**Lesson Plan Title: Lewis Bond Structure**

**Teacher’s Name: Mr.Gomez Subject/Course: Chemistry**

**Unit: Bonding Grade Level: College Prep/Honors**

**Overview of and Motivation for Lesson:**

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| **Stage 1-Desired Results** | | |
| **Standard(s):**  HS-PS1-2. Use the periodic table model to predict and design simple reactions that result in two main classes of binary compounds, ionic and molecular. Develop an explanation based on given observational data and the electronegativity model about the relative strengths of ionic or covalent bonds. Clarification Statements: \* Simple reactions include synthesis (combination), decomposition, single displacement, double displacement, and combustion. \* Predictions of reactants and products can be represented using Lewis dot structures, chemical formulas, or physical models. \* Observational data include that binary ionic substances (i.e., substances that have ionic bonds), when pure, are crystalline salts at room temperature (common examples include NaCl, KI, Fe2O3); and substances that are liquids and gases at room temperature are usually made of molecules that have covalent bonds (common examples include CO2, N2, CH4, H2O, C8H18). | | |
| **Aim/Essential Question:**   * How do single, double and triple bonds affect the shape of molecular compounds? | | |
| **Understanding(s):**  *Students will understand that . . .*   * Molecular compounds have a certain orientation * The element written first is the central atom * A single line signifies a single bond made up of 2 electrons * A double bond(line) is made up of 4 electrons * A triple bond(line) is made up of 6 electrons | | |
| **Content Objectives:**  *Students will be able to . . .*   * Draw Lewis Structure for molecular compounds with double and triple bonds * Draw Lewis structures of polyatomic ions (Honors * Draw resonance structures of some molecular compounds(Honors) | | **Language Objectives:**  ELD Level 4 *Students will be able to . . . in English*   * In own words describe to your partner how to draw Lewis structures for the given molecular compound (Day 2)   ELD Level 2 *Students will be able to . . . in English*   * Explain to the teacher how they know a certain molecular compound has a double or triple bond (Day 1) |
| **Key Vocabulary**   * Single Bond: A bond between atoms made up of two electrons * Double Bond: A bond between atoms made up of four electrons * Triple Bond: A bond between atoms made up of six electrons * Lewis Structure: diagrams that show the bonding between atoms of a molecule | | |
| **Stage 2-Assessment Evidence** | | |
| **Performance Task or Key Evidence**   * Students will demonstrate knowledge of Lewis structures by doing examples on the board | | |
| **Key Criteria to measure Performance Task or Key Evidence**   * Students will score at least an 80% on the mixed review of Lewis Structures | | |
| **Stage 3- Learning Plan** | | |
| **Learning Activities:**  Do Now/Bell Ringer/Opener (Day 1): Students will go to their folders and answer two questions about Lewis Structures with their plicker card.    How many lone pairs are there on NH3?  Image result for lewis structure single bond examples  a)1  b)2  c)3  d)Too many to count  Day 2:  Students will go to their folders and answer two questions about Lewis Structures with their plicker card  What type of bond does N2 have?  Image result for n2 lewis structure  a) Single Bond  b) Double Bond  c) Triple Bond  Learning Activity Day 1: Teacher will demonstrate drawing of Lewis Structures by doing example problems and leading students through a step by step process  Examples:  O2  N­2  SO2  O3  For honors Resonance will be covered with the example of O3 about how the double bond can go on either side of the central atom  NH4+  CO32-  NO3-  Learning Activity 1 Day 2:   * Students will work independently or with a partner to finish the worksheet given to the students at the beginning of the class. The worksheet will be collected at the end of the period and graded   Application  **Lewis structure helps demonstrate molecular geometry**  Summary/Closing (End of Second day)  **How can lone pair of electrons make a difference in the shape of an atom**  **Multiple Intelligences Addressed:**   |  |  |  |  | | --- | --- | --- | --- | | Linguistic | Logical-Mathematical | Musical | Bodily-kinesthetic | | Spatial | Interpersonal | Intrapersonal | Naturalistic |   **Student Grouping**  Whole Class  Small Group  Pairs  Individual  **Instructional Delivery Methods**  Teacher Modeling/Demonstration  Lecture  Discussion  Cooperative Learning  Centers  Problem Solving  Independent Projects | | |
| **Accommodations**  Student with broken arm will work with another person and participate orally. Grade will be based upon the worksheet done by student and partner | **Modifications**  none | |
| **Homework/Extension Activities:**  Due Monday Read Chapter 6 Section 5 Molecular Geometry and do a 3-2-1 | | |
| **Materials and Equipment Needed:**   * Worksheet * Step by Step sheet(Worksheet done on Wednesday) * Pencils * White Board | | |

**Adapted from Grant Wiggins and Jay McTighe-*Understanding by Design***