



Curriculum Units by Fellows of the National Initiative
2026 Volume V: Chemistry of Cooking

Rising to the Occasion: How Yeast Transforms Food

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This fifth grade-based science unit introduces students to the fascinating role yeast plays in transforming food through chemical reactions, focusing on the creation of pizza dough. Students investigate yeast as a living organism and explore how it produces carbon dioxide gas as a product of fermentation, leading to the rise of the pizza dough. Through a series of experimental investigations, students will have a chance to observe how variables such as temperature, sugar types and concentration, and rising time influence yeast activity and the changes that occur in pizza making.

To help deepen their understanding of chemical reactions, students will witness one in an activity using “Elephant Toothpaste”. While not the same as fermentation, this allows students to observe how reactions can occur at different rates, demonstrating how the ingredients and their use can alter the speed of a chemical reaction. Students will also investigate the physical properties of a gluten network by washing the starch of a completed pizza dough to reveal only the gluten left behind.

Throughout this unit, students will engage in hands-on experiments, collaborative investigations, and scientific discussions that will encourage them to make predictions, collect data, and work together to communicate evidence-based conclusions. This unit concludes with a hands-on activity in which students bring their learning all together to create a pizza from scratch. This connection of chemistry concepts to a real-world application of food students are very familiar with will help them gain an appreciation for the culinary arts and all the science that goes into it.

(Developed for Elementary Science, grade 5; recommended for Elementary Science, grades 4-5)

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