

Chemistry in the kitchen

Date: 4-28-2015

Subject: Chemistry

Grade: 4-6

Goals/Objectives/Standards: Expand student's knowledge of chemical elements and processes.

Nets Standards:

- 1c. Use models and simulations to explore complex systems and issues.
- 3b. Locate, organize, analyze, evaluate, and synthesize information from a variety of sources and media.
- 3c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks.
- 3d. Process data and report results
- 4b. Plan and manage activities to develop a solution or complete a project.
- 6a. Understand and use technology systems.
- 6b. Select and use applications effectively and productively

Timeline/structure of lesson:

Time (1 ½ hr. total) Set up 5 min.	Opening/Framing the Lesson/Introduction/Early Assessment Display the necessary ingredients and tools for making cookies; put on a kitchen apron. Invite the students into your chemistry lab. Have several stations already set up around the room for various groups to rotate through as the lesson progresses.	Monitor/Feedback
3-5 min.	Project the periodic table over the document camera for everyone to see. Ask "who can tell me which elements from the periodic table I will be using in making a batch of cookies? Along with that, what chemical processes will take place as I combine those elements together and subject them to heat in baking them?"	Student responses
5 min.	The Lesson Structure: Show the TedEd video found at https://www.youtube.com/watch?v=n6wpNhyreDE	
5 min.	Explain to the students that today they will be exploring some of the elements from the periodic table as well as some of the chemical elements and processes involved in baking cookies. As groups they will rotate through 4 different stations/activities and then at the end everyone will come back together for one last activity.	
5 min.	Quickly model for the students what they will be doing at each station and then separate them into 4 groups.	Any questions?
15 min.	Station/Activity 1: Using iPads students will use the Elements 4D app to explore the paper element blocks previously printed off from http://elements4d.dagri.com . Using the app students point the camera at the block to see an image of the element. They can combine two blocks together and see what reaction takes place.	Assign groups and tell them how the rotations will go.
15 min.	Station/Activity 2: Using iPads students will go on a QR code element hunt. At the station they will pick up an elements/recipe checklist and will search for QR codes around the classroom that link them to sites showing the different elements that make up the basic ingredients to a cookie recipe.	
15 min.	Station/Activity 3: Students will use the PBS elements app on the iPad to research different elements and then will choose one element to study further and create a visual presentation for (on-going project). The presentation could be through a thinglink, powtoons, or similar webtool, or it could be artistically illustrated. The assignment sheet will provide details as to what information should be included in the visual presentation.	

	Station/Activity 4: Students will meet with the teacher and learn more about the chemical processes and elements that go into making cookies as they aid in mixing up a batch of cookies.	
10 min.	Closing/Assessment Students will come back together and discuss some of the interesting information they learned about chemistry. A plate of cookies will be sent around and as each student takes one they must share a bit of information about what they learned at one of the various stations.	Pass out cookies Student responses
3 min.	Homework The elements visual presentation is homework. More detailed instructions on the assignment will be given to the class as well as upcoming time that will be available in class for working on the assignment.	Any questions?
Self Evaluation of the Lesson I think this will be a very fun lesson. It will take a fair amount of preparation time but many other lessons could spin off of this one for a week or two. I am very excited to give this one a try someday!		
Resources/Materials iPads set up with Elements 4D, PBS Elements, and QR code scan apps Cookie ingredients Cooking tools QR code sheets 4D Element blocks		