

Problem #2: What Element Would You Be? Lesson Plan

Periodic Trends

Introduction:

This activity is designed to encourage students to apply knowledge to a new situation and to encourage writing across the curriculum. After completing units on atomic structure, electron configuration, periodic trends and bonding students will be asked to select an element from the periodic table that best represents who they are. Students will create a one page story that relates the properties of this element to themselves.

Learning Outcomes:

Students will relate an elements properties to its' atomic structure and location on the periodic table. Students will use analogies to relate chemical and physical properties of an element to human behaviors.

Students will create an entertaining story

Curriculum Alignment:

NCSCOS Chemistry Objective 2.06 Assess bonding in metals and ionic compounds as related to chemical and physical properties.

NCSCOS Chemistry Objective 2.07 Assess covalent bonding in molecular compounds as related to molecular geometry and chemical and physical properties.

NCSCOS Chemistry Objective 3.01 Analyze periodic trends in chemical properties and use the periodic table to predict properties of elements.

National Science Content Standard B

- Structure of atoms
- Structure and properties of matter

Classroom Time required:

80 minutes of class time

Materials Needed:

Periodic table

Chemistry notes or textbook as a reference

Technology resources:

None required

Student Pre-activities:

Students need to understand basic atomic structure and periodic trends in atomic radius, ionic radius, ionization energy and electronegativity. Knowledge of ionic and molecular bonding is not necessary, but may add to the creativity of the stories.

Teacher Pre-activities:

Pre-read the following excerpt from *The Periodic Table* by Primo Levi so you can relate the human characteristics to that of argon. Primo Levi uses words like inert, disinterested, static, abstention to describe his ancestors. He relates their lack of engagement in life to the behaviors of the inert noble gases.

Student Activities:

1. Read a short excerpt from the chapter Argon in Primo Levi's book "The Periodic Table" so that students have an example of how properties of elements can be related to human behavior.
"The little I know about my ancestors presents many similarities to these gases. Not all of them were materially inert, for that was not granted them. On the contrary, they were—or had to be—quite active, in order to earn a living and because of a reigning morality that held that "he who does not work shall not eat." But there is no doubt that they were inert in their inner spirits, inclined to disinterested speculation, witty discourses, elegant, sophisticated, and gratuitous discussion. It can hardly be by chance that all deeds attributed to them, though quite various, have in common a touch of the static, an attitude of dignified abstention, of voluntary (or accepted) relegation to the margins of the great river of life."
2. Handout the "What Element Would You Be? Student Sheet". Allow students to use their notes or textbooks as a reference if needed.
3. Have students read the grading rubric.
4. Have students select an element and write a story that relates their own personality to the properties of their chosen element.
5. Collect stories at the end of the class.
6. Use the What Element Would You Be? Grading rubric to assess

Assessment:

Use the *What Element Would You Be? Grading rubric*

Modifications:

For students with limited English language skills, the reading passage may be difficult to understand. In this case, discuss the personality attributes the author has listed and why they are similar to the properties of a noble gas.

This activity makes an excellent sub plan. If you introduce the idea to students prior to your absence they may choose to do some research before class.

Critical Vocabulary:

Ionization energy
Electronegativity
Atomic radius
Ionic radius
Reactivity
Periodic trends

Web Sites and resources:

There are many periodic table web sites where students can access information about specific elements.

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