




After School S.A.F.E. Framework for Lesson Planning

Theme: STEAM

Grade: K-6

Objective: to teach youth about molecules and colloids

Circle Component(s):	Physical Activity – 30 Min. Daily	Wellness/Nutrition Education – 2x/month	Math and Literacy – 30-40 min. daily
	Arts Education – 1x/week	21 st Century Skills and STEAM – 2x/week	Global Learning – 1x/week
	Leadership and Character Development – 1x/week	College and Career Readiness—2x/month	Service Learning – 1 project/quarter

Sequenced	<p>Explain step-by-step the activity and how it builds on other activities</p>	<p>Activity: Buttery Science</p>  <p>Hands-On Science: <i>Making Butter</i> </p>  <p>Materials Needed:</p> <ul style="list-style-type: none"> ● Mason Jar ● Heavy Whipping Cream ● Bread slices ● Spoons
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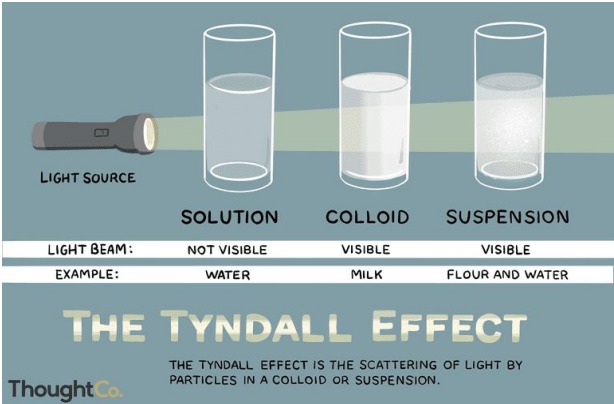
- Strainer

Steps:

1. Give each student a mason jar
2. Fill the Mason jar halfway with heavy whipping cream
3. Shake for 15 minutes with 5 min checkpoints.
4. Read the book while they are shaking the cream.
5. After 15-20 minutes they can spread it on bread and eat it.
6. Lead discussion as how the butter was created.
7. The more the cream is shaken the more these fat molecules clump together forming a solid which is the butter.
8. There are no specific measurements for this activity, pour ingredients as to how much will be consumed.

Science Behind Butter Making:

1. Lead discussion as to how the butter is made
 - a. When the cream is agitated which means the solution has been stirred up, the fat molecules get shaken and they start to clump together. When they clump together, the liquid is removed and it is made into buttermilk.
 - b. Butter can be considered a colloid which is when the particles in a solution (any liquid) are evenly spaced out. The particles can be seen with the human eye. In a simple solution, you cannot see anything, with a suspension the particles are visible and they are suspended. Since the particles are evenly distributed in a colloid you cant see the particles individually.

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Active	Hands on-engagement, demonstrate and practice skills	Youth will have the opportunity to experiment, create, and observe the science behind making butter..
Focus	Specific time and attention on skill development	30 minutes
Explicit	Observation and reflection = validation of skills Review Objective	<p>What do you think will happen before the experiment?</p> <p>How do you think butter is made?</p> <p>What is a colloid?</p> <p>What happens to the fat molecules in the heavy whipped cream?</p> <p>How does it taste?</p>
Alignment	Alignment of Common Core State Standards (Two standards)	

Language Development	List Vocabulary and Sight Words	Colloid: when the particles in a solution (any liquid) are evenly spaced out
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