Lesson 1 Topic Title: Acids and Bases

Lesson 1 Learning Goals: Define what you expect students to know and be able to do at the end of the lesson. The learning goals should be specific, observable, challenging and varied. Learning goals should describe what your students will learn and be able to do by the end of the lesson, and not simply what activities they will do during the lesson.

Learning Goal 1: Students will be able to identify which foods or materials are acids and bases.

Learning Goal 2: Students will be able to identify where on the pH scale acids and bases are located with 100% accuracy.

Alignment of Learning Goals to State or National Curriculum Standards: Describe how your learning goals align with the Iowa Core Curriculum and/or National Standards for your content area. Identify the general subject area, grade level, and one or more specific standards in your response. The Iowa Core Curriculum can be found at: http://educateiowa.gov/index.php?option=com_content&view=article&id=2485&Itemid=4602

Both of my goals are aligned with the Iowa Core Curriculum Standards. The general subject area is science for a 6th grade classroom. These learning goals relate to “use evidence to develop descriptions, explanations, predictions, and models.”

Learning Goal 1 relates to this benchmark because the students will use inquiry and observations to provide explanations of why a food/material is an acid or a base. Students will apply knowledge they have learned about acids and bases (Learning Goal 2) to foods and materials in the room (Learning Goal 1) to demonstrate their understanding. Students will be asked to document their predictions and then their findings. Along with their findings they will include an explanation for what they found.


Justification of Learning Goals: Explain how your learning goals are relevant, challenging, and appropriate. Consider their importance relative to previous and succeeding topics covered in the class, the students’ future in the class and school, and to skills needed for success in the 21st century world.

Students will be able to recognize acids and bases. These two learning goals open up the idea of acids and bases for further development in chemistry ideas, as well as other areas of science. Knowledge of acids and bases can be applied in numerous areas in science. The word “acid” is used a lot in our language today, however not many understand what an acid is. We talk about acid reflex disease or the acidity of something. All of these things needing an acid reducer. This lesson is design to address these ideas about what acids and bases are.
Students will identify foods and materials as acids or bases. The students will be asked to predict which foods and materials are acids or bases. This is a way of assessing student’s prior knowledge on the subject of acids and bases. Knowing where the students are at the beginning of the lesson will help me in assessing their progress throughout the lesson.

The last part of the lesson will be for the students to go through with the knowledge they have learned during the lesson and apply them to the items they made predictions about. They will confirm or deny their predictions and then they will justify why the item is an acid or base. This is a time where they will apply about where on the pH scale the item would lie. They will use the information they learned about acids and bases in their justifications. The activity will allow students the opportunity to explore acids and bases. They can observe them, feel them, touch them, taste them, etc. All of this will be helpful in developing a basic knowledge of acids and bases to be able to apply to real life situations and to be able to address future science topics that deal with acids and bases.

Assessment Plan: Describe your plan for assessing your learning goals.

<table>
<thead>
<tr>
<th>Type of Assessments</th>
<th>Assessment Sample Size</th>
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<tbody>
<tr>
<td>Below, describe the method/s to check on student progress. Consider these approaches: <strong>selected response</strong>, e.g. multiple choice, matching, fill-in the blank questions</td>
<td>Below, list your assessment sample size. An assessment sample refers to the amount of student work you will assess. Teachers often make inferences about student learning based on a sample of only a few students’ work. Examples of assessment samples would include choral responses from the entire class, your observations of a small group performing a learning task, or an analysis of individual student writing, drawing or other performances.</td>
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<td><strong>writing assessment</strong>, e.g. essays, essay questions, journaling</td>
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<td><strong>performance-based assessment</strong>, e.g. throwing a ball, presentation</td>
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<tr>
<td><strong>teacher / student communication</strong>, e.g. class discussion, interview, group work</td>
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**Learning Goal 1 and 2 Assessment Methods:**

Writing assignment: The students will be asked to write down their predictions, observations, and supporting information for their findings at each station. The stations include the material/food that they will observe. This is the time that they will also write where on the pH scale they believe the material/food is located.

Teacher/student communication: I will be walking around monitoring progress and asking questions. At the end of class we will discuss what we found and whether everyone got the same answers. This is also the time were we will discuss the reasons why a material/food is an acid or base.

(List additional assessment methods here, if I will use the whole class as a sample size. Since the class size is so small I think it makes the most sense to use the whole class. There are a variety of skill levels and thinking levels. I will be walking around assessing individual progress by asking questions. This is the best way for me to see what every student is doing since I will have time restraints that will not allow me to work with students individually. While asking questions I hope to push the student’s thinking further.)
Lesson 1 Plan: Describe your plan for achieving your learning goals. The lesson plan should include the following sections: Analysis of pre-assessment data; Plan for differentiation; Plan to motivate learning and engage attentiveness; Description of activities to achieve learning goals; and Description of materials needed to implement lesson plan. You may insert your lesson plan 1 responses in the provided prompts below or attach as a separate document in Appendix A. If you choose to attach a separate document, make sure that it still addresses all five sections below.

Analysis of Pre-Assessment Data: Discuss what students already know and can do regarding your goals before you began your lesson. Pre-assessments may include your PLS instructor’s descriptions of past assessments and activities and/or your own observations from previous class activities or student work samples.

The prior knowledge the students possess would be through life experiences. Most students are going to know that some fruits are acids because of the affects they have had on their tongue before. Another likely object they will know is a bar of soap is a base. These things are mostly common knowledge because of life experiences. Beyond these ideas students have had little work with the pH scale.

Plan for Differentiation: Describe at least one way you will differentiate the content, process, or product involved in your lesson in response to individual student needs, preferences, prior knowledge, or interests. Consider especially the needs of students with disabilities, students who are high achievers in some area, students with language needs, and students who are at risk for school failure. For more information, see: http://www.cast.org/publications/ncac/ncac_diffinstruc.html

In an effort to include learning for all styles of learners I have incorporated a power point presentation, work sheet, and activity for students to complete. The power point will bring students to attention of what we’re learning about. The worksheet goes along with the power point so students will have specific things they will need to pay attention to. These are all important in order to do our hands on activity. The activity will be set up in stations. At each station will be an item for students to observe or taste. The will then have specific ideas to record on paper.

By incorporating both desk activities and activities around the room I am hoping for students to be energized and actively learning. At the same time there is structure to the lesson. The balance of the two, I believe, is key. Also the students have the opportunity to be in charge of their own learning. As I have seen in the classroom so far, this is how the students prefer and are best at doing their learning. They need and want to take control of their own learning.

Plan to Motivate Learning and Engage Attentiveness: Describe how you will motivate student learning at the beginning of the lesson. Describe specifically what you will say to introduce the lesson and engage students’ interest. Describe how you will maintain students’ interest throughout the lesson.
In order to motivate and engage student’s learning I will use a lot of examples. By showing examples students will easily know what is expected of them. Also I will include real world situations and applications so that students will see relevance in what they’re learning. Engaging questions will be offered so that students are thinking about the lesson. My hands on activity will keep students motivated and eager to learn. Also I will incorporate partner work into the activity and a discussion at the end of the activity. Knowledge of acids and bases can be applied in numerous areas in science. The word “acid” is used a lot in our language today, however not many understand what an acid is. We talk about acid reflux disease or the acidity of something. All of these things need an acid reducer. This lesson is design to address these ideas about what acids and bases are. This will be a motivator to learn and also be a means of describing why we should learn about acids and bases. The idea that there is a purpose for learning will motivate students because they know what is expected of them.

**Description of Activities to Achieve Learning Goals:** Include descriptions of the activities you plan to use in the lesson. Your activities should be designed to support your learning goals and should be clearly described and carefully sequenced. Actively engaging students in learning also gives you the opportunity to assess their understanding. Make sure you take advantage of this opportunity by coordinating your activities with your assessment plan.

There will be stations set up around the room with a material/food at the center. The students will come around spending 2-3 minutes at each station observing. They will then be required to write down if they think the item is an acid or base and why based on observations. Also at this time they will indicate where on the pH scale the item is located. This activity will allow me to walk around and assess the students progress. I will be able to see when students are struggling and when they are successful. I can help by asking questions to push in the right direction and also to push learning further. At the end there will be a discussion which will pull the lesson full circle.

**Description of Materials Needed to Implement Plan:** List of all the materials or technology you will need to implement the activities.

- I will need the ability to present a powerpoint presentation.
- Desks/tables for station activity.
- Items to observe/taste:
  - Lemons
  - Tums/antacid
  - Grapefruit
  - Dish soap/laundry detergent
  - Toothpaste
  - Rusted object
Pictures of acid rain and their affects on statues
NaOH burn images
Section 2: Reflection on Lesson 1 and Planning Lesson 2

Instructional Decision Making

TCWS Standard
•The teacher analyzes student learning to make instructional decisions

Students’ Response to Lesson 1: Did the students respond in the ways you had predicted? Were you successful in accomplishing your learning goals for this lesson? Explain why you were or were not successful. Consider motivation, management, understanding of instructions, complexity of task, and differences in students’ achievement levels when constructing your answer.

My lesson actually went much better than I had even anticipated. I was very happy with the way it went. A lot of this was based on my way of using management. I separated the students into groups of two to work with and I assigned them setting. This way there was less chitchat going on and they were able to work with another person. This also worked well because instead of having the students move to stations, I moved the material to them. This worked out very well and went smoothly. I accomplished my learning goals for this activity. Students followed along excellently during the notes and then really applied that to the activity, which was required of them. The tasks were not overly difficult but some things did come up. For example, they had to taste a lemon and a grapefruit, which are both acids. They were confused because some people thought the grapefruit was more bitter and others thought it was sour. I was able to explain to them that lemons are a stronger acid than a grapefruit. Through guided thinking the students came to this conclusion on their own. I was also excited that there were “real-life” questions at the end of the lesson. We were able to discuss things like why we take tums when we have a tummy ache or heart burn. Different students picked up on things quicker than others, however I think I can say that all the students had an understanding of the properties of acids and bases at the end of the lesson. They all could correctly identify if acids or bases are below or above a pH of 7.

Adjustments for Lesson 2: Describe how you will adjust your second lesson in response to your analysis above. Consider instructional strategies, the organization and content of the lesson, motivational strategies, preventative management strategies, procedural changes, materials, activities and assessment. Explain why you believe these adjustments will improve students’ learning.

I honestly don’t have a lot of adjustments to make that I think are necessary. I think mainly I will continue to do what I did before. I will seat the students in pairs and select where they will sit.