

INSPIRE GK12 Lesson Plan



Lesson Title	Periodic Table Patterns using Fabulous Periodic Eggs
Length of Lesson	1 day
Created By	Kimberley Leggett
Subject	Chemistry, Physical Science
Grade Level	10 th , 11 th , 12 th (Chemistry)
State Standards	Chemistry: 3 b
DOK Level	DOK 2
DOK Application	Analyze; compare; make observations; interpret; Predict
National Standards	9-12: B: Physical Science
Graduate Research Element	I use Carbon everyday in my research and knowing the trends of the periodic table are very useful.

Student Learning Goal:

Physical Science: 3 Develop an understanding of the periodic table: (b) Analyze patterns and trends in the organization of elements in the periodic table and compare their relationship to position in the periodic table.

- Atomic number, atomic mass, mass number, and number of protons, electrons, and neutrons in isotopes of elements
- Periodic properties

National Science Education Standards of Content 9-12

B: Structure and Properties of Matter

- An element is composed of a single type of atom. When elements are listed in order according to the number of protons (called the atomic number), repeating patterns of physical and chemical properties identify families of elements with similar properties. This “Periodic Table” is a consequence of the repeating pattern of outermost electrons and their permitted energies.

Materials Needed (supplies, hand-outs, resources):

Fabulous Periodic Eggs handout (2003 AIMS Education Foundation – Chemistry Matters); a set of periodic eggs; an egg box sheet

Lesson Performance Task/Assessment:

Formative: We will have an opening discussion on the periodic table and the trends that go along with it.

Summative: We will have a Fabulous Periodic Eggs game that will show the patterns in the periodic table.



Lesson Relevance to Performance Task and Students:

The students will be able to recognize the different patterns that are associated to the Periodic Table. The students will be able to sort and classify a set of eggs, use a vertical and horizontal axis for classification, and identify how to read parts of a periodic table of the elements.

Anticipatory Set/Capture Interest:

The Fabulous Periodic Eggs game will be used after the lecture to enforce the patterns they have just learned.

Guided Practice:

Teacher lecture on the periodic table and patterns associated with it. Key Question – What can we learn about organization that will apply to the periodic table of the elements? After the lecture the students will use this knowledge to play the fabulous periodic eggs game.

Independent Practice:

Part One:

1. Have students get into groups.
2. Distribute the cut out pictures of the periodic eggs. Ask a student in each group to sort the eggs based on an observable property. Have the other students predict the criteria used to group the eggs. Have each student in the group sort the eggs at least once.
3. Discuss ways that the students grouped the pictures of the eggs. Point out that there are multiple ways the eggs can be sorted.
4. Draw the student's attention to the bands and the jewels on the eggs. Tell them that the bands are the horizontal rows with jewels. Ask the students to find the egg that has the least number of bands and the least number of jewels.
5. Distribute the egg box page and ask them to place the egg with the least number of bands and jewels in the first container of the egg box. Tell them that they must now sort the remaining eggs based on the rules of the box. The horizontal rule is the number of jewels arranged from fewest to most going from left to right. Each row needs to contain the same type of jewel. The vertical rule is the number of bands, fewest to most going from top to bottom.
6. Check the students' organization of the eggs and discuss how they went about organizing the eggs.
7. Distribute a copy of the periodic table. Point out the periodic table is also organized along a vertical and horizontal axis based on the properties of the elements.
8. Hand out the periodic table information page for students to read. Focus on learning to read and interpret the table, not memorizing the elements.



Part two:

1. Tell the students that Dimitri Mendeleev, a Russian chemist, was the first to publish the classification of the elements that gave us the format we use today. Mendeleev organized his chart by patterns in the elements that he knew at that time. He predicted that some elements had not yet been discovered because there were spaces in his organizational chart that were not filled.
2. Tell the students that you have some mystery eggs that need to be classified. Distribute the mystery eggs and encourage students to place them according to the patterns they have established in their charts.
3. Invite students to use the blank egg shapes to illustrate eggs that are missing.
4. Discuss the procedure and the results.

Remediation and/or Enrichment:

R: Individual IEP; only do part one of the assignment

E: More intense egg patterns like in part two

Check(s) for Understanding:

Below are follow-up questions to check for understanding:

1. How did your group go about sorting the eggs?
2. How is the box of periodic eggs like a periodic table of the elements? How is it different?
3. What did you have to think about when placing the mystery eggs?
4. Did everyone position the mystery eggs in the same place? Explain.
5. Why do you think scientist organized the table of the elements this way?
6. What other things are organized into tables?
7. Why are tables useful in organizing data?
8. What are you wondering now?

Closure:

A teacher guided summary discussion

Possible Alternate Subject Integrations:

Physical science maybe

Teacher Notes:

This game came from the 2003 AIMS Education Foundation in a workbook called Chemistry Matters.