

Discipline: Science and Technology

Standard Category: Physical Science, Chemistry and Physics

Lesson Focus: Periodic table

Suggested

Level:

Middle

PA Standard(s):	Related TESOL Standard(s):
3.4.10A: Explain concepts about the structure and properties of matter.	Goal 2: To use English to achieve academically in all content areas. Standard 3: Students will use appropriate learning strategies to construct and apply academic knowledge.

Lesson Focus:

Periodic table

Teaching

Strategies:

Whole group instruction

Key Objectives in Accordance with TESOL Level:

Pre-Conversational/ Beginning	Intermediate	Advanced
Students will be able to: <ul style="list-style-type: none">Match elements with chemical symbol.	Students will be able to: <ul style="list-style-type: none">List symbol and atomic number of each element.Identify which group houses an element.	Students will be able to: <ul style="list-style-type: none">Complete a matrix listing symbol, atomic number, and group.Write a description for each group with examples.

Lecture

Use of graphic organizers

Materials:

1. Periodic Table
2. Single cell of the table – enlarged for detail (on board)
3. Pictures – see website in notes

Procedures:

1. Discuss the fact that all living and non-living matter is made up of elements. The smallest unit of an element is an atom. Each atom has a different composition in that they have a certain number of protons, neutrons and electrons.
2. Atomic Number – The number of protons found in an atom determines the atomic number (Hydrogen has 1 proton therefore its Atomic Number is 1).
3. Scientist needed a way to organize the elements – Periodic Table
4. Show *enlarged cell* from the Periodic Table. Teach what information is found there and the significance of each component.

1	1.0
H	
Hydrogen	

ESL students at all levels benefit from the use of visuals.

5. Key Points: The Periodic Table consists of elements in order of increasing atomic number with elements having similar properties placed in vertical columns. Elements in a column often exhibit some similarities in their physical and chemical properties. These are known as FAMILIES and GROUPS

Group	Name/Family	Elements
1A	Alkali metals	Li, Na, K, Rb
2A	Alkaline earth metals	Be, Mg, Ca, Sr
7A	Halogens (salt formers)	O, S, Se, Te, Po

6. Hand out *matrix* – refer to a copy of Periodic Table. Show students how to complete the chart.
7. Discuss of elements and the properties of each group.
Beginning ESL students may not feel comfortable participating in whole-group speaking activities. Don't force them to speak. Beginners tend to develop listening skills in English before attempting to speak it.
8. Have students review and correct each answer and their reasoning.

Closure:

Have students compare and contrast the differences elements. Responses should include the following:

Assessment:

Completion of matrix with descriptors for each family of elements.
Extension – research how elements are named when they are discovered

Beginning

Match elements with chemical symbols, in groups, students should locate pictures with items made of each group of elements.

Intermediate

Complete matrix with atomic number, symbol, and family.

Advanced

Complete matrix, write a description for each group and list examples of items made of those elements.

Notes:

Terms to Know:

- Periodic Table
- Element
- Atomic Number
- Families of elements
- Groups of elements

Websites helpful for Periodic Table:

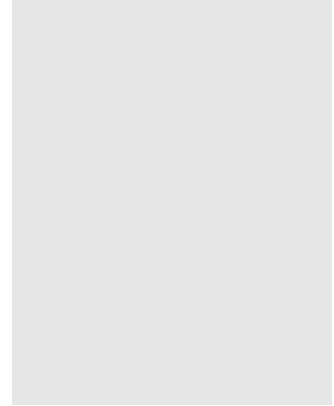
<http://www.webelements.com/>

<http://chemlab.pc.maricopa.edu/periodic/periodic.html>

<http://pearl1.lanl.gov/periodic/default.htm>

Additional Resources:

The Science Technology, Environment and Ecology Project (STEEP) Classroom Connections Kit has an integrated unit of study entitled It's Elementary.



Alkali Metals (Family) Matrix

Element Identification Chart

Element	Symbol	Atomic Number
Lithium	Li	3
Sodium	Na	11
Potassium		
Rubidium		
Cesium		
Francium		

Noble Gases (Family) Matrix Element Identification Chart

Element	Symbol	Atomic Number
He		
Ne		
	Ar	
	Kr	
		54
		86
		118