**Saturday Science Lesson Plan**

**March 6, 2010**

**A) Learning Objectives**

* Students will cut, glue, and draw pictures onto a newspaper to show what the Water Cycle looks like.
* Students will cut, glue, and draw pictures onto a newspaper to show what the a Waterworks looks like.
* Students will cut, glue, and draw pictures onto a newspaper to show what erosion looks like.
* Students will create a newspaper in groups of 4 to demonstrate their knowledge of the previous 4 weeks.
* Students will present their newspaper in front of their classmates and parents to explain the Water Cycle, Waterworks, and how water changes the land.

**B) Standards**

* **National Science Education Standards**
  + K-4 Science as Inquiry: Abilities necessary to do scientific inquiry
  + K-4 Science as Inquiry: Understanding about scientific inquiry
  + K-4 History and Nature of Science: Science as a human endeavor
* **Indiana State Academic Standards**
  + K.1.1 Raise questions and the natural world
  + K.1.2 Begin to demonstrate that everybody can do science
  + 1.1.2 Investigate and make observations to seek answers to questions about the world
  + 2.1.3 Describe, both in writing and verbally, objects as accurately as possible and compare observations with those of other people
  + 2.1.4 Make new observations when there is a disagreement among initial observations
  + 2.1.5 Demonstrate the ability to work with a team but still reach and communicate one’s own conclusions about findings
  + K.2.2 Draw pictures and write words to describe objects and experiences
  + 1.2.7 Write brief information descriptions of a real object, person, place, or event using information from observations

**C) Content Knowledge**

* Water is a vital resource to every living organism on Earth. As populations increase, the need for clean water rises. Water pollutants can arrive from a variety of sources; petroleum pipeline spills, natural gas seepage, pesticides, heavy metals, and fecal contamination are some of the most common culprits of unsafe drinking water.
* The process of water being consumed, precipitated, and recycled is called the Water Cycle. The Water Cycle naturally cleans some of the man-made contaminants; however, some dangerous additives can still reside in untreated water.
* Drinking water is cleaned in a Waterworks or Water Treatment Plant. After water is pumped out of rivers and lakes, it is sent to the Waterworks to be sieved, aerated, filtered, and sterilized.
* Water safety applies to both drinking water and water processes on the land. Erosion is the process by which materials of the Earth’s crust are loosened, dissolved, or worn away and simultaneously moved from one place to another.

**D) Materials**

* 27 mechanical pencils
* 6 packs markers
* 6 packs crayons
* 27 sheets of 17x22 white paper
* 12 scissors
* 1 hole punch
* Wool string
* 15 glue sticks
* Construction paper

**E) Lesson Description**

1. 9:35-9:45 Recap last 4 week’s material with PowerPoint
2. 9:45-10:30 Create newspapers in groups
3. 10:30-10:50 Snack and bathroom break
4. 10:50-11:15 Groups prepare for presentations
5. 11:15-12:00 Student presentations of newspapers
6. 5-E Learning Cycle
   * **Engage** Instructors will ask the students “What do you remember about the last four weeks?” to gauge cognition of the water safety, the Water Cycle, Waterworks, and erosion. Instructors will ask attention-focusing questions such as “How do you think water changes the land?,” “Where have you seen evidence of the Water Cycle in action before?,” and “How do you know water is safe to drink?”
   * **Explore** Students will recall their explorations from the previous 4 sessions, but will not do any direct, hands-on exploration in this final, assessment-focused session.
   * **Explain** Instructors will explore the topics of the previous 4 sessions with the students through an interactive PowerPoint. This PowerPoint will revisit the topics of water safety, water pollution, Waterworks, and erosion.
   * **Elaborate** During the Powerpoint presentation, vocabulary words from the previous 4 class sessions will be elaborated upon. These vocabulary words will be incorporated into a memory game at the end of the PowerPoint.
   * **Evaluate** Students will work in groups of 4 to create a newspaper that summarizes what they learned in the past 4 weeks. They will cut out and glue construction paper, as well as draw with markers and crayons, to make pictures of important concepts. Additionally, students will receive copies of pictures from last week and glue them on their newspaper pages. Finally, students will complete a metacognitive reflection of what they liked and didn’t like about their time in Saturday Science, as well as questions about water they think were answered and questions they still have about water that are unanswered; this reflection will be included in the “Opinion” section of their newspapers. Students will present the newspapers that they created in front of the class and their parents. Each group of four will present their paper, with each individual student explaining what they did and what they learned.
     1. **Factual Knowledge** Students’ factual knowledge will be assessed through their use of correct definition of vocabulary words on their newspaper. Students will have to understand what the Water Cycle is and apply that knowledge when they draw a diagram of the cycle. Students will evaluate what water safety means to them and list evidence for this in their newspapers. All of these factual definitions will be assessed through their creation of a newspaper.
     2. **Conceptual Knowledge** Students will be assessed on their memory of the previous 4 weeks of material. They will have to design and create an newspaper that addresses the interrelationships between water safety, water pollution, waterworks, and erosion. Students will apply their conceptual knowledge by making a newspaper and writing out descriptions of what water safety is.
     3. **Procedural Knowledge** Students will be assessed on their procedural knowledge through remembering all of steps of a waterworks factory and draw/write each step on their newspaper. Many students will understand these steps better by explaining the steps to a younger peer. Instructors will also assess student’s procedural knowledge by observing students while they are following the steps, such as cutting and gluing, to create a newspaper.
     4. **Metacognitive Knowledge** Students will be assessed on their own self-knowledge through the “Opinion” portion of their newspaper, where each student will list the favorite and least favorite portions of the sessions, as well as what questions they felt were answered/not answered. Students will independently summarize and reflect on their learning experiences in this written “Opinion” section.