**Lesson Plan Template**

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| **Name:** |  **310** |  | **Course:** | Earth Science |  | **Grade:** | 8 |
| **Unit:** | Atoms/Chemistry/Elements |
| **Big Idea:** | What are atoms? What do they have to do with me? How do they combine? How do we get energy from them? (Idaho State Standards Goal 2.4.1) |
| **Subconcept:** | Atomic Models have changed over time. The Bohr Model is particularly useful as a 2-dimensional model to show the subatomic particles, their charges and locations in the atom. Knowing about electron energy levels/orbitals helps to understand about ions and how atoms combine with each other. (Idaho State Standards: 1.1.2, 1.8.1 in addition to 2.4.1) |
| **Literacy Strategy(s):** | Outline-style notes, “Atomic Structure Bohr Model Assignment” |
| **Lesson:** | Bohr Model, electron energy levels |  | **Date Taught:** | 12/9/2009 |
| **Learning Objective(s):** |
|  |  Students will be able to | Describe an ion and isotope and how they differ from a “regular” atom of a specific element |
|  | Students will be able to | Draw models of atoms with subatomic particles in correct locations  |
| **Idaho Standards (or National Standards if no Idaho Standards exist):** |
| Idaho State Standards: 1.1.2, 1.8.1 in addition to 2.4.1 |

**Detailed Description of Lesson:**

Describe the sequence of activities in the lesson. Include the instructions that students are given for activities. Remember that these lessons will be shared with other teachers. Please provide enough detail so that other teachers could replicate the lesson.

Prior to this lesson, students participated in a Periodic Table research assignment during which they saw more Bohr models and read more about the various elements and found out more about how the Periodic Table is organized. They had also taken notes and completed other activities to see find out about atoms.

It turned out that I was ill this day and left a short set of outline notes on ions and isotopes to share with my students and a worksheet on the Periodic Table and Bohr models for each of the first 18 elements. According to my students they found the notes slightly confusing at the time but the assignment was relatively easy since they already knew how to make the Bohr models, just long.

The day I returned I was able to use this assignment to expand on the notes they had taken about ions and isotopes. I will find out Monday if it helped when we review for the quiz to be given on Tuesday. I will have journal prompts on Monday to elicit student ideas about ions and isotopes.

**Handouts:**

Include any handouts that students were given. The “Atomic Structure Bohr Model Assignment” sheet will be scanned in and e-mailed separately as an attachment on Monday, December 14.

**Student Work:**

Include samples of student work from the lesson (include and identify examples of high, medium, and low quality). *Remove student names before submitting.*

**I will e-mail scanned images of student work on Monday, December 14.**

**Reflection:**

Complete the Lesson Reflection Form on the following page. Spend time to include details of how the strategy worked and what you may have done differently. This is the portion with will most help your colleagues in implementing their own version of you lesson.**LIMSST Project Literacy Lesson Reflection Form**

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| --- | --- | --- | --- | --- |
| **Name:** | **310** |  | **Date lesson was taught:** | **12/01/09** |
| **Lesson Title/Topic Areas:**  |
| **Bohr Model, Electron Energy Levels**  |

**Literacy Strategies Used:**

(Please discuss what literacy strategies you embedded in this lesson. What were your goals in using these strategies? Be specific and use as much detail as possible.)

The purpose on this day was to review what was done in class on previous days. The literacy strategy used was whole class discussion, of ions compared with the models of neutral atoms we had already made on the “Atomic Structure Bohr Model Assignment”. Demonstration of the various electron energy levels in the models created by the students helped them to see what I meant when explaining the notes on ions that they had taken during my absence. Then I demonstrated the differences between isotopes using more atomic models.

Following the discussion and demonstration I put up on the overhead seven descriptions of atoms which students had to determine whether the descriptions were of isotopes or different elements. They need more practice with the deeper thinking required to analyze the statements. They will get some more practice this on Monday.

**Student Response to the Lesson:**

(Was the strategy effective? Were students able to read/write as needed in this lesson? What attitudes were displayed? How did specific

 students and/or the class do? How did the literacy strategy aid in developing student understanding of the topic? Cite specific evidence from the samples of student work)

The strategies used were effective for the students who actively engaged in the lessons. The questions asked by thestudents showed increased understanding of Atomic Models, ions and isotopes.

During each of the five periods I had about 10% of my students do a verbal “AH-HA!” which I found quite amazing to witness as the teacher. So, I am sure that more students had “AH-HA” moments quietly. The students liked not having to do more “work” as they just had to add a few things to the assignment already completed on the previous day.

The assignment completed by the students shows various levels of understanding and or ability. (They will follow as attachments in an e-mail).

**Lesson Reflection:**

(What worked well with this lesson? What challenges did you encounter in this lesson? Would you change certain aspects of the lesson or the questions that you asked? How does this influence future lesson planning?)

The discussion held during the demonstration about ions and isotopes worked fairly well. I called on volunteers mainly during this one. I will follow up on Monday with more on ions and isotopes to check understanding of my students and allow them to deepen their thinking/understanding.

**Relationship to Previous Instruction:**

(Have you taught this lesson/topic prior to the LIMSST project? If so, how did your teaching of this lesson differ from what you taught before? How did students’ reactions to this lesson differ?)

I have taught this topic in previous years. The main difference this year was to increase the discussion during the lecture. I also cut down on how much I dominated the lecture. I also used the “Atomic Structure Bohr Model” assignment for the first time. It was quite useful to me as a teaching tool and to the students as they didn’t have to do as much “work” after they had completed the assignment in order to follow my demonstration and participate in the discussion of ions and isotopes.