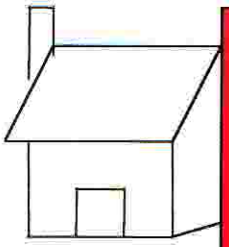


HEWN TIMBER CABINS

SCIENCE GRADES 4-6

FRANCIS MARION UNIVERSITY
FLORENCE, SOUTH CAROLINA

SOUTH CAROLINA FRAMEWORK STANDARDS

CONTENT STANDARDS

- INVESTIGATE SEVERAL FORMS OF ENERGY LIGHT AND HEAT.
- INVESTIGATE WAYS IN WHICH PEOPLE USE RESOURCES OF THE EARTH.
- RECOGNIZE THAT FORCES ACT ON OBJECTS TO BRING ABOUT CHANGES (SIMPLE MACHINES).

ACTIVITY 1
GOURDS GALORE

ACTIVITY 2
THE RIGHT TOOL FOR THE JOB

ACTIVITY 3
KEEPING THE HEAT IN

ACTIVITY 1
GOURDS GALORE

OBJECTIVE

Students will investigate how people use earth's resources – gourds.

PROCEDURES

- Present examples of gourds to the class.
  Discussions should involve use and ideas for other gourd creations.
- Complete provided activity sheets.
- Students should write a description of a gourd example shown to the class or create their own idea for a use for a gourd. (Descriptions should include drawings.)

MATERIALS NEEDED

- Gourd information (May be obtained from internet site.)
- Different gourds.
- Copies of activity sheets (One for each student or students may work in pairs.)
- Access to internet site or copies of site

http://www.fmarion.edu/
http://gourdsbyjeanie.com/gourd_suppliers.htm

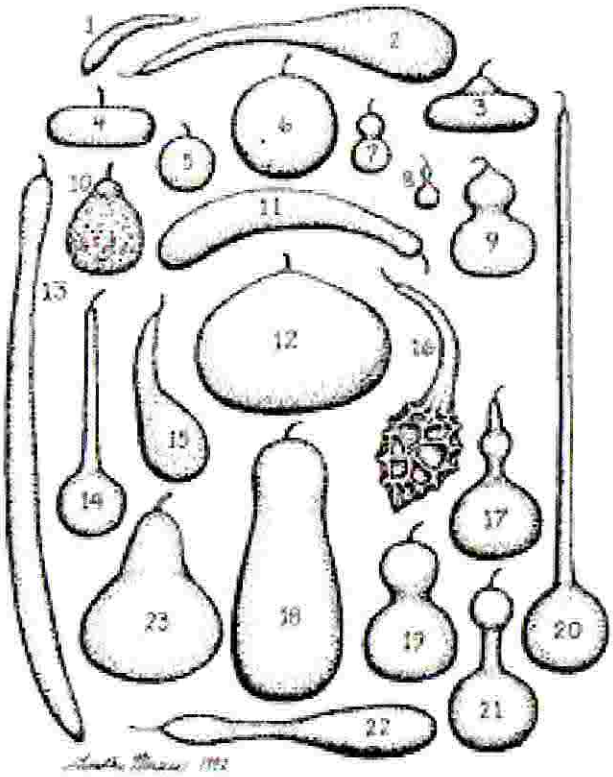
EVALUATION

Gourd descriptions should be graded using the South Carolina Writing Rubric.

GOURDS GALORE

WRITE THE CORRECT NAME OF EACH GOURD

Gourd
Identification Chart



1._____ 8._____ 15._____ 22._____
2._____ 9._____ 16._____ 23._____
3._____ 10._____ 17._____
4._____ 11._____ 18._____
5._____ 12._____ 19._____
6._____ 13._____ 20._____
7._____ 14._____ 21._____

ANSWER KEY:

1. banana
2. club cave-man's club
3. tobacco box, sugar bowl
4. canteen, sugar bowl
5. cannon ball
6. basketball
7. mini-bottle
8. sennari
9. Mexican bottle
10. hand-shell warties
11. Hercules club
12. bushel
13. baton, snake longissima
14. short handle dipper
15. powder horn penguin
16. French dolphin, maranka monkey
17. lump-in-neck
18. zucca
19. Chinese bottle, dumb bell
20. long handle dipper
21. Indonesian bottle, Costa Rican bottle
22. Japanese bottle siphon
23. kettle

GOURDS FOUND AT HEWN TIMBER CABINS

ACTIVITY 2
THE RIGHT TOOL FOR THE JOB

OBJECTIVE

Students will match tools with appropriate job descriptions.

PROCEDURES

- Review tools and their job descriptions on the web site.
- Complete provided worksheet.
- Students should create a new tool and write a description of its intended purpose.

MATERIALS NEEDED

- Access to Internet web site http://www.fmarion.edu/
- Copies of worksheet (one for each students or students may work in pairs or small groups.)
- Access to tool exhibit at hewn timber cabins

EVALUATION

New tool descriptions should be graded using included rubric.

EARLY TOOLS

Draw knife – used to shave one end of shingle to create a taper

Froe – a cleaving tool for splitting shingles

Pit saw – used to saw down entire length of the timber

Adz – very sharp blade used for hewing when the user stood astride the timber

Broad ax – used to slice away pieces of wood until the 2 sides of the log were flat, this was called hewing

Felling ax – used to score the log

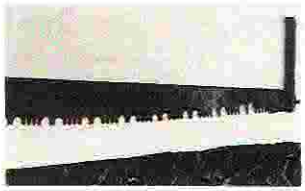
Wedge – used to hold the cut open so that the weight of the tree did not bend the saw

Cross-cut Saw – used to fell large pine trees

Strap and pintle hinges – an upright pin on which a hinge hangs

WRITE THE CORRECT NAME OF THE TOOL ON THE LINE

1



2

3

4

5

6

7

8

9

1_____

2_____

3_____

4_____

5_____

6_____

7_____

8_____

9_____

ANSWER KEY:

1. Wedge
2. Cross cut saw
3. Broad ax
4. Adz
5. Adz with proper handle
6. Froe
7. Draw knife
8. Strap and pintle hinge
9. pintle

NAME_____
DATE_____

NEW TOOL GRADING RUBRIC

ACTIVITY	1 point	2 points	3 points	TOTAL
Tool design	Student does not use a lot of imagination with tool design – very basic.	Student makes attempt at creating new design still very basic.	Student designs tool with much imagination and creativity.	
Tool description	Description is very brief and contains many errors in convention.	Description is somewhat detailed and contains a few errors in convention.	Description is very detailed and contains little or no errors in convention.	
Presentation to class	Student does not make eye contact and project well.	Student attempts to make eye contact and project.	Student makes eye contact and projects his/her ideas to the class.	

GRADING SCALE:
9-8 A
7-6 B
5-4 C
3-2 D
1 F

COMMENTS:_____
_____
_____

ACTIVITY 3
KEEPING THE HEAT IN

OBJECTIVE

Students will investigate the effects of insulation on temperature.

PROCEDURES

- Place students into groups of 4 to 5 students.
- Set up work stations around the room (one station for each group).
- Discuss the terms *insulation* and *conductor*.
- Complete lab worksheet.

MATERIALS NEEDED

- Cooperative groups and assignments
- For each group:
  - Timer
  - Thermometer
  - Ice
  - Strong lamp
  - Cotton
  - Newspaper
  - Tissue
  - Plastic cups (3 for each group)
- Lab worksheet (one for each student)

EVALUATION

Lab worksheets accurately completed.

KEEPING THE HEAT IN

Ms. Catherine would line the walls of her house with newspaper and magazine pictures. Was she just making her own version of wallpaper or did she have another reason?

- Material that conducts heat well is called a <u>conductor.</u>
- A material that does not conduct heat well is called an <u>insulator</u>. Wood, wool, straw, paper, and cork are good insulators.

Investigate the effects an insulator has on temperature.

1. Place a thermometer in a plastic cup. Wait 3 minutes and record the temperature.
2. Place the cup with the thermometer under a strong lamp. Wait 3 minutes and record the temperature.
3. Remove the cup from the strong lamp, allow the temperature to go back down to the original "room temperature."
4. Place the cup in ice. Wait 3 minutes and record the temperature.
5. Remove the cup from the ice and allow the temperature to go back to "room temperature."
6. Wrap the thermometer in cotton and repeat both the lamp and ice processes. Record the temperature for each.
7. Wrap the thermometer in newspaper and repeat both the lamp and ice processes. Record the temperature for each.
8. Wrap the thermometer in tissue and repeat both the lamp and ice processes. Record the temperature for each.

FOLLOW-UP QUESTIONS

1. **What did you find out about insulation and temperature?**
2. **Why did Ms. Catherine use newspaper as her insulator?**
3. **What are some other materials you would like to test to see how they affect temperature?**

KEEPING THE HEAT IN
LAB WORKSHEET

NAME_____DATE_____

RECORD ACCURATE TEMPERATURE READINGS IN CELSIUS DEGREES FOR EACH ACTIVITY. MAKE DETAILED COMMENTS ON YOUR OBSERVATIONS.

ACTIVITY	TEMPERATURE	OBSERVATIONS
ROOM TEMPERATURE (3 MINUTES)		
THERMOMETER UNDER LAMP (3 MINUTES)		
THERMOMETER IN ICE (3 MINUTES)		
THERMOMETER IN COTTON UNDER LAMP (3 MINUTES)		
THERMOMETER IN COTTON IN ICE (3 MINUTES)		
THERMOMETER IN NEWSPAPER UNDER LAMP (3 MINUTES)		
THERMOMETER IN NEWSPAPER IN ICE (3 MINUTES)		
THERMOMETER IN TISSUE UNDER LAMP (3 MINUTES)		
THERMOMETER IN TISSUE IN ICE (3 MINUTES)		

WRITE ABOUT WHAT YOU HAVE OBSERVED ABOUT INSULATION AND TEMPERATURE.

WHAT ARE SOME OTHER MATERIALS YOU WOULD LIKE TO TEST TO SEE HOW THEY AFFECT TEMPERATURE?

FOLLOW- UP ACTIVITY.

Other experiments on heat and energy can be used to explore the conditions in the hewn timber cabins. For example http://www.col-ed.org/cur/sci/sci87.txt gives a very detailed lesson plan on building a Solar Hot Box. And http://www.col-ed.org/cur/sci/sci106.txt gives a Solar Energy Experiment. They are also numerous experiments on Solar Cookers that could be linked to cooking methods by the occupants of the cabins.