A CHEMICAL REACTION

Grade Level: 4th Grade
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Length of Unit: Six lessons (approximately 1.5 weeks; 1day = 30 minutes)

I. ABSTRACT

This unit covers the necessary information in the fourth grade *Core Knowledge Sequence* incorporating a variety of lessons, visuals and experiments. Students will receive the opportunity to use critical thinking skills and deductive reasoning to explain certain chemical phenomena.

II. OVERVIEW

A. Concept Objectives
1. Students understand the processes of scientific investigation and design, conduct, communicate about and evaluate such investigations.
2. Students know and understand common properties, forms, and changes in matter and energy.

B. Content from the *Core Knowledge Sequence* (pages 104-105)
1. All matter is made up of atoms
2. Scientists have developed models of atoms
3. Protons(+), Neutrons(neutral), Electrons(-)
4. Unlike charges attract, like charges repel
5. Properties of Matter: Density, Volume, Mass, Vacuum
6. Elements; basic kind of matter
7. Solutions; solute, solvent, concentration and saturation

C. Skill Objectives
1. Students will review the three forms of matter and give examples of each.
2. Students will become familiar with the atom and label the different parts of an Oxygen atom.
3. Students will demonstrate knowledge learned by taking notes and illustrating an atom, element, and a compound.
4. Students will complete a worksheet of chemical formulas by decoding the formulas and recording the atoms needed to make the compounds listed.
5. Students will understand the three properties of matter, take detailed notes and illustrate experiments of each. Students will also understand the concept of a vacuum of empty space.
6. Students will conduct a simple experiment in which they will observe a chemical change in a solution.

III. BACKGROUND KNOWLEDGE

A. For Teachers
1. Ardley, Neil. *The World of the Atom*. New York: Gloucester, 1989.
2. Berger, Melvin. *Atoms, Molecules and Quarks*. New York: Putnam, 1986
3. Gregoire, Tanya. *Museums of Science Activities for Kids*. Holbrook, MA: Adams Media, 1996.
4. Baltimore Curriculum- Fourth Grade Chemistry