Activity: Atomic Structure RAFT

FOR THE TEACHER

Summary
In this activity, students choose from a number of activity options in order to best display their understanding of atomic structure. The RAFT model will be followed for this assignment, which means the students choose their assignment and may modify the assignment based on Role, Audience, Format, and Topic.

Grade Level
Middle or High school

Objectives
By the end of this activity, students should be able to
- describe the structure of an atom, including all subatomic particles.
- understand that different atom types contain different amounts of subatomic particles.
- define an isotope and explain how the relationship to a parent atom.
- identify the scientists Niels Bohr and John Dalton and describe their contributions to atomic structure.
- understand vocabulary related to atomic structure.

Chemistry Topics
- Atomic structure
- Atoms
- Subatomic particles
- Isotopes
- Atomic history

Time
Teacher Preparation: 15 minutes
Lesson: Two 60 minute classes

Materials
- Laptops for students making a PowerPoint presentation
- Poster board for students making posters
- 11X14 plain white paper for students making comic strips
- Notecards for students making the matching game
- Colored pencils/markers/crayons
- Glue sticks/tape

Safety
- No specific safety precautions need to be observed for this activity.

Teacher Notes
- Make sure to emphasize to students that they are creating the assignment based on the aspects of RAFT (Role, Audience, Format, and Topic). The Audience they are creating for
can be at the discretion of the teacher. Feel free to change the audience types based on your students, some suggestions are included below.

- Make sure that students who are going to create the poster understand they need to pick an element larger than #10. Also have these students discuss their idea for their poster with you before they start drawing. I have students explain why they chose their idea and how it will relate to the structure of the atom.
- Students who create the PowerPoint should create it as if they were teaching this subject matter to the class, as their audience. Be sure that they create an original presentation.
- Students who decide to write the story about the life of an atom should be given an audience for their story. I tell my students to write the story for 3rd-4th graders, but you can pick the audience type that you think will work best for your students.
- For the memory game, make sure that students understand that they need to create two cards for each word (the words I have listed are the ones I have chosen, you can decide what vocabulary words work best with your students). They also should understand that one side of the card is the word with a colorful picture and on the other side is the definition or explanation.
- Allowing 60 minutes for the design of the student’s activity option of choice should be sufficient, but teachers can allow more time if needed. Teachers should also allow an additional 60 minutes for student presentations.

**FOR THE STUDENT**

**Lesson**

**Atomic Structure RAFT Activity**

**Directions**
Choose one of the activities below to display your knowledge of Atomic Structure. Remember that you should be writing, drawing, or creating these projects for the audience associated with your project.

1. Create a map of Atomville. Choose an element from the periodic table (use an element that is higher than #10) and make a map of Atomville showing where everyone in the town lives. This map should be creative, colorful, and should show all parts of the atom. Make sure to label your map showing who represents each part of the atom. On the back of your poster, discuss how each part of the map relates to each other.

2. Write a song or rap about the parts of an atom. Make sure the song/rap includes the parts of the atom, their location, how they interact with each other and how the number of parts and their attraction/repulsion to each other determines the size of the atom. Using examples of specific atoms in your song or rap is important.

3. Draw a Comic Strip/Cartoon about how an atom becomes an isotope. Include the steps involved in the formation of an isotope, how isotopes differ from the parent atom, and the interactions between isotopes and parent atoms.

4. Create a PowerPoint presentation. You are the teacher, so create a presentation on how you would teach this information to the class.

5. Write a story about the life of an atom in the universe. Create a 3-4 page story written for young kids about an atom’s travels around the universe. Talk about how
the atom is made and what could happen to it during its travels.

6. Create the pilot episode for the new TV show, “As the Atom Turns.” Write a script for the show; make sure to include parts for all of the characters. Your characters include all of the parts of the atom as well as Niels Bohr, and John Dalton.

7. Create an Atomic Structure Memory Game. Create two cards for each of the words that will be part of your game. Make sure each card contains the word and a picture for the word (on one side of the card), and the definition for the word (on the other side of the card). Use the following words to create your game:
   a. atomic mass
   b. electron
   c. neutron
   d. proton
   e. atomic number
   f. ion
   g. isotope
   h. atomic mass unit
   i. atom
   j. nucleus
   k. periodic table
   l. group
   m. period
   n. mass number
   o. Dalton’s Atomic Theory (1 card for each part)