NSTA Periodic Table Question 2

On Jan 21, 2008 7:20 PM, Robert Kern <robert.kern9@gmail.com> wrote:

I'm a first year teacher and we are about to start the chemistry unit of 7th grade. I have been trying to come up with some activities involving the history / organization / characteristics of elements in the periodic table and have a few ideas, but was wondering if anyone has something that worked really well with middle school students.

Thanks in advance for your help.

Robert Kern
Team 7-2 Science Teacher
Stratford Middle School
Bloomingdale, IL

The periodic table is one of my favorite units to teach - it can go so many places and bring back so many ideas.

Last year, I put together something really big because of some out-of-school time, and I wanted the kids on a specific path, that they could work on pretty independently and work on some skills as well as science content.

http://wizard.4teachers.org/worksheet/view.php?id=96362

In reality - it was too long, but boy, did we have fun - I saw some awesome work, and building our table was an excellent way for them to see lots of ideas in practice. The Periodic-al Tabl-oid was hysterical. I'd trim the project, but keep it's essence.

scroll down to the end, and you will see the websites that I based this on.

''Danger at the table'' was for my older kids, who were looking at the elements with a different eye.

http://trackstar.4teachers.org/trackstar/ts/viewTrackMembersFrames.do?

org.apache.struts.taglib.html.TOKEN=fb86b580892a45bfe070bde17f30de97&number=314778&password=

I've attached the worksheet that I handed out - it's pretty much hardcopy of the webquest, but I needed my kids to have access to a bunch of stuff offline, too.

Links to a wide variety of tables - some annotation of what I think are the advantages of each.

http://trackstar.4teachers.org/trackstar/ts/viewTrack.do?number=282870

(this is the first link on the worksheet site)

Finally - today I stumbled across this new entry into the Periodic Table collection and I am very impressed! It could rival webelements since it layers so many good features of other tables onto it. This is the link to the chemistry pathways of the NSDL (I've become a fan - I think I'm escalating to groupie): http://www.chemeddl.org/ Click on Periodic Table Live for a great resource.

kathy g

One of the best periodic activities I did with my kids was the "periodic table of students".

As the students were working on their notes, I would pull one at a time out into the hall.

I would take a picture of the students in any school appropriate pose they wanted. (standing, seated, laying down)

After I took a picture of each kid (and developed the film)...

The students would create a periodic table of themselves...

Each class got to choose how to put it together and they had to defend their reason why.

(color of pants, shirts, hair, boy, girl, etc...)

The kids really got into the project and it was amazing to see how each class decided on the organization of their tables.

The tables were then displayed in the hall so everyone could see!

A discussion would follow and sometimes corrections are made.

Brandon Thurston [bthurston@garcoschools.org]

There are several other ‘Element’ resources where the bingo game came from…

http://education.jlab.org/

Stacy DeVeau

Embry-Riddle Aeronautical University

NASA Educator Resource Center

3700 Willow Creek Road - Bldg. 70C

Prescott, AZ 86301

Tel: 928-777-6281

Email: deveaus@erau.edu

Fax: 928-777-6693

http://www.erau.edu/pr/erc

Paint chips make a GREAT periodic table. There's an article in the NSTA archives--it was in the summer about 2 years ago--about giving each group a set of the main colors (red, orange, yellow, green, blue, purple) with the hues separated (and identifying numbers blocked). Take away a few of the hues for some of the colors. Students have to put them into some kind of order and defend their order. Since there are holes in their "periodic table" they make predictions of what the missing colors would be just as scientists predicted what missing elements should be based on similar properties. Best of all, paint chips are free. I also gathered my own set of 18 colors with 7 hues and put together my own Paint Chip Periodic Table and wrote the symbols on each color square. The kids got a better understanding about how elements in a column are similar to each other but not necessarily across a row.

Tammy Simons

High Point Central High School

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Tammy Simons [tssimons@gmail.com]

I also played element bingo with a blank version of this template. Students had to write in their own 24 choices (symbol only) from periods 1-6 and I made cards to draw from a hat from these periods only. The caller calls out the name of the element … first the students play with a copy of the periodic table in front of them table and then they actually memorize the elements. Sometimes I give hints about the element and they guess. It's a fun filler to pull out the cards when there is free time as well.

Have fun!

Mary Jo Nairn

Science & Math

Chaska Middle School West

Chaska MN

I found this great set of bingo cards online. I gave the kids periodic tables then called elements by their Name, Atomic Mass, Atomic Number, Number of electrons/protons/neutrons etc... its great practice for them to calculate those things.

See attachment saved in CSE 486 – element bingo

Periodic Table Bingo NSTA List Serve

http://wizard.4teachers.org/worksheet/view.php?id=96362

I also did a project I called the Atomic Comic. I used the scholastic book "The Periodic Table: Elements with Style." It goes through the periodic table and each element talks about its self - its properties, history and characteristics. (I copied parts of the book for each group so I didn't have to buy 6 copies) The instructions were for them to choose 4 (or more) elements and use them as characters in a superhero comic book. They must use the properties of the element as it's "super powers." I got some great results.

Good Luck!

Aleya Van Doren [ajvandoren@gmail.com]

[NSTA Physical Science]

Robert Kern wrote:

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> has something that worked really well with middle school students.

>

I can't find the exact activity now, but a great start is to have a set of cards with different shapes, colors, some with holes in them, etc.

Then have each group arrange them into a table, taping their final "table" together onto a large sheet of paper that can be taped in the front.

Students will find different arrangements, and then have the groups present their tables with the logic of their arrangements. You may find that some place the colors in rows, and others place them in columns.

Other similarities may show up.

The benefit of an activity like this is it gets students to, when presented with the "real" periodic table, start looking for the logic in it.

I just created a sample, which I haven't used with students but should work:

http://trampleasure.net/science/chemistry/periodic-table-intro-game.pdf

Remember, the goal is not for them to find the "right" arrangement, but to be able to explain their logic. Depending on the class, when you have all of them up front, you might take a vote to decide which is the "best" arrangement (you might create a few "best" categories).

Lee (Amosslee) Trampleasure

Carondelet High School

Concord, CA

[NSTA Physical Science]

I introduce this unit with a "Periodic 'table of the 'classroom". I give each student a set of 8 (because I have 8 groups in my classroom) index card and have them write some information on it. Usually I ask for their own chemical symbol (initials Last initial capitalized, first initial lower case... in the event of repeats I have them use a middle initial). I also ask for information in the corners of the cards... shoe size, hair color, eye color, birthday... it varies from year to year. Each student makes 8 cards so that I can make 8 total sets for each table group. Then they are charged with creating the periodic table of the classroom and they have to defend their organizational strategy. When IEPs and 504s don't get in the way I allow them to sit in one of the arrangements throughout the unit.

Mary Jo Nairn

Science & Math

Chaska Middle School West

Chaska Minnesota

basic written/oral report. Students could pick any element, bring in a sample, dress like their element (one kid wrapped himself in aluminum foil)

before the unit started we did some sorting exercises to get them in the mindset of how things might be organized. I obtained small samples of elements and in grps they had to decide how to sort them...metal looking ones, powdery ones, metallics etc....

Jess Jarvis [jessjarvis7@hotmail.com]

You could have them construct their own periodic tables using a set of fake "elements". Encourage them to be creative and give them supplies to make them 3-D or whatever they want. Each "element" would have several characteristics so the students have several pieces of information they can use to help order the information. At the end, you could compare the way they did their tables to the historical periodic tables, for example if you have one that tries to make it 3-D compare it with the "Telluric Screw".

It's all on the Table – and a look at what's under it!

Studying the Elements of the Periodic Table - Webquest

Overview
In Part I of this project, you are going to learn lots and lots about the elements so that we can build our own periodic table.
In Part II, you will examine elements that are very special to you and describe their relationship to you.
Part III will turn into a scavenger hunt as you explore the elements your classmates have studied and discover what each has in common. This will be where we build our table.
We will conclude our project by writing a Periodic-al Tabl-oid that has newspaper articles, comic strips, and ads for the elements and element groups.

General Instructions
• Read all instructions carefully.
• Be sure you include all requested materials.
• Neatness and grammar count.
• Creativity helps.
• Plan your work and use your class time efficiently; deadlines are deadlines.
• There are a lot of interesting websites, but get your work done first and then go back to check out the cool stuff.
o No extra computer time will be allowed.
• A resource list for this project can be found at:
• Collate all information in your notebooks
o Some will be needed for the plates.
o Some will be useful for the essay.
o Some will be appropriate for the Tabl-oid.
• You will find most of this information – I know what's out there, and I picked the website based on the date I wanted you to find, so I will know if you really looked or not!

Links:

- Doc G's Table of Tables - start here!!
- Chem4kids.com: Elements and Periodic Table
- Martindale's Reference Desk
- Physics 2000

Find this information for Each of your Elements
1. Name
2. Name origin
3. Symbol
4. Is there an ancient (picture) or alchemist's symbol? If so, what is it and what did it mean?
5. Atomic number
6. Atomic mass
7. Is it a solid, liquid, or gas at room temperature?
8. Does it have a characteristic color, taste or smell?
9. What is its melting point and boiling point?
10. Does it react easily with other elements or compounds?
11. Is it a metal, metalloid or nonmetal?
12. When was it discovered?
13. Where was it discovered?
14. Who was the discoverer of your element?
15. Name of country of discoverer.
16. When was it first used? What was its original use?
17. The elements relationship to humans and the environment (dangerous or helpful?)
18. Can the element or compounds made from it be recycled? If so, how and where? Is it done in your community?
19. What do humans make with your element? (List at least 3 things.)
20. Is the disposal of your element an environmental concern? Are there special disposal needs? Explain.
21. Where do humans normally find your element?
22. How do they process it to purify it for use from its natural state?
23. If it is normally a mineral or an ore in nature, what are the names of its most common ores or minerals?
24. What country is its biggest producer?
25. Does it have any impact on history or civilization?
26. How much is your element worth?
27. Is your element poisonous to plants, animals or humans?
28. Is it a nutrient?
29. Can it be used in place of another element?
30. Could it be replaced in its use by another substance?
31. Is it commonly mixed with another substance that makes it more valuable to humans?
32. Names of the elements in 6 different countries.
33. What is the most interesting thing that you learned about your element?

Part I Element data and plate (15 points per element)
• Each of you will be assigned a variety of elements. It will be your job to search for the listed information then create a table plate for each one.
• Collect all information in your log books before creating any plates. (You may begin sketching plates for homework, not in class.)
• Set up your notebooks this way:
o We will tape a list of general instructions on an even page.
o We will tape a list of numbered specific data to collect on an odd page.

- Thinkquest's Periodic Table
- Science Park Periodic Table
- Resource for Environmental Safety Concerns
- It's Elemental: the Periodic Table of the Elements. Check out the student zone as well as clicking on an element
- Scroll down for alchemist's, biology & other table types

o On an even (left side) page, begin a new element. Your notes can go from the even to the odd (right side) page. It is possible to keep all necesary information within these 2 pages. This way, all the information is right there with the notebook open. No page turning should be needed for a particular element.
• Use numbers to identify the data since it will refer back to the sheet of numbered questions.
• When all element data is collected, then plates will be made. Cardboard will be provided (about 11 x 11 cm) Some class time will be allowed, but most will be homework assignments. It should be colorful, neat and full of information. Your Element squares must contain at least each of the following items.
o The name, symbol, atomic number, and atomic mass of your element.
o The physical properties of the element.
o Is it a solid, liquid or gas at room temperature?
o Is it a metal, metalloid or nonmetal?
o Does it have a characteristic color, taste or smell?
o What are its melting and boiling points?
o Are there any other properties that make it unique or especially valuable or dangerous to humans?
• Think about how you will portray key information on the plates. As a class, we will decide whether or not there is to be some common legend for the plate designs.

Part II – 7 paragraph essay (30 points for the data, 70 points for the essay)
• You will be asked to compile data and information for 3 specific elements.
• You will write 7 paragraphs about these elements (total, not for each one).
• Paragraph 1 is your intro: what are your elements and their basic information.
• Paragraphs 2-6 include all the interesting stuff, such as:
o Most interesting use of your elements
o Most dangerous use of your elements
o Medical/beneficial uses of your elements.
o Weirdest and/or strangest story involving your element
o Was it ever used in a comic book or novel? If so, state where, and give a description of how it was used.
• Paragraph 7 should analyze how these elements describe you. Why were you assigned these elements?

Part III – laying the table (50 points)
• We will discuss different ways to organize the plates and try out the different arrangements.
• After each layout, we will analyze its pros ond cons.
• As a class, we will use the element plates like a big deck of cards.
• We will group them in several categories like Mendeleev did.
• After each grouping, we will assess our sort and describe it's validity in several sentences. (Why do we think it's a good organization of the elements? Why is missing from this organization? What, if anything,

- Mendeleev's Magic is an good element quiz

- If it's all too much for you.... :)

should we consider next?)

Part IV – all the elements, a periodic-al tabl-oid (50 points)
• After we build our periodic table, each student will be assigned a task for our Periodic-al Tabl-oid. Each piece will feature some element or group of elements or important aspects of them.
o news flash agony article
o feature stories personal column
o comic strips ads
o poem/arts entertainment
o nature story others?
• Each student will be assigned a newspaper article to create using our collective information on the elements.
• Students will share and combine information as necessary.
• Each student will submit the equivalent of at least 6 paragraphs.
• The class will agree on the Tabl-oid layout for presentation.
• The teacher will assemble the paper for distribution and display.

This project is blended from a webquests by Christine Mahuran and Linda Culp at
[http://www.salemschools.com/~cmahuron/index.html#INTRODUCTION] and [http://www.thorndale.txed.net/lculp/webquest.html]