Project: 21st Century Elements

FOR THE TEACHER

Summary
In this project, students will learn the importance of the elements in our lives. The students will research one chosen element and create a webpage, a digital comic strip, or a video to explain the important properties of the element as well as why the element is so important to our lives.

Grade Level
High or Middle School

Objectives
By the end of this project, students should be able to
- successfully use technology to either create a short video, create a completely designed, educational website or create a digital cartoon.
- explain the relevance of the element that they are researching to our lives.
- display a stronger understanding of some fundamental chemistry topics, including: atomic structure, physical properties, periodic trends, and atomic history.

Chemistry Topics
- Atomic structure
- Physical Properties
- Periodic Trends
- Atomic History

Time
Teacher Preparation: minimal
Lesson: 3 classes (this may vary)

Materials
- Chrome books, ipads, cell phone (some sort of technology that each student is able to use themselves that can take video if they choose to).
- Dependent upon which medium the student chooses to use.

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

Teacher Notes
- This project allows for the students to creatively display their knowledge about atomic structure, physical properties, and element placement on the periodic table.
- Students will be required to use technology in order create a website, a short video clip, or a digital comic strip to show specific information about an element.
• The following units should be completed prior to this project
  o Atomic Theory
  o Quantum Mechanics
  o Trends of the Periodic Table
• Each student should be given their own element to research. Students can be given a choice, or teachers can hold a raffle so the element choice is random. If students want to change to a “more difficult” element, choosing one that has a higher atomic number on the periodic table would accommodate this.
• I suggest that teachers do not allow students to have the same element as another student.
• Explaining the project a day or two in advance of the start is advised so they can determine the type of project that they would like to do, and you or the students have sufficient time to gather necessary technology.
• During the time in class that the students are working be sure that they are staying on track with the content requirements as well as the creativity aspects. It is easy for the students to spend too much time on the creativity requirements of the project.
• Differentiation: If there is not enough technology for the entire class to work alone the students could be partnered up.
• Suggested content requirements (For advanced students additional components could be added):
  o Name of the element
  o Element symbol
  o Atomic Number
  o Atomic Mass
  o Source of the element (found in nature or manmade)
  o Something “wow” about the element
  o State of matter for the element at room temperature
  o Chemical properties (2)
  o Oxidation number(s)
  o Physical properties (2)
  o Electron configuration
  o Number of protons
  o Number of electrons
  o Number of neutrons
  o Price/value of the element
  o When the element was discovered
  o Who discovered the element
  o Group and period where the element is located on the periodic table
  o Name some common isotopes of the element (including where they are found)
  o Common ionic compounds the element creates using the oxidation numbers
  o Historical relevance of the element
  o Common uses of the element when it was discovered versus modern day
• Possible websites to make the webpage are:
  o Weebly.com
  o Googlesites.com
• Possible website to use to make a digital video:
  o Lensoo.com
  o WeVideo-Video Editor and Maker
  o Webcam recorder and snapshot
  o Photo to Cartoon App
Camera on cell phone – upload to moviemaker
• iPad/iPhone – upload to iMovie
• Possible website to make a digital cartoon
  o Bitstrip.com

Cross-Disciplinary Extensions

Connect to Math
This project could also include a portion where the students have to show mathematically
different compounds that the element creates including the canceling of oxidation numbers.
Also included is finding the number of protons, electrons and neutrons from the atomic number
and mass number.

Connect to Reading
The students are researching and reading about the different properties of the elements as well
as reading articles about the historical relevance.

Connect to Writing
The students are writing a script for the short video clip and are also writing the information
into the digital cartoon and website.

Connect to Social Studies
A historical representation of how the element has been used in the past is to be included in the
presentation.

FOR THE STUDENT

Project: 21st Century Elements

Background
You are to create an informational presentation about an element. Your project
may be in the form of a short video, an educational webpage, or a digital comic
strip. It will be used to teach the class about the properties of a specific element.

This will be an independent project. You will be given three class periods to work
on the assignment. During this time you should research your element and get all
of the required information for the project. Once you have compiled all of the
necessary information, you should use the remaining class time to create the video,
webpage or digital comic strip. The given class time will include time to use
computers, cell phones, iPads or other necessary multi-media. Finally, upon
completion of the project you will be required to give a short presentation of your
multimedia (website, video, or digital comic) in front of the class.

This project must include all of the following information as well as be creative and
organized.

• Name of the element
• Element symbol
• Atomic Number
• Atomic Mass
• Source of the element (found in nature or manmade)
• Something “wow” about the element
• State of matter for the element at room temperature
• Chemical properties (2)
• Oxidation number(s)
• Physical properties (2)
• Electron configuration
• Number of protons
• Number of electrons
• Number of neutrons
• Price/value of the element
• When the element was discovered
• Who discovered the element
• Group and period where the element is located on the periodic table
• Name some common isotopes of the element (including where they are found)
• Common ionic compounds the element creates using the oxidation numbers
• Historical relevance of the element
• Common uses of the element when it was discovered versus modern day