Lesson Plan

Lesson: classifying chemical reactions with balanced equations
Length: _____70 minutes**_____**
Age or Grade Level Intended: ___ Chemistry I**__**

Academic Standard(s):
C.1.9 Describe chemical reactions with balanced chemical equations.
C.1.10 Recognize and classify reactions of various types such as oxidation-reduction.

Performance Objective(s): 1. Given a vocabulary word, students will create their own vocabulary card and present it to the class as detailed below, with 100% accuracy of the definition.
2. Given a homework assignment of section review problems involving types of chemical reactions, students will answer the questions correctly at least 75% of the time.

Assessment: The teacher will assess student learning with a short quiz at the end of chapter. The quiz will ask students for definitions for 10 of the words presented earlier in the chapter. This will allow students to have more time to learn the words before being quizzed on them.

Advance Preparation by Teacher: The teacher needs to have a blank unlined sheet of paper for students, as well as colored pencils
for them to use in creating their vocabulary card. The instructor will also need to have lecture notes (and have looked over them before class), as well as materials for a demonstration to show what a chemical reaction is, and what products and reactants are. The teacher must also have enough quizzes for the students to complete at the end of the class.

Procedure:

Introduction/Motivation: The teacher will begin the period with a demonstration of a chemical reaction. (Gardner's
Spatial-Visual) Before the reaction takes place the teacher will weigh the contents of each flask. After the reaction (which forms a bright yellow solid from two clear liquids) the teacher will ask students if they think the mass of the flasks has increased. (Bloom's Analysis) (Due to the formation of a dense solid, some may think so.) This will set the stage for writing a chemical reaction equation and a quick study of the vocabulary of the unit.

Step-by-Step Plan:

1. Begin by telling students that before we proceed with learning more about chemical reactions and equations, it is important to spend some time figuring out the vocabulary of the chapter, as science uses words that we sometimes do not use in our everyday language. At this time the teacher will explain the vocabulary card. The teacher will tell the students that their work will be displayed in the room once it is completed.

2. Each student will need to get a sheet of paper, as well as a few colored pencils. The teacher will show a sample of what they need to do, as shown below2.

3. Students will then be assigned a vocabulary word from the chapter to use to complete their vocab card
(Gardner's Spatial-Visual).

4. The teacher will explain that at the end of the period there will be a quiz over the vocabulary words.

5. Once the students have completed their cards, they will present them to the class, briefly explaining their reasoning (Bloom's Evaluation) and their work (Gardner's Linguistic).

6. After this, the teacher will begin a lecture at the whiteboard over the first section of chapter 10, Reactions and Equations. (A lecture outline with questions is attached.)

7. When the period is nearly over, the teacher will hand out the quiz, which should only take about 5-8 minutes for the students to complete. Students who need additional time may continue working (and will receive a pass to their next class), or may finish the quiz at the start of the period the next day.

Closure: After the quiz the teacher will explain to the students why they need to know what the vocab words mean and that they will be tested on them later on in the unit.

Teacher's Lecture Outline for Chapter 10, section 1, Reactions and Equations

I. Introducing Chemical Reactions

A. A name for chemical change—rearranging atoms to form different substances.

1. What is a chemical change? (Bloom's Knowledge)

2. How can you tell a chemical change has taken place? (Bloom's Application)

II. Chemical Equations

- uses chemical formulas to show identities and amounts of substances involved in a chemical reaction.

A. reactants and products – the before and after of a reaction

1. On which side of the reaction arrow would the products be? Reactants? (Bloom's Understanding)

B. Symbols used in reaction equations

+ □ (s) (l) (g) (aq)

C. Example of chemical equation

1. A + B □ C or A + B □ C + D

D. Different types of equations

1. Word equations, skeleton equations

III. Balancing Chemical Equations

A. Mass must be conserved.

B. Coefficients are used to balance chemical equations

C. Steps for balancing equations

1. Write skeleton eq.

2. count the atoms of the elements in the reactants

3. count the atoms of the elements in the products

4. change the coefficients to make the number of atoms of each element equal on both sides of the equation (NO SUBSCRIPT CHANGING)

5. write coefficients in lowest ratio possible

6. check

D. Provide some example equations to balance with the students' input to help solidify the process.

E. Questions to ask during step III:

1. Why can we only change coefficients? (Bloom's Analysis)

2. Why does there need to be equal amounts of each element on each side of the equation? (Bloom's Synthesis)

Chapter 10 and 11 Vocabulary Quiz
Name_____
Period_____
Date_____
Provide the definition for the words below. Pick any two words and use each in a sentence in the
proper context.
Chemical reaction
Chemical equation
Decomposition reaction
Precipitate
Spectator ions
Mole
Reactants
Solute
Synthesis reaction
Aqueous solution