

Application of Science, “The Nature of Science & Technology”, pages (pgs 86 - 121)

Effort Credit

C3 Definitions (16)

WS - Classifying Technologies (pg 90 for reference)

Lab Zone: Chapter Project “Design & Build a Chair” pg 87 (TR pgs 172-176)

WS - Progress Report (reference pg 93 - Lab Zone)

Additional - Timeline for Obsolete, Current, Emerging, and Coexisting

WS - The Good & The Bad

WS - Show & Tell

WS - Key Terms “Technology & Engineering” (TR pg 206)

5-ETS1-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

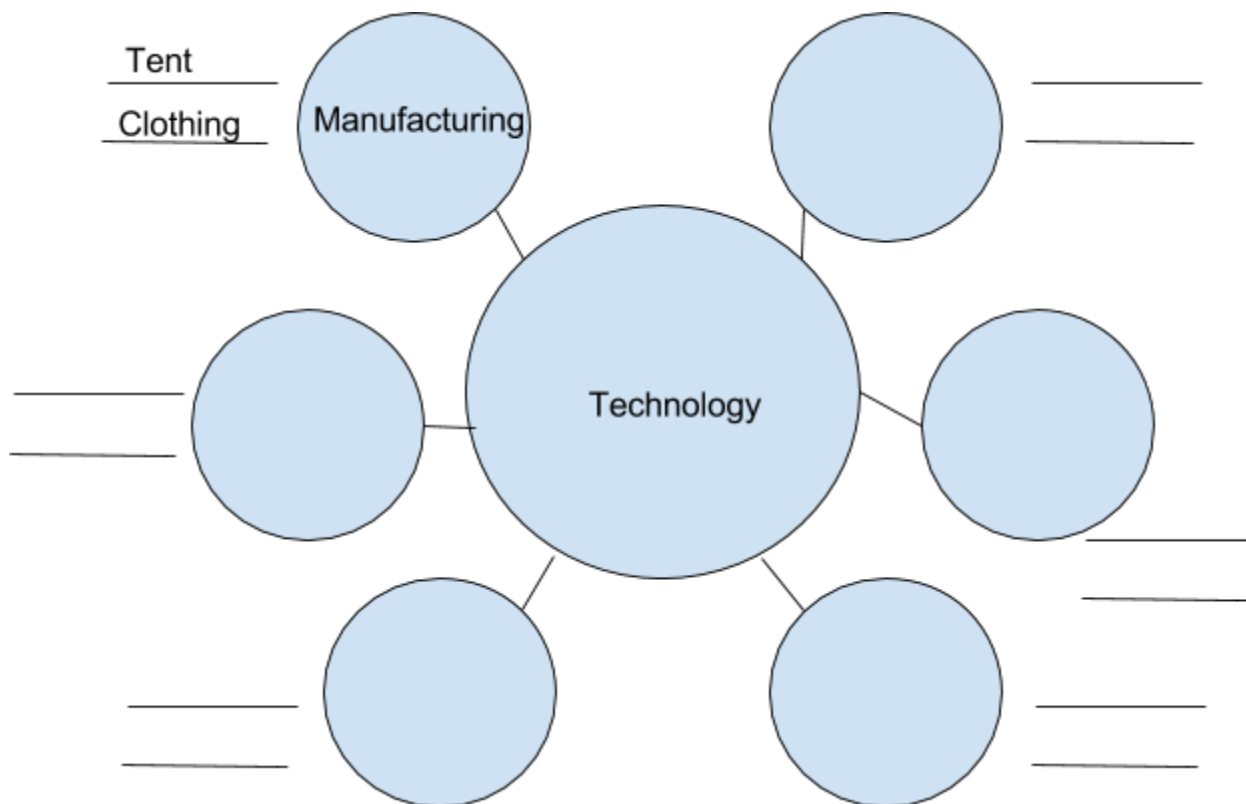
PACING GUIDE

Day 1	<p>“Organizational Clues for Reading” Worksheet (we do)</p> <p>Video - What’s An Engineer? https://www.youtube.com/watch?v=owHF9iLyxic</p> <p>Hand out - Guided Reading & Study “Understanding Technology” (TR pg 179 - 182)</p>
Day 2	<p>Continue Guided Reading & Study WS</p> <p><i>HW: pg 111 “Math: Analyzing Data - Working on a Farm”</i></p>
Day 3	<p>Graphic Organizer - Engineering Design Process</p>
Day 4	<p>Video - Engineering Design Process https://www.youtube.com/watch?v=fxJWin195kU</p> <p>Hand out - Guided Reading & Study “Technology Design Skills” (TR 190 - 193)</p>
Day 5 - 6	<p>Skills Lab - Investigating a Technological System (TR pg 185 - 187)</p> <p><i>HW - “Understanding Technology” Review (TR pg 183)</i></p>
Day 7 - 9	<p>LAB: “Design & Build Egg-ceptional Packaging”</p> <p><i>Complete Questions for Homework</i></p>
Day 10	<p>Students should read S3 - <i>Complete Guided Reading & Study “Technology & Society” (TR 201 - 203)</i></p>
Day 11	<p>Flex Day - Check Answers</p> <p>Check for CHAIRS</p>
Day 12	<p>Review</p>
Day 13	<p>C3 Test</p>

CLASSIFYING TECHNOLOGIES

20 Points

According to your textbook, there are 6 categories of technology. Complete this graphic organizer giving 2 examples of each type. A portion has been started for you.



PROGRESS REPORT

FLEX POINTS

Technology changes as people's knowledge increases and as new needs can be satisfied. Walking and riding horses were once the only ways to travel. Although this was very inexpensive, it could take a LONG time to walk to town to buy cloth. In the early 1900's, an automobile was invented. They were expensive and not everyone could buy one, rain blew in and it was hard to find a gas station. However, these new "Model T's" were speedy at 40 mph (on smooth roads). Today, we are able to travel in many new ways.

Your assignment is to talk to an older adult about the technologies they have used in their lifetime to listen to music. Be sure to tell me with whom you spoke.

Adult _____

First _____

Then _____

Then _____

Then (if needed) _____

Then (if needed) _____

Now _____

Now (if needed) _____

For additional points...

Create a "timeline" similar to the one in Figure 4 on page 92-93 identifying the music technologies that are obsolete, current, emerging, and coexisting.

THE GOOD & THE BAD

20 POINT

In any age of history, technology has had a large impact on society. Some impacts have been advantageous (good for our advantage) while others have been disastrous (very, very bad). Choose a technology product that you rely on or use every day. Using the T-chart below, list the advantages and disadvantages of this product. Then, answer the question at the end.

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Do you think that this product you chose has had an overall positive or negative impact on society? Explain.

SHOW & TELL - OUTDATED TECHNOLOGY

25 POINTS +

Every kid loved “Show & Tell” day at school. We actually still do!

Your task is to find an outdated technology to **SHOW** to your classmates at school. You will need to investigate the following questions to **TELL** them the specifics.

NAME of item

WHAT was its purpose?

–

HOW did it work or was it used?

–

WHEN was it invented?

–

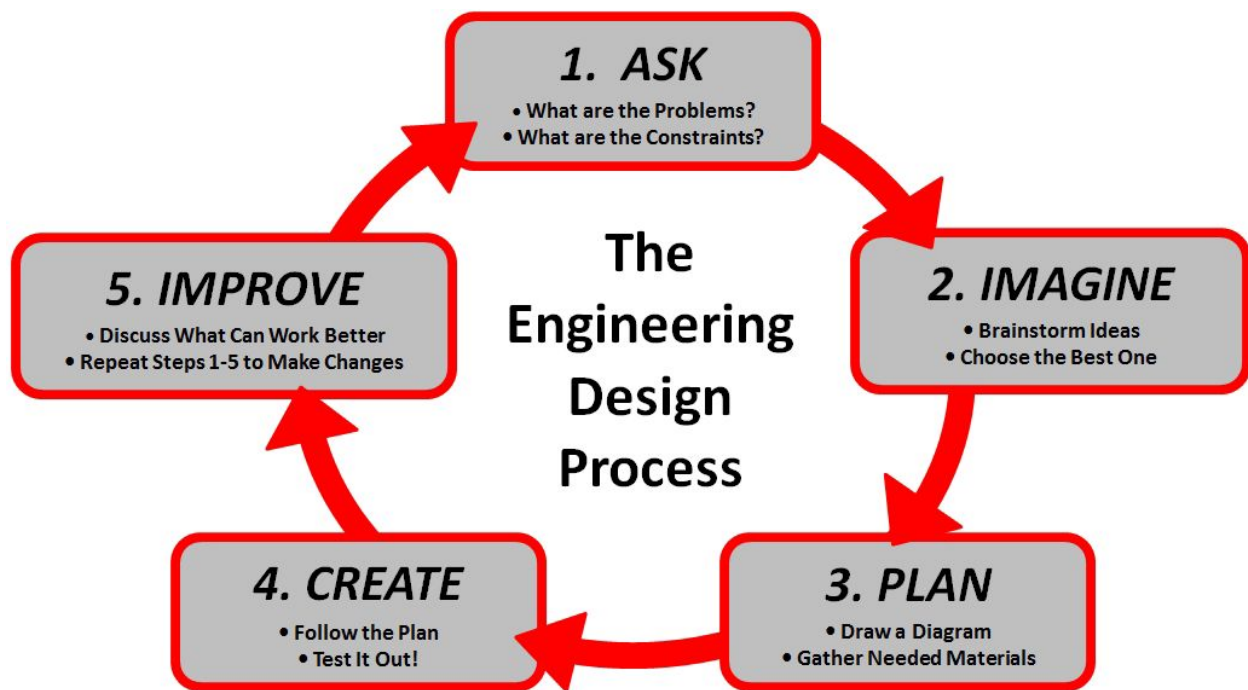
WHY is it no longer used?

–

Other questions you might want to answer...

Who invented this? How much did it cost? Where was it popular? What do we use now?

Create this for the students WITHOUT answers.



DESIGN AND BUILD “EGG-CEPTIONAL” PACKAGING

Problem - *Can you design and build protective packaging for a breakable object?*

Skills Focus - Engineering Design Process

Materials

- 2 Raw egg
- Resealable plastic bag
- Meter stick
- Tape
- Scissors
- Modeling clay
- Various packaging materials provided by teacher

Part 1 - ASK (What will it take to protect an egg from a big drop?)

1. We need to research and investigate what happens to an egg when dropped from 2 meters. First, mold a piece of modeling clay into the shape of an egg. Use a plastic egg or real egg as your model.
2. Hold the clay egg 2 meters above a hard surface. Drop the egg. Examine the egg carefully for damage from the fall. Record your observations in the Data Table.

Object Dropped	Observations
Clay Egg	
Clay Egg in Packaging Material 1	
Clay Egg in Packaging Material 2	
Clay Egg in Packaging Material 3	

3. Reshape the egg so it looks like it did in Step 1. Then, choose one of the packaging materials and wrap it around the egg. Repeat Step 2.

4. Repeat Step 3 two more times using different packaging materials each time. Be sure to reshape the egg before each new test.

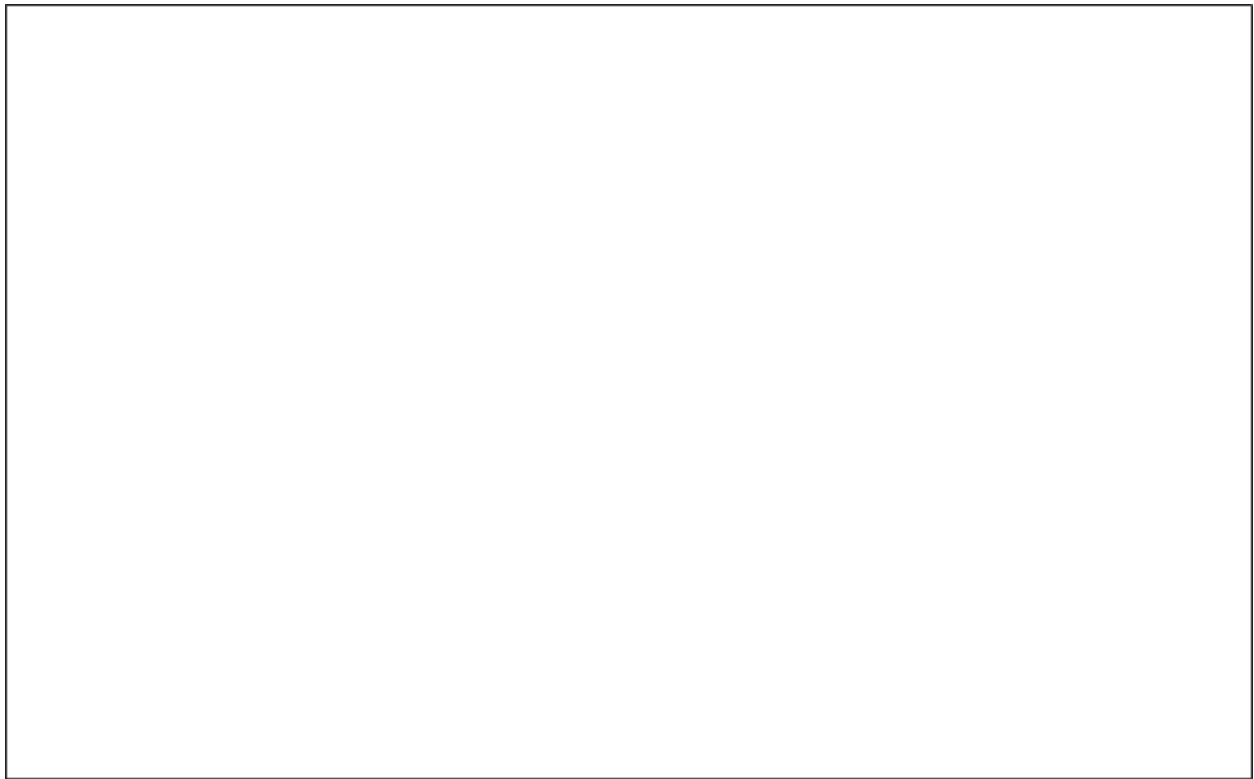
Part 2 - IMAGINE

5. Based on what you learned from Part 1, design protective packaging for an uncooked egg. Your packaging should:

- a. Prevent the egg from cracking when dropped onto a hard surface from a height of 2 meters
- b. Use only the materials that your teacher has provided
- c. Use as few items as possible

PART 3 - PLAN

6. Sketch your design below. Be sure to label the different parts of your drawing. When finished, LIST the materials you will be including amounts.



7. Obtain your teacher's approval of your design BEFORE you begin building.

_____ Teacher Initials

_____ Student 1

_____ Student 2

_____ Student 3

_____ Student 4

Part 4 - CREATE

8. Build your design. If changes must be made, you must get approval from your teacher.

Changes

9. Your teacher will designate a location & time where you can drop the egg to test your protective packaging. Be sure to place your raw egg into the resealable plastic bag BEFORE testing.

10. After the test, unwrap the packaging and evaluate how well it protected the egg. Record your observations / draw a picture of any damage.

Part 5 - IMPROVE

11. Based on your results, determine how you might redesign your packaging to do a better job.

12. Then, make improvements and test the redesigned packaging with a new egg. Record your observations / draw a picture of any damage.

Questions to Consider

1. What did you learn from Part 1 that helped you design the protective packaging? Be specific. For example, what did you learn from each of the packaging materials that you tested?

2. Did your packaging prevent the egg from breaking? If so, which aspects of your design do you think were the most important in protecting the egg? If not, why not?

3. How did you decide what changes to make in redesigning your packaging?

4. Did you redesigning help or make things worse? Explain.

5. What successful designs did you see in the other groups' projects that you would like to have tried?

6. Imagine that you work for a company that designs skateboard helmets. How does this lab activity connect to skateboard helmets?

7. In making a skateboard helmet, what additional features would you need to consider in designing a helmet?
