Chrissy Gutenberger Grade 3

**Density and Buoyancy**

1. Purpose & Essential Question: What is density and buoyancy and how can we apply these concepts?
2. Vocabulary and Key Terms: density, buoyancy, solid, liquid, gas, matter,
3. Skills: Reading, Writing, Speaking, Listening, Counting
4. Objectives: The student will identify the concept of density. The student will identify the concept of buoyancy. The student will be able to apply these concepts to real-world examples.
5. Common Core Standards for grade 3:
   1. Key Idea 3:Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.
   2. Observe and describe properties of materials, using appropriate tools.
   3. Some properties of an object are dependent on the conditions of the present surroundings in which the object exists.
   4. The material(s) an object is made up of determine some specific properties of the object (sink/float, conductivity, magnetism). Properties can be observed or measured with tools such as hand lenses, metric rulers, thermometers, balances, magnets, circuit testers, and graduated cylinders.
6. Pre-Assessment: Students will have completed an activity on the states of matter as a previous lesson for the unit.
7. Lesson Presentation
   1. Set-Induction: Begin by asking “If you throw a stone into a pond, it will sink to the bottom. But if you put a balloon in some water, it will float. Why do some things float and others sink?” (Act it out, so they see the motion and can visualize what you are talking about!)
   2. Procedure: I will explain that density is the mass of an object divided by the volume to give us the amount of matter in an object in a certain amount of space. We have been working toward this, and they should be able to recall it. I will then explain that buoyancy is the force on an object that is immersed a gas or liquid that tends to make it float. Then I will show a video from Mythbusters.
   3. Closure: I will take the students into the gym and have several large buckets filled up with water. I will do a brief demonstration about the density of diet coke, vs regular coke. I will put a can of each in water and one will sink and one will float. Then the students will explain to me why one is sinking while one is floating.
8. Materials and Resources Needed:
   1. Worksheets, dry erase board, markers, parchment paper, one can of Coke, one can of Diet Coke, three small Tupperwares, Tin Foil, Pennies, and a large Tub filled with water.
9. Assignment: The students will be asked to construct boats out of Aluminum Foil. The boats will in turn be tested for buoyancy when the students put the boats in the water and fill them with as many pennies as they can. We will then discuss which designs worked best for buoyancy.
10. Evaluation: The teacher will grade them later on in the unit. Then the students will also get a review sheet for homework. This worksheet builds a foundation for a later project in the unit. The teacher can review the homework to see the extent the students grasped the concept.
11. Differentiated: The groups that the children will be divided into will be previously differentiated for three levels of students. The groups that are novice and expert level are expected to accomplish the buoyancy task with a higher number of pennies. The lower levels will be able to take notes based on a sentence tree with word boxes provided. They will have an adult in their group to assist in the technical movements required, and to ask prompting questions. The adult will refer them to what they learned in the mini lesson, and the important “words of the day”. The students will also be able to report on their classmates findings of the experiment. Some will be able to show their sentence trees, while other will read their notes with their findings. Advanced students will discuss without their notes in front of them, practicing their recall.

Tyriq will have his aid. He is emotionally disturbed. He will be reminded that experiments are a fun way to learn but he needs to be mindful of his behavior. He will be on his behavior chart, as usual.

1. Resources:

http://dsc.discovery.com/tv-shows/mythbusters/videos/lets-talk-buoyancy.htm