

HANDS, HORSES AND HIGH TECH MACHINES!

LESSON SNAPSHOT

RELATED “MY AMERICAN FARM” GAME

Equipment Engineer available at www.myamericanfarm.org

GRADE LEVELS

- Third - Fifth

CONTENT AREAS

- Science
- Technology

STANDARDS

NS-K 4.5 Science and Technology

NS-K 4.6 Personal and Social Perspectives

NS.5-8.5 Science and Technology

NS.5-8.5 Personal and Social Perspectives

NT.K-12.3 Technology Productivity Tools

National Science Standards, National Technology Standards

OBJECTIVES

By the end of this activity, the students will be able to:

- Describe the importance of machinery and equipment in helping farmers to increase their productivity of food and fiber.

MATERIALS

- Note cards – 1 package per team
- Paper clips – 5 per team
- Masking tape – 1 roll

- Poster board or Butcher paper – 1 sheet per team
- Markers, Crayons or Colored Pencils
- “Decoding History” cards (1 set per group)
- (Optional) Computers and internet access – 1 per student or pair. This is only necessary if you wish to do the My American Farm game in class.

PREPARATION

- Visit the My American Farm online game (www.myamericanfarm.org) to preview the Equipment Engineer game.
- Review the lesson. There are a couple of places where you will see an asterisk (*). These are areas where you can choose to modify the lesson. To determine if you need to make these modifications, ask:
 - » How much time would you like to allocate for the activity?
 - » How would you like students to demonstrate what they’ve learned?

INTRODUCTION

SET CONTEXT FOR THE ACTIVITY

Step I: Introduce “Agricultural Equipment”

- Ask students to respond to the following questions:
 - “Who will describe to the class how they’ve seen a grown-up go about cutting the grass on a lawn?”
 - “Great! Can anyone share how they’d go about cutting grass without the use of a lawn mower?”
- Connect student responses to the importance of machines. *A lawn mower is a complex machine that helps us complete the very simple everyday task of cutting the grass. Without this machine, cutting the grass would be possible...but it would be MUCH more difficult. Just the same, farmers*





use machines to help them to more easily and more efficiently produce food and fiber.

BODY

MAIN CONTENT

Step 2: Advancing Equipment

Introduce students to the Advancing Equipment activity.

- Students will be broken into teams of 3-5 students.
- Each team will receive a package of note cards.
- Teams will have 3 opportunities to build the tallest tower they can out of note cards. A new piece of “equipment” will be given to them before the 2nd and 3rd rounds.
- Round 1: Using just the note cards, give the team 1 minute to build. Measure each tower and declare a winner of round 1.
- Round 2: Provide each team with 5 paper clips. Give the teams 1 minute to build. Measure each tower and declare a winner of round 2.
- Round 3: Provide each team with a 2 foot piece of masking tape. Give the teams 1 minute to build. Measure each tower and declare a winner of round 3.
- Process Advancing Equipment Activity
 - » *What happened as we advanced from one round to the next?*
 - » *How did receiving a new piece of equipment help you to succeed?*
 - » *So what does this tell us about equipment?*
 - » *Just as advances in equipment provided helped us to be more successful as we built our towers, advances in agricultural equipment and machinery help farmers to become more efficient as they produce agricultural products. Farmers have grown over the years from using their hands and horse-drawn plows to using large machinery that is computerized to navigate itself through their field.*
 - » *What machinery or equipment do you think will be developed in the future?*



Step 3: Decoding History

- At the end of this document you will find cards showing the historical progression of the use of agricultural machinery in the United States. An answer key is also provided.
- Make one copy of this sheet per group. Cut apart cards and shuffle prior to giving to students.
- Groups are to race to lay out cards in historical order.
- Check it! Check in with each group to determine if they have cards in the appropriate order. You may do this individually or as a whole class.
- Report it! Students act as news reporters and provide a brief news report to the rest of the class on this amazing historical discovery!

Step 4: Equipment Engineer Game

- At this point you may elect to have students play “Equipment Engineer”, available at www.myamericanfarm.org. Students can work individually or in pairs.
- Inform students that they will be jumping into a fun game, in which they will learn more about the equipment that farmers use to produce food and fiber.

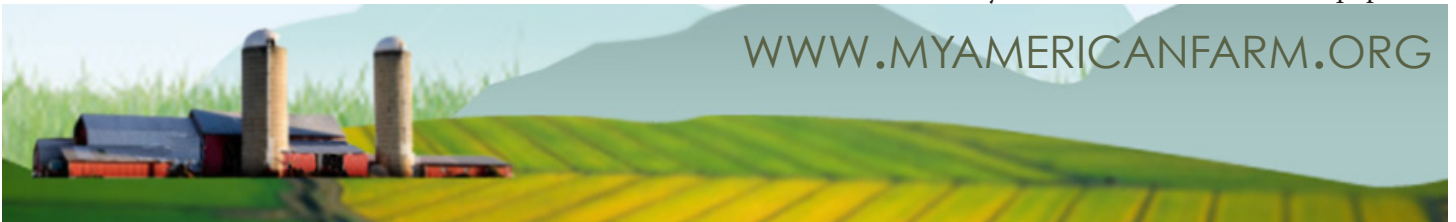
**You may choose to have students play this game before you arrive, after you have left, or at home with adult permission.*

WRAP UP

REVIEW, ASSESS, CHALLENGE

Step 5: Review Relevant Concepts

- After students have returned to their seats, write the following sentence stems on the board and have students complete the sentences on a piece of paper:
 - » One thing I already knew about farm equipment before today was...
 - » One thing new I learned about farm equipment during today’s activity is...
 - » One thing I can’t wait to share with a friend about farm equipment is.....



- After students have captured all three sentences on a piece of paper, have them turn to a partner and share what they've written.

- 1990s - Present: Information technology became popular.

Step 6: Assess Learning

- Show What You Know: Have students join back together with their team from the activity. Provide each team with a piece of poster board or butcher paper and crayons/markers/colored pencils. Have each team take 5 minutes to create a poster to share with others something they learned about farm equipment.

*Ask the teacher if he or she knows of a place where the posters can be displayed in the school (lunch room, hallway, gymnasium, etc.) Offer to hang the posters yourself as you leave, or ask the teacher if she will do so.

Step 7: Challenge

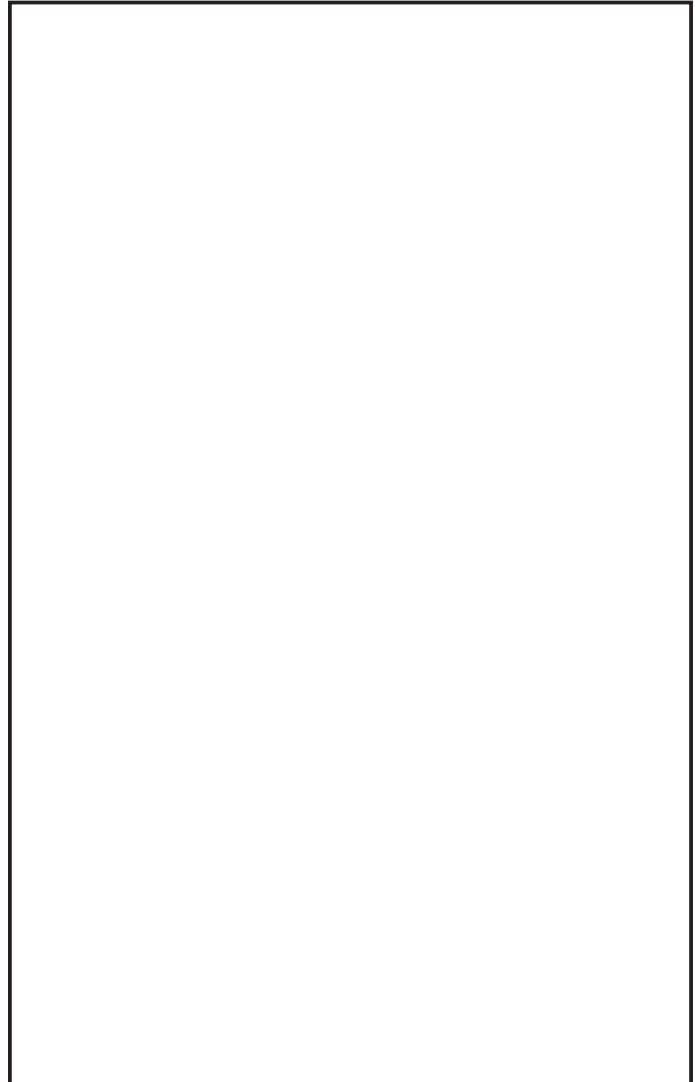
- Remind students that advances in machinery and equipment allow farmers to be more productive. Challenge them to make a list of all the tools and equipment they have that make their life easier and find out more about how those useful items were invented/created.

*Take Home Enrichment: Encourage students to ask an adult to take them to visit an agricultural equipment dealer to look at the variety of agricultural machines up-close and ask the dealer if he'd be willing to answer a few questions about the equipment.

“DECODING HISTORY” ANSWER KEY

- 18th Century: Oxen and horses were used to do work on farms.
- 1793: Eli Whitney invented the Cotton Gin.
- 1837: John Deere and Leonard Andrus began making steel plows.
- 1862-1875: 1st Agricultural Revolution
- 1884: The Horse Drawn Combine was put into use.
- 1930s: Rubber tire tractors became popular.
- 1945-1970: 2nd Agricultural Revolution

TEACHING NOTES



FOUNDATION CONTACT INFORMATION

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DECODING HISTORY

Make one copy of this sheet for each group. Cut apart cards and randomize before giving to group.



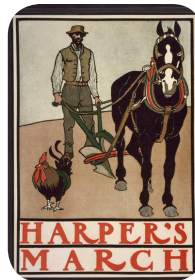
OXEN AND HORSES WERE USED TO DO WORK ON FARMS.



ELI WHITNEY INVENTED THE COTTON GIN, WHICH SEPARATED COTTON LINT FROM THE SEED. THIS MADE HARVESTING COTTON MUCH EASIER!



JOHN DEERE AND LEONARD ANDRUS BEGAN MAKING STEEL PLOWS.



1ST AGRICULTURAL REVOLUTION: FARMERS BEGAN USING HORSES TO DO MORE WORK THAN WORK DONE BY HAND.



THE HORSE DRAWN COMBINE WAS PUT INTO USE TO HARVEST WHEAT.



RUBBER TIRE TRACTORS BECAME POPULAR FOR WORKING ON FARMS.



2ND AGRICULTURAL REVOLUTION: FARMERS BEGAN USING MACHINES MORE THAN HORSES.



INFORMATION TECHNOLOGY, LIKE GPS, BECAME POPULAR IN TRACTORS AND MADE FARMING MUCH MORE EFFICIENT AND PRECISE!