



Let's Make Butter

Suggested Grade Level: 3rd-5th grade

Time: 40 minutes

Subject: Science

Overview: Students will learn about the dairy industry, the process of making butter, and its importance in Kansas agriculture. They will engage in hands-on activities to make butter while exploring dairy farming, dairy products, and careers in the industry.

Objectives:

Students will be able to:

1. Understand the role of dairy farming in Kansas and the U.S.
2. Explain the process of making butter from cream.
3. Identify key vocabulary related to dairy production.
4. Recognize the different careers in the dairy industry.
5. Engage in a hands-on butter-making activity.

Background Information:

Dairy farming is vital to Kansas agriculture, contributing to the economy and providing essential dairy products. Butter is made by churning cream, which separates butterfat from buttermilk. Historically, families made butter at home before modern dairy processing plants became widespread.

Kansas Connections:

Kansas plays a vital role in the U.S. dairy industry, with over 300 family-owned dairy farms producing more than 4 billion pounds of milk annually. Major dairy-producing counties, including Gray, Hamilton, and Scott, contribute to the state's \$1 billion dairy industry, which supports thousands of jobs in farming, transportation, and food processing. Kansas is also home to significant dairy processing facilities, such as the **Hilmar Cheese Company** in Dodge City and **Dairy Farmers of America** in Kansas City. Many farms use modern technology, like robotic milking systems, to improve efficiency and sustainability. Historically, butter-making was common on family farms, and today, Kansas communities celebrate dairy farming through fairs, farm tours, and hands-on learning programs. By exploring Kansas's strong dairy heritage, students gain a deeper appreciation for the state's agricultural impact.

Materials Needed:

- Heavy whipping cream

- Plastic condiment cups
- Salt
- Plastic Knives
- Bread or crackers for tasting

Instructional Format:

1. Review the background and Kansas connections information.
2. Conduct engagement exercises.
3. Review Vocabulary.
4. Follow the procedures to complete the activities.
5. Tasting and observation discussions.

Vocabulary:

- Dairy farm - A farm where cows are raised for milk production
- Cream - The fat-rich part of the milk to make butter
- Churning - Stirring or shaking cream to separate butterfat from buttermilk
- Buttermilk - The liquid left after butter is made
- Curd - The solid part of milk used to make cheese

Procedures:

Activity 1: What is milk, and where does it come from?

1. Ask students: "What is milk?" Accept reasonable answers and use the following questions to guide students in recalling information about milk.
 - "Where does milk come from?"
 - Mammals produce milk after giving birth. Although all mammals produce milk, cows produce it most efficiently, making it available for humans to drink.
 - "What is milk made of?"
 - Milk is mostly water (almost 87%), but it also contains solids such as fat, protein, carbohydrates, vitamins, and minerals.
2. Ask students, "What happens to milk after it leaves the dairy farm and before it is sold as milk, cheese, or butter in the grocery store?" Explain that many of the foods we eat must be processed in some way. Food processing takes place after food leaves the farm. Examples include pork being cured into bacon or apples being made into applesauce.
3. Explaining that butter is made by separating fat from cream through a process called churning. Introduce historical methods of butter-making, such as using butter churns, and compare them to modern production techniques in dairy factories.
4. Play this short video describing a tour around a dairy farm. [Ivan Inspects Milking Cows | Fun and Educational Videos for Kids and Toddlers](#)
5. Explain that they are going to process heavy whipping cream into butter!

Activity 2: Making Butter

1. Pass out all materials to students.

2. Pour whipping cream into condiment cups until the cup is half full.
3. Snap the lid tightly on the cup. Make sure the lid is secured tightly before letting students shake the cup.
4. Instruct students to shake the condiment cup. Teams or groups of students can take turns shaking the cup.
5. The butter is done when there is a butter mound in the center. A small amount of clear water may remain, which can be drained off.
6. Spread butter onto the crackers!
7. Explain that in large dairy farms, machines do the churning instead of people, making butter production faster and more efficient. Discuss the importance of dairy farms in Kansas and how butter travels from the farm to grocery stores.
8. Finally, Read "Out and About at the Dairy Farm" by Andy Murphy. [OUT AND ABOUT AT THE DAIRY FARM - Kids Stories Read Aloud | Childrens Read Along | Bobby's Backyard](#)

Kansas Academic Standards:

Kansas Science Standards

- 3-PS2-1:** Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
- 3-LS1-1:** Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.
- 4-PS3-4:** Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.
- 4-LS1-1:** Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
- 5-PS1-4:** Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

National Agricultural Literacy Standards:

Plants and Animals for Food, Fiber, and Energy

T2 3-5 e. Understand the concept of stewardship and identify ways farmers/ranchers Cared for soil, water, plants, and animals

Food, Health, and Lifestyle

- T3 3-5 b. Diagram the path of production for a processed product, from farm to table
- T3 3-5 c. Distinguish between processed and unprocessed food
- T3 3-5 d. Explain the costs associated with producing and purchasing food
- T3 3-5 e. Explain the practices of safe food handling, preparation, and storage

Supporting Resources:

[Ivan Inspects Milking Cows | Fun and Educational Videos for Kids and Toddlers](#)

[OUT AND ABOUT AT THE DAIRY FARM - Kids Stories Read Aloud | Children's Read Along | Bobby's Backyard](#)



Author: Ella Pachta, an agricultural education major at KSU and a KFAC intern. Lesson was adapted from Better Butter by Nebraska Farm Bureau Foundation and Whipping Butter into Shape by National Agriculture in the Classroom.

References:

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“Make & Take Activity – Better Butter.” *Nebraska Farm Bureau Foundation*, nefbfoundation.org/make-take-activity-better-butter/. Accessed 4 Mar. 2025.

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