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 45 minutes Grade Level Third

Subject or Topic: Magnetism Section

STANDARD: (PA Common Core):

**S3.C.3.1:** Observe and identify changes in an object’s motion.

**3.2.3.B4:** Identify and classify objects and materials as magnetic or non-magnetic.

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

**S3.A.2.1.2:**Make predictions based on observations.

I. Performance Objectives (Learning Outcomes)

1. The third grade students will be able to make predictions based on observations and prior knowledge by completing the Magnetic Field Prediction handout and a journal entry.
2. The third grade students will be able to identify materials as magnetic or non-magnetic by completing Am I Magnetic handout.
3. The third grade students will be able to demonstrate understanding that all magnets have a magnetic field that attract magnetic objects by completing a journal entry.

II. Instructional Materials

1. *Building Blocks of Science: Magnetism*
2. Weebly
3. Discovery Trays (one per table)
   1. Different types of magnets (horseshoe, bar, circular, etc.)
   2. Wood
   3. Glass
   4. Rubber
   5. Paper
   6. Aluminum foil
   7. Metal Paper clips
   8. Metal bucket
4. Laminated sorting words for board
5. Iron filing jars
   1. Iron filings
   2. Nylon pantyhose (for on opening of jar)
   3. Empty baby food jars or similarly sized jars
   4. Rubber bands (to hold pantyhose on jar)
   5. Aluminum pie pans
6. Document cam
7. Smart board
8. Cardboard pieces (1 per table)
9. Brain Pop Jr. video on magnets

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

1. Prerequisite Skills
2. Magnets stick to materials (that have iron, cobalt, and nickel)
3. All magnets have a magnetic field
4. Good scientists make predictions based on observations and prior knowledge
5. Key Vocabulary
   1. Magnetism- the attraction of certain kinds of materials
   2. Magnet- any material with iron, cobalt, or nickel
   3. Magnetic Force- the force (push or pull) that a magnet has on objects
   4. Magnetic field- the area surrounding a magnet where the magnet has force on other objects
   5. Magnetic poles- the two opposing sides of a magnet; north and south
6. Big Idea- Discovery through magnetism
7. New Content
   1. What is magnetism?
      1. The attraction of certain kinds of metals
      2. Magnets have a north and south pole
      3. Opposite poles attract
      4. Like poles repel
   2. Examples of magnetic materials
      1. Paper clips
      2. Metal bucket
      3. Any material made up of iron, cobalt, or nickel
   3. Examples of non-magnetic materials
      1. Wood
      2. Plastic
      3. Glass
      4. Paper
      5. Aluminum foil
      6. Rubber
   4. What is a magnetic field?
      1. Different types of magnets have different looking magnetic fields.
      2. Magnetic fields look different depending if the magnets are repelling or attracting.
   5. Observations- Good scientists conduct experiment by making predictions and observations

IV. Implementation

1. Introduction –
   1. Point to the title of the book, *Building Blocks of Science: Magnetism.* Ask the class if they have any idea what magnetism is. Find out by reading the book, pausing to highlight main ideas and vocabulary.
   2. Allow students 5-10 minutes to explore the given materials with magnets. Students will complete Am I Magnetic handout as they are exploring.
   3. Ask class what surprised them about what materials were and were not attracted to the magnet.
   4. Have class sort given materials in the chart on the board.
   5. Visit Weebly to talk about magnetic poles.
2. Development –
   1. What is a magnetic field?
   2. Make a prediction as a class: What does a magnetic field look like? Can you see it? Smell it? Hear it? How do we know it is there if we cannot see it? (Give an example of a prediction and why it is important)
   3. Have student draw their predictions on the Magnetic Field Handout.
   4. Pass out materials to create a magnetic field.
   5. Take 5 minutes to demonstrate how to make the magnetic field visible on the document cam. Place bar magnet on table and cover it with a piece of glass. Gently shake the iron filing onto the glass above the magnet to reveal the outline and shape of the magnetic field.
   6. Have students use the various magnets that are on their trays to create their own magnetic fields. Walk around to each group to be sure that they are placing the magnets in the aluminum pans with the cardboard to substitute for the glass. Encourage students to use two magnets at once to see the repelling force within the field.
   7. Students should complete drawings of various fields as they complete them for observation.
   8. Bring class back together and discuss how the magnetic fields looked for each type of magnet. Were their predictions accurate? How were they different?
3. Closure –
   1. Have student volunteers come up to the board and draw what the magnetic fields looked like.
   2. Compare and contrast as a class.
   3. Give students 10-15 minutes to complete journal entries.
   4. Close the lesson by reviewing magnetism by watching the Brain Pop Jr. video on magnets.
   5. Assignment- Are magnetism and electricity related? Become investigators and research or interview someone on how they are related. This can be done online or in class using the text set provided. Five minutes will be taken to discuss this at the beginning of science class the next day by visiting the Weebly. Students are encouraged to visit the Weebly during free time or outside of class to watch the posted videos.
4. 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. Verbal prompting and assistance will be provided as needed.

E. Assessment/Evaluation plan

1. Formative

1. Students will demonstrate understanding of how to conduct good scientific investigations by making at least one prediction based off of observations and prior knowledge by completing a journal entry and the Magnetic Field Prediction handout. A checklist will be used to document learning by either a check plus or a check minus.
2. Student journals will be completed to demonstrate understanding that all magnets have a magnetic field that attract magnetic objects by including observations, a conclusion, and at least one future question. A checklist will be used to document learning by either a check plus or a check minus.
3. Students will identify materials as magnetic or non-magnetic by completing the Am I Magnetic handout. 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: Magnetism.* Chicago, IL: World Book Inc.
2. Young, R.M. (2009) *Magnets & Electricity Super Science Activities.* Westminster, CA: Teacher Created Resources, Inc.
3. Magnets. (n.d.). Retrieved April 16, 2015, from https://jr.brainpop.com/science/forces/magnets/