

Activity 10 Udderly Amazing Milkers

by Joyce Johnson

Study Question: How do we get milk from a cow?

Activity: Students work together to construct a model of a cow and experience milking a rubber glove.

Curriculum Fit:

Division One/Two - Language Arts

- Oral Communication - sharing ideas, providing and interpreting instruction, seeking and providing direction.

Division One/Two - Health

- Relating to others, working with others, building friendships.

Division One/Two - Art

- Working with a variety of art mediums.

Agriculture Concept: Dairying - The milking process.

Purpose:

- To acquaint children with the structure of a cow's udder.
- To familiarize children with and have them participate in the milking process.
- To give children an opportunity to develop language skills while learning about milking.

Materials Required:

Student Resource sheets:

- "Milk: How Do I Get It Out of the Cow?", provided with the unit.

Student Worksheet:

- "Magnificent Milker Construction Blueprint", provided in the unit.

Teacher Resource Sheet:

- for ideas and tips on how to construct the cow and the udder.

Prop Box I: Materials for cow construction

- scraps of lumber for udder support or beaker holder (see diagram)
- art or butcher paper suitable for paint
- tag board or cardboard
- paint (black, white, brown, red) and paint brushes
- rubber gloves: surgical gloves work best
- glue, tape, string, craft yarn, twine, and rope
- milk powder (may wish to use warm, tinted water instead)
- ice cream pails and margarine containers
- clips
- sawhorses
- newspaper
- scissor

Prop Box II: Construction Clothing & Tools

- carpenter's aprons
- caps
- rulers and measuring tapes
- hard hats
- carpenter's pencils

Time Required: Three to four class periods.

BACKGROUND — For the Teacher

Milk is a valuable commodity. Children realize from an early age that milk plays a vital role in their diet. Yet how many of them have an in-depth understanding of the whole milk process? How milk is manufactured, how it is extracted from a cow, or how it gets from the cow to the carton to the grocery store?

In this unit on milk, the activities are intended to bring some of these concepts to life for both students and teachers.

The activities lend themselves well to a cross-graded setting where older and younger children are paired together and carry out each activity in a sharing situation.

NOTE:

For an overview and time line of Canada's dairy history refer to AITC Resource *Pride in Alberta, Grade 4 "Discovering Dairying"*.

Procedure

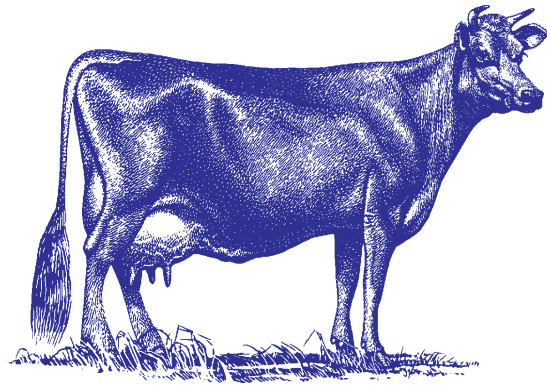
Preparation

1. Select another classroom or a few students from each of the grade levels (max. 24-28) to work with your class on this unit.
2. Arrange the students into pairs.
3. Gather a supply of art and construction materials to make up a prop box.
4. Provide a prop box of construction clothing and tools.
5. Provide student resource sheets and worksheets.

Introduction

(Note to teachers: Formulate questions that promote thinking rather than knowledge responses).

6. Generate interest by asking students: How many of you had milk in some form in the past day or two? What was it in? Have any of you ever seen milk in a can? In a bag?
7. Show pictures or slides of dairy cows to direct focus to the dairy farm.
8. Have students note physical characteristics of the cow: things they can see and touch.
9. Inform students that they will be constructing a cow.



Activities (1 to 3)

Activity 1:

10. Planning Stage

- a. In assigned pairs students spend 5-10 minutes deciding what materials they will need and what tasks will need to be completed.
- b. Form a construction crew by joining two partnerships.
- c. Have students i) review the supply lists adding or deleting materials as they see fit, ii) review the list of tasks to be completed. Revise the list if necessary.

Activity 2:

11. Follow the Leader

Purpose: To help students understand the role of group leaders.

Procedure:

- a. As a class, establish what students feel are the qualities and responsibilities of a good leader and a good group member. Make a class list.
- b. Divide class into groups of 4 or 5. Name a leader and give each group a simple task to complete. Allow 5 minutes for the group to organize. Perform the task.
- c. Conclude by identifying some of the problems the group encountered. What were some good examples of co-operation?
- d. Revise the list of responsibilities for leaders and group members.

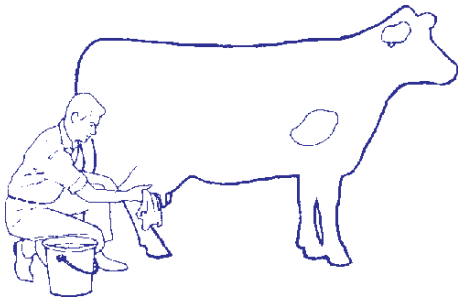


Activity 3:

12. *Planning Stage*
 - a. Ask students to assemble in their construction crews and choose a foreman.
 - b. Have students check their list of tasks to be completed and assign jobs.
 - c. Since children enjoy dressing up, direct them to the prop box containing construction clothing.
13. The Activity: Constructing the cow. See teacher resource sheet for design and construction of cow.

Conclusion

14. Have students demonstrate the efficiency of their animal by milking the cow.



Discussion Questions

1. Dairy Products are an important part of our lives. List as many dairy products, besides milk, as you can and describe what you feel to be their importance to us.
2. Which food items do we supplement with dairy products? e.g., pancakes, cakes, cookies, bread, ice cream, pudding, etc.
3. Explain what steps you think the dairy process might involve in milk's cycle from cow to the consumer. (*Activity 24 "Beef It up" can be used as a follow up activity to the concept of the calf to consumer process*)

Evaluation Strategies

1. The student's ability to communicate, share and work with others in a group situation.
2. Willingness to participate in and contribute to the project work.
3. General understanding of the topic discussed.

Related Activities

1. Set up a display of milk and milk product containers.
2. Begin a picture file on dairy cows.
3. Have students browse through magazines and newspapers for articles relating to milk. Begin a scrapbook.
4. Design a picture for the front of a dairy postcard.
5. Make a collage of dairy-related pictures using newspapers, magazines, and grocery store ads.
6. Write a letter to a local milk producer asking if the class could plan a visit.
7. Design a button to promote milk.
8. Teach the students the old camp song "A Hot Time in the Old Town Tonight."

**One dark night when we were all in bed,
Mother O'Leary left the lantern in the shed.
And when the cow kicked it over, she winked one
eye and said,
"There'll be a hot time in the old town tonight".
Fire! Fire! Fire!**



STUDENT RESOURCE

Milk: How Do I Get It Out of the Cow?

The ability to produce milk is the one feature that distinguishes mammals from all other vertebrates. Mammals have special glands on their bodies called mammary glands. The milk is produced there. Mammary glands usually occur in pairs. On each gland is a teat, or nipple, from which newborn offspring nurse.

The mammary glands in a cow are known as the udder. The udder has four separate gland units called quarters. Each quarter has its own teat.

Inside the cow's udder, milk is made in special milk-secreting cells found in the alveoli. The alveoli resemble bunches of grapes joined together by a duct, or hose-like system. From the alveoli the milk drains into small ducts which lead to larger ducts. From the large ducts, the milk enters into four large containers in the udder.

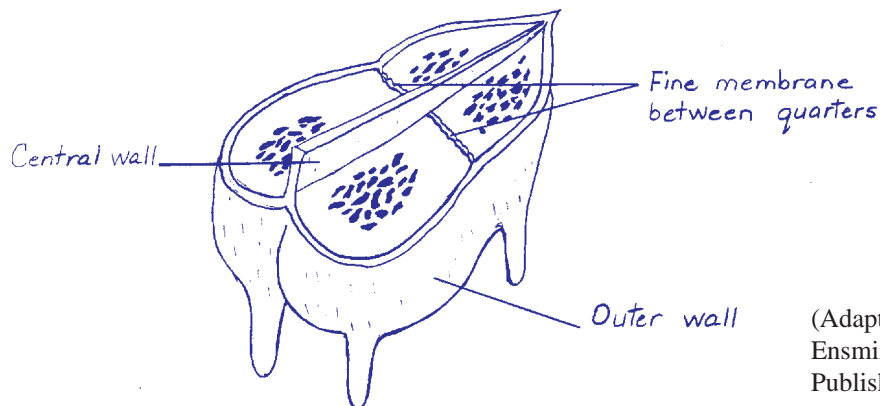
A gentle squeezing at the top of the teat with the thumb and forefinger stops the supply of milk to the teat. Gently squeezing the length of the teat with the remaining fingers and palm of the hand will force the milk out through the teat opening or streak canal.

Sources:

van Loon, Dirk. The Family Cow. Garden Way Publishing, Charlotte, Vermont, 1976.

Ross, Catherine & Wallace, Susan. The Amazing Milk Book, Kids Can Press Ltd., Toronto, 1991.

See What's Inside

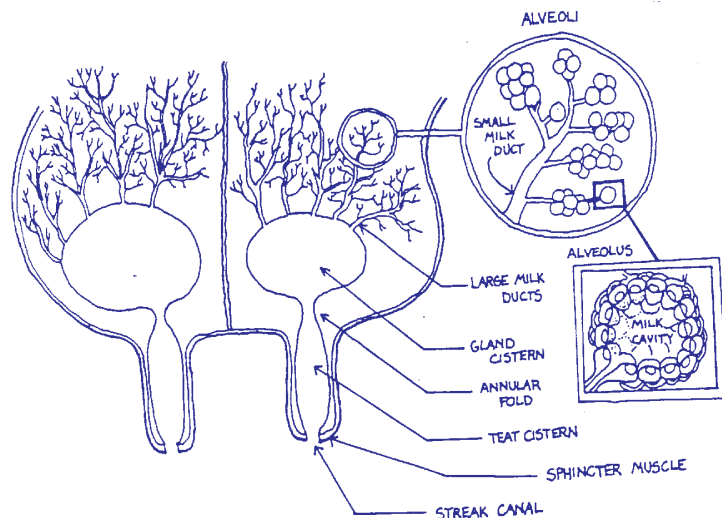


“See What’s Inside”

- Cross-section of the udder

(Adapted from Dairy Cattle Science.
Ensminger, M.E. The Interstate Printers &
Publishers, Inc., Danville, Illinois, 1980.)

Side View of the Udder



(Adapted from The Family Cow, Dirk van Loon, Garden Way Publishing, Vermont, 1976.)

WORKSHEET:

Magnificent Milker Construction Blueprint

Instructions to Students:

1. Prepare a list of items you will need to build your cow.

2. List tasks to be completed. Who is responsible?

3. Construction Foreman:

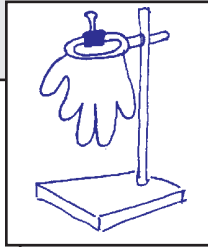
4. Construction Crew:



TEACHER RESOURCE

Designing and making a cow can be a real adventure, but trying to milk it can be a messy experience! Here are some pointers for how to prevent any of little mishaps from happening.

- Give the students some guidance as to how to construct their udder. The rubber glove must be securely in place before it can be squeezed. Try attaching it to a Bunsen Burner/Beaker ring. This ring can be attached to a stand constructed from two by fours, or can be left attached to the Beaker stand.



- Try using warm water! This will give the students the real feel for what milking a cow is like! After all, milk doesn't come out refrigerated.

- No use crying over spilt milk ... at least not until it starts turning sour and stinking up the place! It might be a good idea to use water with coloring instead of real milk or milk powder ... before the novice milkers turn "pro", milk tends to go everywhere but the milk pail!

- When its time to do the milking, don't forget: Whatever finger of the glove is to be milked, the top part of this finger must be securely squeezed shut before milk can be squeezed out of that tiny hole at the bottom. If not done properly, the milk will spill out of the top of the glove!