**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):** | Journal Entry, class discussion, Notes |
| **Lesson:** | Bohr Model, electron energy levels |  | **Date Taught:** | 12/1/2009 |
| **Learning Objective(s):** |
|  |  Students will be able to | Describe an atom and its subatomic particles |
|  | 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.

The day before this lesson took place students took notes on atoms by making a concept map with me leading lecture. The concept map included information about atomic number, mass number, subatomic particles, fission and fusion.

To start students thinking on the day of this lesson they had to answer two questions in their journals about the notes from the day before: 1) Explain the difference between fission and fusion; 2) Describe the three subatomic particles including their charges. After the students had time to write out their answers we went over the answers as a class.

Following journal discussion students and I participated in class lecture about Bohr Models and electron energy levels. Once the notes were complete, students drew two more atomic models using the information from their notes.

**Handouts:**

Include any handouts that students were given. **No handouts were provided for this lesson.**

**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.)

I continued using journal entries on this day. The purpose on this day was to review what was done in class the day before. In my class we have established a pattern of discussing responses to the journal prompts daily. This can take anywhere from 5 minutes to 15 minutes depending on the needs of the students. On this day it took nearly 15 minutes as students were not totally clear on fusion and fission. They also had questions about how the energy released from the two reactions affects the Earth, what we need to do to contain the radioactivity, etc.

Following this discussion we moved on to Bohr models and electron energy levels. I lead an interactive lecture to draw in student participation and interest. As a class we developed an atomic/Bohr model for an element and I explained about the location of protons, neutrons and electrons as we did this. We made side notes about how to find the number of neutrons by subtracting atomic number from mass number. We also made note of details about energy levels such as what a orbital/energy level is, how many electrons could be in each of the first four.

After the notes were finished, we made two more atomic/Bohr models to allow for more practice.

**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 fusion and fission.

The questions asked during the lecture and the notes recorded showed ability to follow the train of reasoning in how the Bohr model is used to show atomic structure. Engaging students visually through the overhead display of notes, their kinesthetic engagement in writing the notes and their verbal engagement through questions by them and me increased understanding of the model used and the energy levels of electrons.

The notes taken by my students show 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 journal entries have been working well for me and my students this year. Collecting them weekly allows me to see more clearly what they think. I need to work on getting my students to elaborate more on their thinking, though.

As far as the notes are concerned, the lesson went alright because I kept them to one page and kept calling on students randomly to contribute to the discussion as we went. Having students follow up the notes with examples on the same paper allowed them to practice.

It turned out the following week to have been a good thing.