**Earth Science Lesson Plan 3 July 10th, 2011**

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**Earth Science: Cloud Identification**

**Grade Level: 9/10**

**Standards (SOL)**

**ES1a/c/e**

**ES.13a/c:** the student will investigate & understand that energy transfer between the sun & the Earth & its atmosphere drives weather & climate on Earth. Key concepts include **a.**) observation & collection of weather data; **b**.) prediction of weather patterns, **c.**) severe weather occurrences, such as tornadoes, hurricanes, & major storms; and **d**.) weather phenomena & the factors that affect climate including radiation & convection.

**Objectives**

Students will recognize and name the various types of clouds and understand their relationship in earth’s atmosphere and how they affect weather.

**Materials & Resources**

Unit Organizer: The Atmosphere

Power Point class notes: Clouds and Precipitation (Clouds I, 2, 3)

Chart/Textbook showing types of clouds

Set of 20 laminated cloud pictures- one set per group of 2 or 3 students

Area large enough to spread pictures out into groups

Colored pencils, pencils

**Safety Considerations**

When going outside, walking quietly through hallway, staying in specified area.

With assignment, an area large enough to spread cards out without them being dropped, etc.

**Engage – Time Estimate: 30 minutes**

Have Judy Collin’s song, “Both Sides Now,” playing as students come into class.Ask class: How do clouds form? How are clouds identified or grouped? Can anyone identify the names of the main types of clouds? Take a field trip outside and observe the clouds in the sky. View and take slot outline notes on power point of **Clouds 1.**

**Explore – Time Estimate: 30-40 minutes**

Read & review the information on the chart showing Types of Clouds. Divide students into their lab groups and have one person from each group come up and get envelope with directions and pictures. Students go into lab to their predetermined space. They then read the assignment and remove the 20 cloud pictures from the envelope and look at them. They are to place the cloud pictures into piles according to major types: stratus, cumulus, cirrus, cumulonimbus, and contrails. List the numbers found on the back of each card in the appropriate area on the worksheet. As they finish, they call the teacher over to confirm answers. They then take a closer look at the clouds within each pile and answer the questions related to each specific cloud type. They also make a sketch of each of the major types of clouds. After completing the Analysis and Conclusion section of the lesson, students turn in their papers to the Lab box and return to the classroom. While waiting for the others to finish, they review their vocabulary (using the LINCS method).

**Explain -- Time Estimate: 10 minutes**

When everyone is back in class, the teacher continues with the Power point presentation on clouds **(Clouds 2**). During this phase, the students will identify examples of each type of cloud as presented on the screen.

**Extend -- Time Estimate: 5 minutes (if make cloud poster-20 minutes).**

Ask the students, “What are the different types of precipitation and how do the clouds go about forming them?”

Students could “make” and label clouds with cotton balls, etc, and put on poster board in the room.

Using a file card, each student will make and turn in an “Answer” and “Question” towards the Jeopardy game that will be used in reviewing the entire unit.

**Evaluate -- Time Estimate: 10 minutes**

Students will take an open note/book quiz on the types of clouds. They will identify pictures with each cloud type and identify vocabulary words associated with each type of cloud. They will also be tested at the end of the unit on the Atmosphere. Grades will be determined by the number of questions correct divided by the total number of questions.

**Plans for Diversity:**

LD: Having the number of answers for each pile has proven to be effective for LD students I have worked with. They may want to draw their pictures first then complete the classification on the front side.

OHI: (ADHD): Teacher may need to check each section of the activity. Questions 3 and 4 may need to be reorganized so they are closer to their “piles.”

ED: Some of the same accommodations as noted above and below may prove helpful. If a student gets frustrated, another student who is finished may assist or have been partnered with him.

Vision: May need to provide clouds made from cotton balls glued to poster board. Clouds will be at various heights and thicknesses to demonstrate the features necessary.

Hearing: Interpreter may have suggestions as to mnemonic “signs” that will help the student in comprehending and remembering the information.

Reading: Material, quiz, and test may be read aloud for students as per their IEPs.

**Connections**

The lesson comes at the end of the unit on Atmosphere. Students have previously had notes, videos, labs, vocabulary, and other practice as to the composition of the layers of the atmosphere, heat transfer, relationships between heat, density, air pressure, & humidity, and precipitation. They will continue with another power point presentation (**Clouds 3**) which contains information on Types of Precipitation. The scientific study of weather (meteorology) will be the next unit.

Website lesson on [www.weatherwizkids.com/index.htm](http://www.weatherwizkids.com/index.htm) also provides for follow up on optical illusions, wind, thunderstorms, tornadoes, hurricanes, blizzards, and clouds