resources**

*Apple(s) and a knife*

**Safety Considerations**

*Make sure all safety considerations are given if you allow students to cut their own apples.*

**Engage – Time Estimate \_\_5 minutes\_\_\_\_\_\_**

*Hand student(s) an apple and tell them to imagine the apple being the earth. Allow them to look closely at the apple to see if they can find any similar earth shapes like continents etc. by spots etc. on the apple.*

**Explore – Time Estimate \_\_10 minutes\_\_\_\_\_\_**

*This activity can be broken into groups or individually. With more severe special needs students you can demonstrate as the teacher and ask questions etc. Explain to the students that the apple they have represents the earths water. Often times our earth is call the “water planet”. Cut the apple into four equal parts. These parts will represent all land and water that’s on the earth. Ask the students to guess how many of the four section they think represents the amount of water on the earth and how many would represent the remaining land.*

Explanation 1.

Ask the students what they think about the remaining 3 quarters and how it represents the amount of water on our earth. Talk to them about if we have this much water compared to the land then we must have an abundance of water.

Explanation 2.

Cut off 1/8 of one of the three slices.

Explanation 3.

Now take the 1/8 slice that represents the amount of freshwater and cut it into three equal sections.

Explanation 4.

**Explain -- Time Estimate \_\_5 minutes\_\_\_\_\_\_**

*Explanation 1-Explain that ¾ of the earth is made up of water. Put one of the apple quarters away and tell them today we are discussing the 3 quarters of the apple that represents the water. Explain that without water on the earth, we would not have life.*

Explanation 2 – Explain that of those three remaining quarters, most is saltwater that is undrinkable.

Explanation 3- ‘explain that of all the water in those three slices only 1/8 of one quarter represents the amount of freshwater.

Explanation 4 – Explain to the students that of the three pieces from the 1/8 slice that only one piece represents the amount of water that we are able to drink because the other two pieces represent the freshwater that is frozen in glaciers and polar ice caps. Tell them that of all the water on the earth that the only remaining water available to drink it one slice of the 1/8 piece. Explain how of this natural resource it is extremely important that we don’t allow pollutants etc. invade this valuable system. Explain the difference between renewable and un-renewable water resources that you just covered.

**Extend -- Time Estimate \_\_5 minutes\_\_\_\_\_\_**

*Briefly show the student the local Chesapeake bay water shed and/or the earths water cycle chart and explain to them how important it is to keep our water clean so that the remaining piece of the apple doesn’t have to continue to be cut.*

**Evaluate -- Time Estimate \_\_2 minutes\_\_\_\_\_\_**

*Ask students to give you thumbs up if they now can understand how much water we have on our planet compared to the drinkable amount of water.*

**Plans for Diversity**

*For students with more severe disabilities have them paired with another students that is very safety conscious. Or if you have an entire group of special needs students it may be necessary to do the lab yourself and let the students observe and answer questions etc.*

**Connections**

*This lab will allow students to begin to realize how water is a very special renewable resource if protected by the people. To take this lab further or to apply to a higher functioning class, you can begin to introduce percentages. Make a grid 10 x 10. Explain to the students that the percent sign means out of 100. Explain that if you were to take 100 people in the school and 55 of them were boys, then boys would comprise 55 percent of the people in the school. Tell them to imagine that you took all the water in the world and poured it into those 100 squares. Ask the following questions.*

Ask - What percentage of the earth’s water is saltwater or ocean?

Answer- 97 percent. Have the students color in 97 squares and color-code the legend at the bottom of the page to match the saltwater color.

Ask – what percentage of the Earths water is frozen?

Answer – 2 percent. Have them color two squares and color code the legend at the bottom of the page to match the frozen water code.

Ask – What percentage of the grid is left uncolored?

Answer – 1 percent. Tell the students that only 1 percent of the earths total water is available for us to use as freshwater.