Thomas Honiss Bridgeport Military Academy

Unit of Study: Polymers

Classroom: Physical Science

Number of Students: 30

Grade: 9

Concept: Polymers

STEM application: Bread making research and development

Standards Referenced:

- D15. Explain the general formation and structure of carbon-based polymers, including synthetic polymers, such as polyethylene, and biopolymers, such as carbohydrate.
- Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).

Learning Goals (what will the students be able to do?)**:**

Classify 3 types of bread based on % mass of water.

Class Activity

Guided reading and Cornell notes utilizing suggested reading.

Science laboratory – classifying 3 types of bread

Students will heat 100-gram samples of bread in a beaker and measure the change in mass to determine water content

Materials

http://www.rsc.org/images/BreadChemistry_tcm18-163980.pdf - Guided reading

Laboratory

Goggles, aprons

Electronic balance, 300 mL flask, heat plates, hot plate signs, rubber mits

Sour dough bread, white bread, French bread

Other factors

Students may use the suggested reading or do independent research on the computer to find the answers to the first two questions

This lab needs to be tested before being done in the field as heating breads to evaporate water content may result in fire!

Notes:

The selected text complexity goes beyond the depth of common core and will require additional scaffolding

How will student success be measured?

Classify the chemical reactions that occur in the formation of bread. [using graphic organizer and Cornel notes]

Define the byproducts in the formation of bread. [using graphic organizer and cornel notes]

Create a data table to classify 3 types of bread. [students will complete an informal laboratory using the materials listed]

Based on your knowledge of bread chemistry, predict how each bread was made. [in summary/conclusion of science laboratory]