



TWIRLY WHIRLY MILK

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Lesson Summary for Grade 1

The following full-day plan was incorporated as part of an ongoing thematic unit on “The Farm.” This science lesson is intended for use with beginning first-graders. It provides links to language arts, social studies, math, music, and art. (Note: Fairfield City Schools has adopted the Ohio State Model Curriculum/Standards in all academic subject areas. The instructional objectives listed are part of the Grade 1 curriculum.)

Science Activity 1: Twirly Whirly Milk

Students observe the effect soap (or detergent) has on the movement of food color in milk.

Source: Sarquis, J.L.; Sarquis, M.; Williams, J.P. *Teaching Chemistry with TOYS*; McGraw-Hill: New York, 1995; pp 99–104. (ISBN 0-07-064722-4)

Key Science Topics:

- milk fat
- soap and detergent

Key Process Skills:

- observing
- controlling variables

Ohio State Model Curriculum/Standards:

Math and Science Instructional Objectives:

- make multiple observations of events and explorations using the five senses
- conduct simple explorations based on his/her own questions
- explore similarities and differences observed in a diversity of objects

Math and Science Performance Objectives:

- Given a situation in which a physical change is evident, the learner will observe and describe the physical change.
- Presented with unfamiliar situations or phenomena, the learner will ask questions related to cause and effect.

Possible Payout of Variation and Extension # 2 of the Activity:

Discuss with the class: Is all milk the same? What do you already know about different kinds of milk? Tell students that “Today we’re going to try something with some different kinds of milk and observe what happens.” Briefly describe the experiment and ask students to predict what they think will happen: In which milk will the colors mix together more easily? Invite students to use paper cutouts shaped like cows to record their predictions. Which kind of milk has the most votes? The fewest?

Pour a small amount of each liquid in the cups. (Each group has a set of six liquids, five different “milks” and the dishwashing liquid.) Follow the procedure on page 100 of

Teaching Chemistry with Toys including Variation #2. Have students record their observations. Note: At this age the students are just being introduced to the scientific process. Emphasize the “wondering about something” (problem), the gathering of materials, following a sequence (procedure), making “thinking guesses” (predicting, hypothesizing), and “drawing what you see” (recording observations). Observe student participation and how well they follow directions to evaluate students.

Science Activity 2: A Jar Full Of Mystery

Students observe the properties of solids and liquids while making butter.

Source: Sarquis, M. *Exploring Matter with TOYS*; McGraw-Hill: New York, 1997; pp 189-195. (ISBN 0-07-064724-0)

Key Science Topics:

- chemical reactions
- mixtures
- multiple senses
- sight
- states of matter
- taste

Ohio State Model Curriculum/Standards:

Math and Science Instructional Objectives:

- make multiple observations of events and explorations using the five senses
- explore similarities and differences observed in a diversity of objects

Math and Science Performance Objectives:

- Given a situation in which a physical change is evident, the learner will observe and describe the physical change.
- Presented with unfamiliar situations or phenomena, the learner will ask questions related to cause and effect.

Language Arts Activity

Students read a poem, generate word families, and then write a poem.

Ohio State Model Curriculum/Standards:

Language Arts Instructional Objectives:

- read and discuss poetry to develop appreciation of genre
- participate in shared reading and writing
- compare and contrast words
- compose in small and large groups

Write the poem “Shaking” by Shel Silverstein from *A Light in the Attic* (Harper Collins: New York, 1981) on chart paper or on the board before class begins. Read the poem aloud to the class, then reread it together. Listen for rhyming words, and list them on a chart by word families. Brainstorm word families or rhyming words for other given words related to the theme (cow, milk, cream, butter) with the class. Record these words on the chart. Use the word families the class created to write your own class poem about cows and milk. Have students copy the class poem and illustrate it. Observe student

participation and their completed poems to evaluate students.

Social Studies Activity

Students watch a video about milk production.

Ohio State Model Curriculum/Standards:

Social Studies Instructional Objectives:

- identify resources necessary for production of a good or service

Discuss milk with the class. Ask students: Where does the milk you drink come from? How does it appear in your refrigerator? Watch the SOITA video “Take A Look 2—The Dairy Farm,” TAL-1, #7 (Southwestern Ohio Instructional Technology Association). As students watch the video, emphasize key steps in the process. Discuss and review the correct sequence of the process as a class when the video has finished.

Listening Comprehension

Students listen to and then discuss a book.

Read the book *Milk from Cow to Carton* by Alikei (HarperCollins: New York, 1992) orally and discuss. Emphasize sequence, detail, vocabulary, and inference questions to check for auditory comprehension. (Note: You may find this non-fiction book about the process by which a cow produces milk a bit too detailed for first-graders. I chose to simply use the illustrations and retell portions in my own words.) Observe listening and auditory comprehension skills to evaluate students.

Ohio State Model Curriculum/Standards:

Listening Comprehension Instructional Objectives:

- listen and view to gather information
- identify and discuss sequences of events
- respond to an orally presented story

Music Activity

Students sing a song about milk.

Invite students to sing the following lyrics to the tune of the familiar folk song. Invite your class to create different lyrics and motions.

The Cow Eats Some Grass (sing to the tune of “The Farmer in the Dell”)

“The cow eats some grass ... the farmer milks the cow...
it’s loaded on a truck... the factory cleans the milk...
the milk’s put in a carton... it goes to the store...
your mom buys the milk... you drink up all the milk...”

Art Activity

Students explore color mixing with paint.

These three activities are designed to further explore color mixing as a follow-up to the science activity. Each activity station needs an adult helper. Rotate groups of 7–8

children between activities every 20 minutes until everyone completes all three stations.

Materials Needed:

- liquid tempera paint
- Styrofoam egg carton lids and egg cups
- paint brushes
- semi-glossy finger-painting paper
- four aluminum (disposable) cake pans
- 8 marbles
- food coloring
- glossy poster board, cut into 12 x 12 inch squares
- light corn syrup

Art Station 1: Color-Mixing with Tempera Paint

Give students paper and egg carton cups with red, yellow, and blue tempera paint. Each student creates a “palette” on his or her paper using the primary colors. Have students experiment with mixing on their paper and paint a picture with their new colors. Write the child’s name in the corner of each picture and lay it out to dry.

Art Station 2: Twirly Pictures

Line the bottom of an aluminum cake pan with finger-painting paper. (Four students at a time can do this.) Put tempera paint in egg carton lids. Have students roll a marble in one color of tempera paint. Then they place the marble in the pan and roll it around on the paper. Remove the marble. Repeat with a different color. Write the child’s name in the corner and hang it up to dry.

Art Station 3: Color-Mixing with Corn Syrup and Food Color

Pour a puddle of corn syrup in the center of a poster board square. Add one drop of food color and observe the “sunburst” effect. Add another color in a different spot on the puddle. Observe. Ask students how this is alike or different from what they observed in the milk samples. Let students twirl the food color and syrup mixtures together with their fingers, then go wash! Write the child’s name in the corner, and set pictures aside to dry. Do not stack them. They dry in 24–48 hours to a very glossy finish.