**Snap Circuits**

**Standards:**

5P.3.2.2 1 Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.\* (P: 6, CC: 5, CI: PS3, ETS1, ETS2) Examples of devices may include electric circuits that convert electrical energy into motion, light, or sound; and a passive solar heater that converts light into heat. Examples of constraints may include the materials, cost, or time to design the device.

**Essential Question:**

What kinds of things use electricity?

Where does electricity come from?

How do I build a closed circuit?

**Content Objectives:**

The student will be able to create a closed circuit by using snap circuits.

The student will be able to define domain specific vocabulary in their own words.

**Language Objectives:**

Use domain specific vocabulary in academic conversations with peers

Set SMART goals

**Academic Language:**

Circuit

**Assessments:** (Pre, formative, and summative)

Pre- What is a circuit?

Formative- vocab game

Summative- reflection activity

**Accommodations**

Adjust as needed

**Day 1**

1. Greeting- About me/share names/expectations. Set goal (You do on own)
2. Show premade sample 1 (I DO/WE DO)
   1. Goal- Show how switch turns an electrical circuit ON and OFF
   2. Take parts apart and show how they go back together
   3. “This is what we are going to make today but first we need to learn more about electricity.”
   4. What do we have in life that runs on electricity? (Make anchor chart)
3. What is electricity? (I DO)
   1. Show video
   2. Electricity is a type of energy.
   3. Electrons are the charge of particles whose movement through a substance creates electricity.
   4. They are too small to be seen with the naked eye or even a microscope.
   5. When electrons flow through certain substances they form an electrical current.
   6. In electrical current provides energy to power all kinds of things.
4. Game (WE DO)
   1. Form a circle
   2. “I represent the battery and you represent the wire conductor; each of you are an atom”
   3. The circle represents a circuit
      1. The word in Latin means “to go around”
   4. Everyone holds the same object (we are using erasers)
   5. “These objects represent the electrons inside a wire conductor”
      1. A wire conductor is full of electrons- (transmits/allows electricity to move through it)
   6. I am the battery (Show positive and negative on each hand)
      1. My left hand is positive and my right hand is the negative end
         1. ELECTRICITY FLOWS FROM NEGATIVE TO POSITIVE
         2. Flows in one direction
      2. Begin to passing to the right around the circle
      3. Demonstrate what happens when the circuit breaks (stand too far apart)
         1. Explain open and closed circuits
5. Vocab game (YOU DO IT TOGETHER/DO IT ALONE)
   1. Pick a vocab word off the wall. Find a partner and say I’m \_\_\_\_\_\_\_\_, I (read definition)
   2. Switch when I say “Circuit”
6. Explore book 1-100 (You do it alone)
   1. Have students explore the book. Show them these questions to keep in mind when looking
      1. What did you find?
      2. What did you learn?
      3. What questions do you have?
      4. Think about a bigger project you and your partner would want to do later in the week
      5. Set goal (pass out goal sheet)
7. Safety (Pg5) (We do it)
   1. Have students explore the safety page and come up with norms together for working with circuits
   2. Create norms
      1. Never: play with an outlet
      2. Never: leave a circuit unattended while it’s on
      3. Never: touch the motor when it’s spinning
8. Rebuild Circuit 1 (We do it)
   1. Students look at the book and walk me through how to build circuit 1
   2. Why does it work?
9. Build it with a partner (you do it together)
   1. Give them the question sheet
   2. Have teacher check before moving on ask them some of the questions on the sheet
   3. Students can start building on their own after that (watching time)
10. Clean up
    1. What went well today?
    2. What needs to be improved?
    3. Did you meet your goal?
11. Assessment (Independent)
    1. Were students on task/did they contribute

**Day 2**

1. Greeting- What was your favorite part about yesterday?
2. Set 50% goal (individual)
3. Add to what uses electricity list
4. Game (do it together)
   1. A non-verbal form of telephone. Children gather together in a circle holding hands. One sends a non-verbal pulse around the circle. This Paul’s passes from child to child until it returns to the first sender. How long does it take? Can you beat your record? The poses can also be a non-verbal pattern three little squeeze us in a big one or two little squeeze and a little one.
      1. Nonverbal telephone
      2. Squeeze hand around the circle
      3. I will time you
      4. Let's try to beat our time each time
5. Vocab game (do it together/alone)
   1. Pick a different vocab word off the wall. Find a partner and say I’m \_\_\_\_\_\_\_\_, I (read definition)
   2. Switch when I say “Circuit”
6. KWL chart (individual)
7. Review safety norms
8. Build circuits (you do together)
   1. Teacher floats and helps students
   2. Clean up and discuss
      1. What went well today?
      2. What needs to be improved?
      3. What did you learn?
      4. Did you meet your goal?

**Day 3**

1. Greeting (little known fact)
2. Set 75% goal (individual)
3. Add to KWL (individual)
4. Revisit safety norms
5. Build circuits (10 minutes) (together)
6. Start working on circuit for demonstration day (Together/pairs)
7. Clean up and discuss
   1. What went well today?
   2. What needs to be improved?
   3. What did you learn?
   4. Did you meet your goal?

**Day 4**

1. Greeting (Star and a wish) Share one thing that you liked about camp and one thing you wish would have been better or different
2. 100% goal (individual)
3. Revisit norms
4. Finish circuit for d-day (together)
5. Demonstrate them to group (together)
6. Evaluate your circuit demonstration (individual)