



Fabric Dying



Time: 45 Minutes **Skill Level:** Beginning (age 9-11), Intermediate (age 12-14)

Background

What is Science Inquiry?

Children are natural scientists. From a very early age they explore the world, ask questions and seek answers. This journey of exploration and discovery is Science Inquiry. Science Inquiry helps young people understand their environment, solve problems and gain knowledge about scientific ideas and processes.

Science and Engineering Practices Youth Should Become Familiar With Are:

1. Asking questions
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations
7. Obtaining, evaluating, and communicating information

FYI-People have been spinning fibers from plants and animals and weaving them into fabric for thousands of years. Plant fibers are called "cellulose fibers" and animal fibers are "protein fibers." About 100 years ago, synthetic fibers were developed from petroleum products.

Materials List:

- Make boiling water on a stove or hot plate- 1 cup volume for each fabric sample
- 2 tea bags for every 1 cup of water
- Masking tape
- A marking pen
- Paper towels and newsprint to protect the table surface
- Tongs
- Samples of BOTH natural and synthetic fabrics. Select white or natural colors
- For each fabric sample:
 - A quart canning jar
 - A bowl of clean cold water

Watch the Video: <http://oregon.4h.oregonstate.edu/science-engineering-and-technology>

Discuss....What do students know about where fabrics come from and how they are made. Pass around the samples and ask students to see if they can tell which are from natural materials and which are man made. Use the FYI and video for background information you may need.

Predict....For each of the fabrics have students predict how well they will take on the color of the tea dye. Record their prediction on a board or flip chart to compare to the results.

Experience “What to Do”- What is the plan for the investigation?

Boil the water and add tea bags in the proportion listed in the materials list. Steep the tea bags 5 minutes. Remove tea bags from the pot. Measure 1 cup of tea into each jar. There should be one jar for each fabric sample. Have students place one fabric sample in each jar and label the jars with the fiber content of the sample. Use care as the liquid will still be very hot. Allow the fabric sample to soak for 15 minutes. Using tongs, remove the fabric and squeeze out the excess dye. Place the sample in a bowl of cold water. Rinse. Squeeze out the excess moisture. Lay the sample on paper towels on the table and observe its color. How do the samples compare?

Share ...

Compare the color of the dyed fabric to the color you were predicting. Are they the same or different? How are they the same or different?

When the fabric was placed in the bowl of clear water what happened?

Share your observations and thoughts about the color of the fabric when it was removed from the clear water.

Reflect ...Analyze and interpret the data and results. Discuss among the group.

Which fabrics accepted the dye the best (dyed the darkest)? Which fabrics did not accept the dye (the dye rinsed off the surface)? Did the fabric dye to the color you were expecting? Explain what were you expecting and why?

Generalize ...to real world examples. Construct explanations.

What is the commonality among those that accepted the dye the best? What is the commonality among the fabric that did not accept the dye? What do you observe about the fabric(s) that accepted the dye but isn't as dark a color as other fabrics?

Apply ...outside the classroom or club meeting.

How can we use the information we just learned in our sewing or fiber arts projects?

How would you apply this learning experience or questioning process to other areas in your life?

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