Ag. & Shop Unit | Grades 9-12 | Lesson 1: Duplicating Steam Lathe

Lesson Description

Welcome to the world of 1880s tools and farm equipment! Take a step back in time where tools were generated by steam and literal horse power…we're talking the kind you have to feed! In this lesson you will take a visit to the Duplicating Steam Lathe and learn the basics of the steam-driven wood lathe. You will talk to the craftsmen and watch as they work with this antique tool. Feel free to ask questions that aren't on the student activity sheet and if you see something you like, you can purchase it for a souvenir!

Concepts

Steam-driven lathe fundamentals (tool functions & mechanics)
Steam power
Lathe tools

Objectives

Students will:

- Learn how the steam is generated to turn the lathe.
- Understand what device transfers the power from the steam generator to the lathe to turn the spindle.
- Be introduced to different tools used with a wood lathe.
- Learn how the size of the pulley affects how fast the spindle turns.

Content Standards

GLE's: S2, S3, M2, 1.6

National Standards in Agricultural Education

- **Standard 2**: Understands trends, issues, and events that have influenced agricultural practices throughout history.
  - Benchmark 1, Grades 9-12: Understands how emerging technologies (e.g., satellite technology, biotechnology, mechanical technology, computer technology, chemical technology, environmental technology) are affecting agricultural practices and their possible implications for the future.
  - Benchmark 2, Grades 9-12: Understands how past technologies and innovations have impacted the agricultural industry throughout history (e.g., the cotton gin, mechanized farming, the seed drill, industrial production).

- **Standard 9**: Understands how various technologies are used in the agricultural industry.
  - Benchmark 5, Grades 9-12: Understands how mechanical and electrical technology is used in the agricultural industry (e.g., engine mechanics, watering systems, control systems, radio monitoring devices, farm machinery Global Positioning Systems).

- **Standard 2**: Understands the history of a local community and how communities in North America varied long ago.
  - Benchmark 1, Grades K-2: Understands the changes in community life over time (e.g., changes in goods and services; changes in architecture and landscape; change in jobs, schooling, transportation, communication, religion, recreation).

Time Required

Approximately 45 minutes

Materials

- Student activity sheet from Kids-U-Cation website
- Silver Dollar City Park Map
- Calculator & writing utensil

Procedures

1. Print off the student activity sheet from the Kids-U-Cation website and hand out to students.
2. Pick up a park map upon entering Silver Dollar City to help students find the steam lathe.
3. Turn into teacher for a completion or accuracy grade.

Closure

Review the key points of this lesson by discussing the following:

- What area in McHaffie's Homestead did you find most interesting?
- Having the technological advances we have today, do you think you would have enjoyed living during this time period?
- What things did you like about the "simple life" in the 1800s?

- Any fun facts that just stuck out in your head?

Assessment/Independent Practice

Give an assignment or test of your choice.

Name/Date: _____

The Duplicating Steam Lathe

Directions: Make your way to the Duplicating Steam Lathe and answer the following questions based on what you see and discover from the craftsman using the tool.

1. How is the steam generated to turn the lathe?

_____

_____

2. What device transfers the power from the steam generator to the lathe to turn the spindle (belt driven, chain driven, etc.)?

_____

_____

3. What determines how fast the lathe spins?

_____

_____

4. Ask the craftsman to explain how he/she decides which tool to use for certain jobs?

_____

_____

5. Assume the steam generator turns a pulley that is connected to another pulley on the lathe spindle by a belt system. Use the illustration below to answer the following questions:
   -How many RPM's is the smaller pulley turning in each scenario? _____ _____
   -Would installing a larger pulley on the steam generator side make the lathe spindle turn faster or slower? Why? _____

_____

Steam Pulley Spindle

8 inch pulley, 500 RPMs  4 inch pulley RPMs?

6 inch pulley, 600 RPMs  2 inch pulley RPMs?