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Beyond Ranch: The Science of Mixtures and Solutions with Salad Dressing

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What do a bottle of ranch dressing, a salad vinaigrette, and a food scientist have in common? More science than you might think. Every time students shake a bottle of salad dressing, they observe fascinating scientific phenomena, including mixtures, solutions, density, emulsions, and physical changes. In this inquiry-based unit, students step into the role of food scientists as they investigate how everyday ingredients interact and why some mixtures blend while others separate. Through hands-on investigations and collaborative problem solving, students apply the fifth grade Virginia Science Standards to explore the properties of matter in a meaningful, real-world context. The unit culminates in students designing, testing, and refining their own healthy salad dressing recipes, using scientific evidence to justify their ingredient choices before sharing their creations during a class "Salad Celebration." By connecting chemistry to a familiar food, students discover that science is not confined to a laboratory but is an essential part of the world around them. The unit is designed for fifth grade students, but it also could be adapted for students in upper grades.

(Developed for Science, grade 5; recommended for Science, grades 5-6)

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