**TEACHING OF GENERAL SCIENCE (GSC201)  
 ASSIGNMENT NO: 2  
  
  
Q 1: How you teach concept of dissolving to grade 6 by using appropriate material, demonstration and an activity.  
   
  
 TEACHING THE CONCEPT OF DISSOLVING  
  
• Learning Objectives:   
  
-**Students would observe by experiments that solid dissolves in liquid (water).   
- Temperature, size and quantity factors also affect on how fast or slow the solid will dissolve in liquid (water).   
- Students will compare how different substances dissolve in water.

- Students will recognize the importance of steps in a scientific investigation.  
- Students would clear the misconception about melting and dissolving.   
- Melting is the process by which a substance changes from the solid state to the liquid state.   
- Dissolving is the process of a material (solid) mixing with liquid in a way that they can not be separated again.  
- Although two materials are required for the dissolving process, students tend to focus only on the solid and they regard this process as similar to ‘melting’.   
  
• **Materials:  
   
-** Water  
- Sugar   
- Plastic cups  
- Spoons  
- Common salt   
- Chalk powder   
- Soil  
- Glucose   
- Lemon juice  
- Name sheets of given materials, 1 for each group   
- Textbook  **\*(All material would be enough according to each group of students)  
  
• Demonstration:**As a teacher, I will demonstrate the experiment first.  **-** I will pour some water in plastic cup.  **-** Then, I will add sugar in water and mix the sugar in water with spoon.  
- I will ask students to observe what difference occurs when we mix sugar (solid) with water (liquid).  
 **• Activity:**

- I would divide the students in groups and give each group the following substances (Common salt, Chalk powder, Glucose, Soil).  
- Firstly, I would ask them to add one by one in water. Students will observe as they add and mix these materials in water.

- I would ask the students to tick the names of the solid things which dissolve / disappear in water like the way sugar dissolves. (Common salt, Glucose)  
  
- Students will likely ask questions like, “What about the rest of the substances?”

- I would explain them that when substances are mixed in water some of them mix up with water and disappear we say that they have dissolved. Others don’t dissolve. The materials that dissolve in water are called soluble materials. The materials that don’t dissolve in water are called insoluble materials. Glucose and salt are soluble materials.

- Then I will take a soda water bottle (cold drink) and open its lid.   
- I would ask students the following questions as they observe with their all senses:

• What comes out of water in the form of bubbles?

- Students’ responses would be, CO2, gas.

• How does soda water taste?

- Students’ response would be it tastes sour.

• Soda water is a mixture of which states of matter?

- Students’ responses would be, liquid, gas, sugar which is a solid.

- I will point out that soda water is a mixture of all three states of matter.

- I will give the material (lemon juice and water) to each group and instruct them to:

• Take water in one glass and lemon juice in another glass.

• Mix the two liquids with the help of spoon.

- I will ask the students to answer following questions:

•What happens when the two liquids are mixed together?

- Students’ response would be, they dissolve in each other.

•What is the name of the mixture you get after mixing the above two liquids?

- Students’ response would be Solution.  
(Students responses would be based on their prior knowledge)  
  
• **Conclusion:   
  
-** Students will understand that there are certain things which disappear when added and mix in water. We say that these things dissolve in water.

- Soda water is an example of such a solution in which a solid (common sugar) and a gas (carbon dioxide) are dissolved in water (liquid).

- A liquid can also dissolve in another liquid.

**Q 2: “fluids expand with heating” how you explain in class by demonstration.   
  
  
• Learning Objective:   
  
-** Students should be able to understand that liquid expands when heated.  **• Materials:   
  
-** A plastic bottle  
- A transparent plastic drinking straw  
- Tap water  
- Food coloring / Ink  
- A glass jar with wide opening   
- Play clay / modeling Dough   
- Hot water  
- Scissors  
  
**• Demonstration:**   
  
- First, I will carefully make a hole in the top of the bottle lid with the pair scissors, big enough for the drinking straw to fit in.   
- Then, I will fill the plastic bottle with colored water (not full).  
- I will mix food coloring / ink in tap water.  
- I will insert the straw through the bottle lid’s hole into the water, making sure that the straw does not touch the base of the bottle.  
- I will seal around the hole in the lid using play dough / modeling clay, thereby fixing the straw in place. I will be checking if the seal is completely airtight.  
- After that, I will fill the glass jar half with hot water.  
- I will place the plastic bottle in the center of the jar.  
- I would be asking students to observe what happens to the liquid in the straw, and why?

- Students would share their ideas about it. I will appreciate and encourage them.   
- Then, I will explain to students that the heat from hot water in the jar warms the air inside the bottle. The air expands and pushes on the water, causing it to rise up the straw.   
  
- I can demonstrate the opposite process, contraction of a gas as the water cools down for better understanding.  
  
- Students have difficulty understanding that molecules are constantly moving in all states of matter. Many students accept the fact that molecules are moving in liquid water because they can see water flow. However, these students have difficulty believing that the molecules in ice are also moving.  
  
- I will explain to them that, nevertheless, molecules are always moving, even in substances such as ice where no motion of the substance is visible.   
   
• **Conclusion:**   
  
When heat is added to liquid, the molecules and atoms vibrate faster. As atoms vibrate faster, the space between atoms increases. The motion and spacing of the particles determines the state of matter of the liquid. The end result of increased molecular motion is that the liquid expands and takes up more space.