Science Days- Gloria Choi and Sung Min Kim

Yeast and Respiration

1. Introduction
    a. Introduce Self
        i. Mentor 1
        ii. Mentor 2
        iii. Make sure kids know how to raise numbers
        iv. Ask few sample questions
            1. Learn the assistant teacher's name (So do you know your teacher's name?)
    b. Tell kids what they will be learning
        i. Cellular respiration
        ii. Unicellular Organism- Yeast
2. Getting into the lesson
    a. Respiration
        i. Ask the students what they think respiration is
        ii. Ask the students to breathe and let them explain to you what they observe
        iii. Definition: catabolic pathway for the production of ATP (energy), in which oxygen is consumed and carbon dioxide is released
        iv. Example: Jumping Jacks
            1. Tell students to sit in their seats and count number of breaths in 30 seconds (record)
            2. Tell students to stand next to their desk and do 30 WIDE jumping jacks.
            3. Tell students to stand still and count number of breaths in 30 seconds (record)
            4. Ask students what they noticed about the number of breaths before/after exercising (should be higher after exercising)
        v. Ask the students why they had to take more breaths after exercising
        vi. Explain cellular respiration
            1. Inhale oxygen
            2. Oxygen travels to your lungs
            3. Oxygen poor blood (that comes from the body) goes into the heart

4. Oxygen poor blood picks up oxygen from the lungs →oxygen rich blood
5. Oxygen rich blood goes back to the heart and gets pumped out
6. Oxygen rich blood gets released throughout the body (where muscles are working out)
7. Oxygen rich blood is consumed by the muscle cells to make ATP (energy)
8. Muscle cells release carbon dioxide in the process
9. Oxygen poor blood picks up the carbon dioxide
10. Oxygen poor blood goes back to the heart
11. Oxygen poor blood (carbon rich blood) goes to the lungs to exhale carbon dioxide and pick up oxygen
12. Cycle starts over again

vii. Ask students why they have to take more breaths after exercising

1. You need more energy therefore your muscle cells have to have more oxygen

b. Yeast Experiment

i. Ask where yeast can be found: bread, baking goods, alcohol

ii. Ask what they know about yeast

iii. Explain to them it is a living unicellular organism

1. Unicellular means you do everything (cellular respiration, eating, digesting, excreting waste) all in 1 cell.
2. Yeast can't make their own food so you have to give them some kind of sugar to make them become active. It's like when you're sleeping and you smell breakfast so you wake up. So sugar is the yeast's breakfast.

iv. As we are asking the questions the teacher should be passing out the materials

1. Yeast packet
2. Bottle
3. Balloon
4. Warm Water

v. Experiment:

1. Materials needed (http://pbskids.org/zoom/activities/sci/yeastpartii.html)
    a. 3 package of yeast
    b. Warm water

c. 3 clear, 16 ounce, plastic water/soda bottles

d. Funnel

e. 3 balloons

f. Rubber bands

g. Various sugary liquids, cola, apple/orange juice, and corn syrup

2. Pour one package of yeast to each bottle
3. Add ¼ cup of warm water
4. Fill the 1st bottle ½ way full with one of your sugary liquids, like coke
5. Fill the second and third bottles with different sugary liquids. Make sure you add the same amount of liquid to each bottle.
6. Put a balloon over the opening of each bottle. Secure each bottle with the rubber bands.
7. The balloon that inflates the most will show which liquid produces the most carbon dioxide.
8. Wait about 10 minutes, you should see bubbles (bubbles are CO2)

vi. Questions:

1. What is in the balloon?
2. How do you know?
3. What process is this called?
4. Who is doing the process?

3. Conclusion

a. Quick review

i. Cellular respiration

1. Make ATP
2. Yeast- releases CO2