Best Practice Lesson – Chemical Formulas

This lesson pertains to correctly writing and naming chemical equations. This lesson would be assigned at the beginning of the unit and due a few days prior to the unit test. By setting up the lesson/project this way I am able to give students feedback prior to their unit exam and clarify any errors/misunderstandings.

In this lesson students will be given a list of 10-15 chemical compounds (names only) and be asked to assemble their puzzle pieces into the correct chemical set up and correct chemical formula. Each charge, positive or negative, will be noted by a triangle cut up of the puzzle piece, up to +4/-3. Students will have to color each puzzle piece specific colors for each individual charge; i.e. all +1’s are colored red and all -1’s are colored blue. Students will have to create a key explaining their puzzle piece; i.e. +2’s are black, +1 are red, etc. Students will then glue the correct number of puzzle pieces together on a poster board and write the correct chemical formula underneath each structure. Each formula, when correctly written, forms a complete rectangle. Each piece of the puzzle counts as one atom of each element and the students can count up the number of pieces to double check their formulas are written correctly.

At the beginning of the unit I will demonstrate how to assemble the puzzle pieces correctly, I have a jumbo magnetic version of the pieces. We also practice an abbreviated version of this activity in table groups using reusable puzzle pieces.

This activity touched every student in class because we used many different learning styles to accomplish the goal of the activity. Kinesthetic learners enjoy the lesson because it gives the ability to work with elements by physically manipulating the material to form the compounds they are learning. Visual learners are able to see how the pieces interact together to form the correct compounds. Auditory learners are able to talk out what is happening with the other students at their table when they are first introduced to the activity.

The last two years I alternated using this activity to learn the correct ways to write and name chemical compounds. Two years ago I did not do this activity and the students struggled with the remainder of the year on how to write chemical compounds correctly, which affected their performance for the rest of the year. This last school year the students completed this activity and performed significantly better when writing chemical formulas, which lead to best results in later units.
Ex: Iron (III) oxide

+3 / -2 = students will have colored the pieces these colors and labeled them in their key

Chemical Formula: Fe₂O₃

Fe₂O₃:
Incorrect because the rectangle not completed