

Let's Raise a Barn

Ag Literacy and STEM

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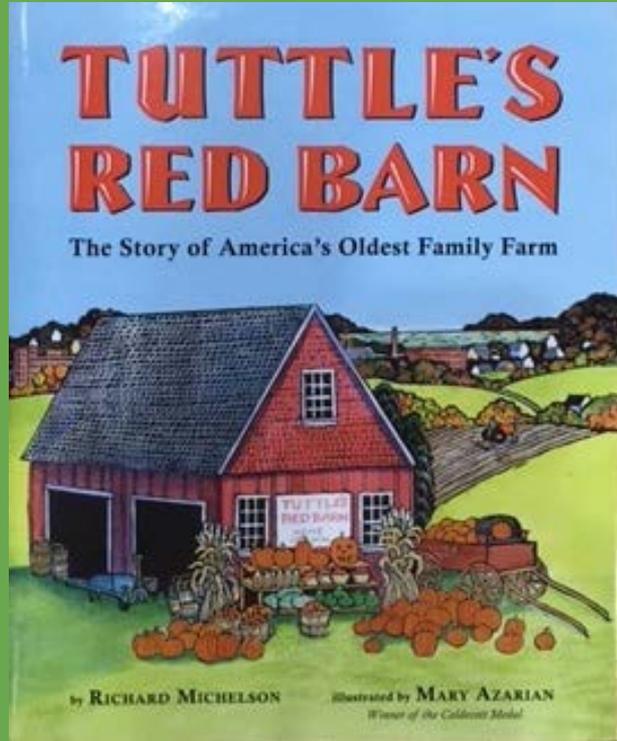
Ag Literacy and STEM



Why should teachers include an agriculture and STEM based lesson in their curriculum?

- Students learn where their food, fuel, and fiber comes from.
- Critical thinking is promoted.
- Academics can be applied (real world application).
- Students are exposed to more career options.
- Innovative ideas are needed to feed a growing population.

The Many Uses of Barns



Barns serve many purposes for farmers. In this story, Tuttle's Red Barn, Richard Mickelson, the author, takes readers on a journey through time of how one farm family grew their farm with the changing times and how the function of their barn adapted to their farming needs.

Barn Function

What function do barns serve? Why are barns important?



https://www.youtube.com/watch?time_continue=2&v=rCQZENqhO_w



https://www.youtube.com/watch?time_continue=49&v=rAw7Fs_IAW4

Types of Barns

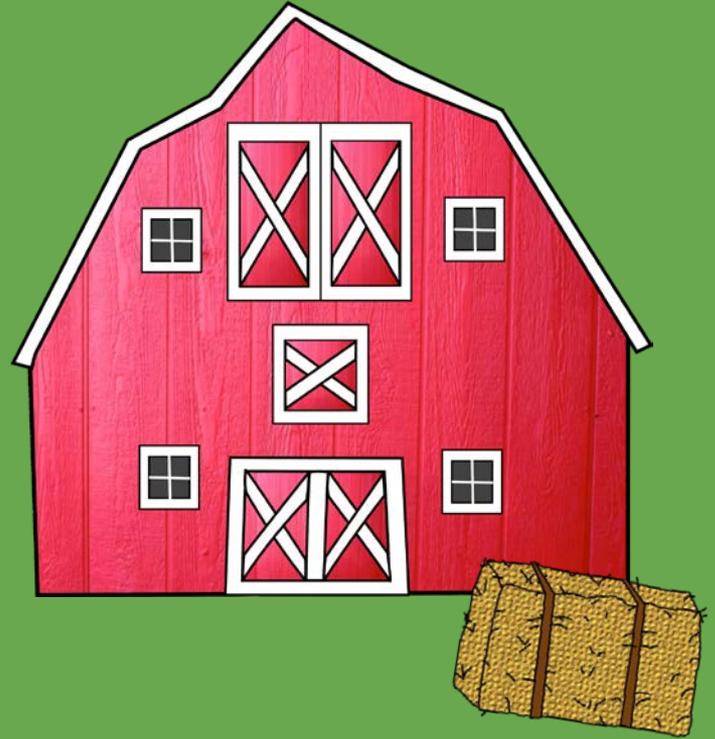
Using a comparison and contrast chart, choose two types of barns and describe how they are like and how they are different in their functions.
(poultry barns, dairy barns, hog barns, stables, lambing barns, storage barns)



Let's Raise the Barn

Materials Needed: (Per each group of students)

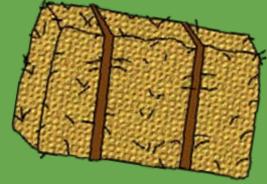
- 20 wooden craft sticks
- 2 pieces of 9 X 12 inch construction paper
- Scotch tape
- Ruler
- Scissors
- Calculator



Background: Why do some farmers choose to store hay in a barn?

The hay will last longer enabling the farmer to stockpile hay for drought years. The quality of the hay is better when it is stored under roof.

Building the Hay Barn



Directions:

In groups of 4 to 5, build a barn for hay storage. You want to maximize your space to fit as much hay in this barn as you can. Just like farmers are limited in the amount of money they can spend on building materials to build a barn, you will be limited on how much materials you can use. Using the given materials, design your barn so that it will hold the most hay possible. You will measure the interior volume of your barn. We will see which group built the barn with the most interior volume. However, your barn will be used for 4 ft. x 4 ft. big round bales, and your tractor can only stack 2 bales high.

Note: 1 inch = 1 foot for our barn building

Considerations for Barns

Questions that promote critical thinking:

How many sides does your barn have?

Will you bring the hay through a side or end of the barn?

Where is the best location for a barn?

What type and/or size of bales will you put in your barn?

How high will you stack your bales?

What type of materials would be used to build a real life hay barn?

Can your barn withstand strong winds, ice , and snow?

Math Extensions



How many 4 ft. x 4 ft. bales can fit in the barn?

Young students can stack manipulatives such as thread spools or film canisters in their barn. Have them count to see how many will fit.

Older students can find their barn volume, length x width x height and then bale volume, (height x pi (3.14) x radius squared), if using big round bales. Then take the barn volume divided by the bale volume to get an approximate amount of hay that will fit in the barn.

Older students could research the amount of needed materials and calculate the cost to build a hay barn.

Science Extensions

Scientific method can be used to investigate ventilation and temperature control. Where is the best location for fans, doors, or windows? Is ventilation needed year round? Is ventilation needed all day/night?

Diseases and animal health care can be investigated. Who gets what? Basic preventative care. Great place to show how health care is essential for a farmer's profit. Rights vs. welfare discussion for older students

Plant science can be done with students growing the grasses used for hay. Lessons on photosynthesis and respiration. Older students could use the science method to investigate effects of temperature and moisture, as well as types and amounts of fertilizer and light.

Don't forget issues such as run-off and waste management.

PHOTOSYNTHESIS & RESPIRATION FLOWER

Beads:

Carbon Dioxide--clear

Water--dark blue

Sunlight--yellow

Glucose--white

Oxygen--light blue

Energy--red or black

Chlorophyll-green

4 pipecleaners

Left is Photo and Right is Respiration



SCIENCE JOURNALS:

- Great place for thoughts and ideas
- Scientific Method Parts: (hypothesis, procedure, materials used, data/graphs, conclusion, changes), observations, drawings
- Doesn't have to be perfect or a certain format.
- Elementary vs High School (lab reports)
- Doesn't even have to be complete sentences!
- Do you use a notebook or paper?
- Make sure to "talk it out" and share

THANK YOU for coming

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