KUTZTOWN UNIVERSITY

ELEMENTARY EDUCATION DEPARTMENT

PROFESSIONAL SEMESTER PROGRAM

Teacher Candidate: Paige Weaver Date: 4-10-15

Cooperating Teacher: Dr. White Coop. Initials

Group Size: Small Group Allotted Time 30-40 minutes Grade Level Third

Subject or Topic: Electricity Section

STANDARD: (PA Common Core):

**3.2.3.A2:** Recognize that all objects and materials in the world are made of matter.

**3.2.3.B4:** Identify and classify objects and materials that are conductors or insulators of electricity.

**S3.A.2.1.1:** Generate questions about objects, organisms, or events that can be answered through scientific investigations.

I. Performance Objectives (Learning Outcomes)

1. The third grade students will be able to demonstrate understanding that all matter is made up of particles called atoms that are made up of protons, neutrons, and electrons by completing the Amazing Atom handout of a model of an atom.
2. The third grade students will be able to demonstrate understanding that static electricity is caused when electrons move from a negative to a positive by completing a journal entry.
3. The third grade students will be able to ask questions and make observations by completing a journal entry and the Shocking Static Electricity observation handout.

II. Instructional Materials

1. Weebly/Youtube
2. *Building Blocks of Science: Electricity*
3. Chart Paper
4. Balloons (one per student)
5. Discovery Trays (one per table)
   1. Carpet squares (small)
   2. Aluminum can
   3. Tissue paper pieces
   4. Packing peanuts
   5. Sink (each group will use one at a time)
6. Markers
7. Handouts
   1. Amazing Atom
   2. Shocking Static Electricity

III. Subject Matter/ Content (prerequisite skills, key vocabulary, big idea, New Content)

1. Prerequisite Skills
   1. Electricity is a big part of our world
   2. Matter is made up of particles called atoms
   3. The movement of electrons creates electricity
   4. Static electricity is created by the movement of electrons from negative to positive
2. Key Vocabulary
   1. Atom- tiny particles that make up matter
   2. Nucleus- the center of an atom
   3. Protons- particles that carry a positive charge; make up nucleus
   4. Neutron- particles that have no charge (neutral); make up nucleus
   5. Electron- particles that are negatively charged; circle around the nucleus
   6. Static electricity- build up of electrons jumping from negative to positive
3. Big Idea- Scientific discovery through electricity
4. New Content
   1. Electricity is found all around us
      1. Light Bulbs
      2. In the human body
      3. Lightning
      4. Electric cars
      5. Power lines
      6. Household appliances
   2. Atoms are made up of protons, neutrons, and electrons.
      1. Atoms can lose or gain electrons
      2. This causes atoms to become electrically charged
      3. Electricity is the movement of electrons
      4. If atoms have an equal number of positive and negative particles, they have no electric charge
   3. Static electricity is the build up of electrons
      1. Electrons move from negative to positive charges
      2. Ex. When electrons move from your body to a doorknob it is a static shock.
   4. Observations- Good scientists document observations and ask questions.

IV. Implementation

A. Introduction –

1. Take a few minutes and brainstorm as a class where electricity is found in our everyday lives. Write some ideas on the board.
2. Show pictures of electricity in the world around us from the Weebly.
3. Read *Building Blocks of Science: Electricity*, pausing to ask questions and point out important ideas.
4. Pass out proton, neutron, and electron cards (Each student will have a role).
5. Have students act out an atom by having the protons and neutrons clustered in the nucleus while the electrons travel around them.
6. Students will use markers to complete the Amazing Atom diagram.

B. Development –

1. Review how the book stated that atoms can gain or lose electrons, which causes the atom to become electrically charged. The movement of these electrons is what we call electricity. (information on Weebly)
2. Ask if anyone remembers what static electricity is. Review that static electricity is the buildup of electrons. When electrons jump from one object to another, it causes static shock.
3. Pass out balloon discovery trays and review rules.
4. Explain that as scientists, the students will be exploring how objects are attracted to or repelled by the balloon due to static. Have groups come up to sink one by one to test how the balloon affects the stream of water without touching it. Also include how they should experiment how the balloon affects the hair on their head.
5. Students will complete the Shocking Static Handout as they make observations.
6. Bring class together and brainstorm what was observed. Record on chart paper to hang in the room.
7. Students will have about 10 minutes to complete journal entries.

C. Closure –

1. Ask the class to think about an instance in which static electricity occurs in nature.
2. As a close, talk about how lightning is caused by static electricity.
3. Show *How Lightning Forms* video.
4. What do you think? Did this surprise you?
5. Assignment- Interview someone or research one safety tip regarding electricity. In the beginning of next class we will all share our tips together to make a safety poster for our classroom. Students are encouraged to watch video resources posted on Weebly.
6. Accommodations / Differentiation –
   1. Student learning levels will be considered when making groups.
   2. Evaluations will be completed orally with the teacher scribing the students’ answers.
   3. Check for latex allergy prior to doing lesson and if necessary substitute with other materials/activities.

E. Assessment/Evaluation plan

1. Formative

1. Student created models will be completed to demonstrate understanding that all matter is made up of particles called atoms that are made up of protons, neutrons, and electrons. A checklist will be used to document learning by either a check plus or check minus.
2. Student journals will be completed to demonstrate understanding that static electricity is caused when electrons move from a negative to a positive. A checklist will be used to document learning by either a check plus or check minus.
3. Students will demonstrate their knowledge of how to conduct good scientific investigations by making detailed observations on the given handout and asking at least one future question in a journal entry. A checklist will be used to document learning by either a check plus or a check minus.

V. Reflective Response

A. Report of Students’ Performance in Terms of States Objectives

B. Personal Reflection

1. Did the lesson fit in the time allotted? If not, why?
2. Did the students achieve the expectations of the objectives? What evidence supports this conclusion?
3. What could I have done differently to enhance my students’ learning?
4. Were the students actively engaged in the activity? What could have been done differently to enhance engagement?

VI. Resources

1. Midthun, J. Hiti, S. (2012) *Building Blocks of Science: Electricity.* Chicago, IL: World Book Inc.
2. Mayada, R. (2009, August 25). “How Lightning Forms.” [Youtube]. Retrieved from https://www.youtube.com/watch?v=jM8h60S1GsM