# Lesson 2: Make Your Own Butter

## Objective:

Students will learn how to make their own food products they find in the grocery stores using basic ingredients. This will also allow students to better understand how liquids change states into a solid.

This lesson plan was shared by the University of Alaska Fairbanks Cooperative Extension Service.

## Agricultural Literacy Education Outcomes (if you do the extension activity):

T3.3-5.b. Food Health and Lifestyle

* Diagram the path of production for processed products from farm to table.

T4.3-5.d. Science Technology Engineering and Math

* Provide examples of science being applied in farming for food, clothing and shelter products.

## Next Generation Science NGGS Standards:

2-PS1.A Different kinds of matter exist and many of them can either be a solid or liquid, depending on temperature. Matter can be described and classified by its observable properties.

5-PS1.B When two or more different substances are mixed, a new substance with different properties may be formed.

## Essential Questions:

* How is the butter that we buy at the store made?
* How can liquids be changed into a solid?

## Materials:

* Jar with a lid
* Heavy whipping cream
* Marbles (optional)
* Salt (optional)
* Accommodations: Use a set measuring cup to pour the whipping cream in to add it to the jar.
* Modifications for this lesson plan could be used for other food science and safety lesson plans.

## Directions:

1. First, wash the jar, lid, and marbles with hot water and soap. Always be sure your hands and utensils are clean during food preparation! That is especially important when what you are preparing food, like this butter, that is not going to be cooked.
2. Fill the jar halfway with heavy whipping cream.
3. Drop a marble or two into the cream.
4. Add a pinch or two of salt to taste (if desired).
5. Tighten the lid to ensure it doesn’t leak.
6. Now, get your muscles ready: Shake vigorously for 15–20 minutes or until butter forms.
7. Did you know? Butter is made by churning , or shaking, the cream. During the process, the butterfat (solid) is separated from the buttermilk (liquid). Commercially, milk and cream are separated by a process called centrifugation in which milk is put in a spinning machine, and that spinning process separates the milk solids and liquids. But we are doing it the old-fashioned way!
8. Drain the buttermilk. You may gently rinse the formed butter under cold water to remove excess buttermilk.
9. Did you know? You can drink the buttermilk! Buttermilk is a product sold in stores and, while it may not be as popular as it once was, lots of people still drink it.
10. Now comes the delicious part: Enjoy your creamy, tasty butter!
11. *Note*. The butter will stay good for 3–5 days at room temperature, about 7–10 days if refrigerated. Homemade butter is best when eaten fresh!
12. More things to try depending on student grade level and ability:
13. Students can research the process of churning butter commercially.
14. Students could also try different milk types when making their butter to see how fat content affects the quality.
15. Students could try adding different types of seasoning to see whether herbs, minerals, or salt affect the butter-making process.
16. Students can research the food safety side of milk-based product production and/or other processes used to make milk-based products.

## Extension Activities:

You can challenge your students to better understand where the products that they used to make their butter come from.

1. Ask students to talk about other products they buy at the store that are made from dairy. (Examples include cheese, yogurt, milk, cottage cheese, ice cream, sour cream, whipped cream and cream cheese.)
2. Explain to students that all of these products came from a dairy farm. Show a video about dairy farms. You can find different videos on YouTube. *Please note that you will need to do a voiceover for your students, as many videos are not fully accessible, but some videos provide more description than others.*
3. You may also choose to have students do an Internet search for written articles for how different dairy products are made, from cow to product.
4. You may want to assign a small group of students to research a specific dairy product.
5. Have students present an oral presentation, a slide show, or a poster of their findings to the class.

## Resources:

Agricultural Literacy Curriculum Matrix (n.d.). <https://agclassroom.org/matrix/lesson/625>

National 4-H Council (2021). 4-H at home. Make your own butter. <https://4-h.org/wp-content/uploads/2021/06/4H-At-Home-USDA-Make-Your-Own-Butter_v2.pdf>