Tooth Enamel

Joshua Dubay
*The College at Brockport*, jduba1@u.brockport.edu

Lauren Thresh
*The College at Brockport*, lthre1@u.brockport.edu

David Kreb
*The College at Brockport*, dkreb1@u.brockport.edu

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Learning Objectives
Students will be able to...
- Identify pH levels of common acidic food and drink
- Determine the significance of saliva to the maintenance of mouth pH.
- Compare the relation of acidic beverages to the percentage of healthy enamel.
- Justify the importance for maintaining dental hygiene.

NYS Learning Standards
Crosscutting Concepts:
Stability & Change - For natural and built systems alike, conditions of stability and determinants of rate of change or evolution of a system are critical elements of study.

NYS Living Environment Standards:
- 5.1 f Enzymes can affect the rates of chemical change. The rate at which enzymes work can be influenced by internal environmental factors such as pH and temperature

NYS CCSS for Mathematical Practice:
1. Make sense of problems and persevere in solving them - Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution.
2. Reason abstractly and quantitatively - Mathematically proficient students make sense of quantities and their relationships in problem situations.
3. Look for and make use of structure - Mathematically proficient students look closely to discern a pattern or structure.
4. Model with mathematics - Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace.

Instructional Resources and Materials to engage students in learning:
- Handouts: Food Acidity and Tooth Enamel Student Worksheet, Exit Ticket
**Instructional Strategies and Learning Tasks** that support diverse student needs. (Include what you and students will be doing.):

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<th>Lesson Component:</th>
<th>Activity:</th>
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| **Engage** (5 minutes) | ▶ The instructor distributes a small cup of an acidic beverage (i.e. orange juice, soda,... ) to each student based on student choice. Students enjoy their drink!  
  ● The instructor then asks each student to discuss with a partner what they believe is occurring in their mouth as a result. Partners then share their thoughts with the class.  
  ▶ Students are shown a video of a healthy human tooth placed in soda for 24 hours straight: [https://www.youtube.com/watch?v=8ANWDrRd-IQ](https://www.youtube.com/watch?v=8ANWDrRd-IQ)  
  ▶ The instructor asks the class if their previous belief has changed. |
| **ToothEnamel NetLogo Activity** (30 minutes) | ▶ Students are organized into groups of three based on teacher discretion with the goal of forming optimal learning groups.  
  ▶ Students work in groups of three to explore the model and complete the corresponding worksheet. |
| **Evaluate** (5 minutes) | ▶ Exit Ticket: Using reliable internet resources, determine the effect of sugar content in food on tooth enamel. Make any connection to the day’s learning apparent. State your sources. Students may work individually or in their NetLogo groups (teacher discretion). |