1-2 YEARS IN PROJECT

How Clothes Get Their Color

4-H Clothing and Textiles Project

Part of the Family and Consumer Sciences 4-H Project Series

Understanding Textiles (Fabric)

Project Outcome: STEM - Identify the dyeing process for various fabric types.

Project Indicator: Tie-Dye project completed.

TIPPS Outcomes:

- Understand the meaning of information.
- Use the senses to gain new information or find new ways to use information.
- Make the needed effort to carry out a task or a plan.

When we buy a garment or home decorating item, there is one factor that influences us the most in what we purchase. What do you think it is? Color. Have you ever looked at all the different colors of clothing that are available and wondered how the color gets there? Fabrics may in the raw stage (like wool or cotton) have a slight color but without dyes our clothes would indeed be boring. In this activity you will learn that:

- Colors in fabrics can come from dyes
- Some dyes come from nature and some are produced in a laboratory
- Dyes can be added to fabric at many different stages of production.

Natural dyes come from things in nature like plants, insects and minerals. If you have ever had a grass stain, that is an example of a dye from nature. Other examples include using roots, flowers, leaves, and berries such as: blackberries, marigolds, onion skins, red cabbage, indigo, walnut hulls, and berries. Tea can also be used as a dye. Many different colors can be achieved from nature.

Until 1856 that was the only way to color fibers. In 1856, the first synthetic or laboratory produced dyes were developed. Today almost all clothing and home decorating items you buy in stores are dyed with synthetic dyes

How are fabrics dyed?

Think of a dye being like Jell-o particles. Once they are put in solution (sometimes water), they dissolve and soak through the fiber, becoming part of the fiber or yarn. A chemical reaction makes them part of the fiber or yarn.

Dyes can be added at most any stage of the textile production process. This includes during dyeing the fibers (fiber dyeing), dyeing the yarns (yarn dyeing), dyeing the fabric or piece goods (piece dyeing), or the end product. The earlier the dyeing, the better the color penetration (even color and longest lasting). Manufactured fibers can even be dyed as they are being made. This happens by color being added to the solution being used to make the fiber. Natural fibers cannot be dyed this way. Some fibers may absorb dyes better than others.

Most fibers that we say are comfortable to wear (example: cotton) also breathe or absorb moisture and accept dyes well because of their high absorbency. These we would say "take" the dye better. Others that do not absorb moisture well (example: polyester) will not accept dyes well unless treated specially for this purpose or dyed by special ways and using special dyes.

Creating Patterns on Fabric

In addition to dyeing fibers to make solid colors, we also wear clothes that have different patterns and designs on the fabric. There are many different ways to make designs. Here are a few:

A. Dye can be applied in certain patterns by using a "direct" dye technique. Block printing is an example of this technique where the dye is applied to the block and it is "stamped" on the fabric. A roller printing machine will do the same thing with the design being raised on the roller, the dye applied and then rolled over the fabric. This includes making paisley, calico, and floral patterns.

B. Tie-dye is a "resist" type of fabric dyeing where a pattern of color is made by preventing the dye from reaching some areas of the fabric while dyeing others.

Be Creative Through Tie Dye

Have you ever wanted to wear your own designed clothing? You can through the tie-dye project? By folding, tying, crumpling or otherwise preparing the fabric, this inhibits the flow of the dye to some areas. Examples follow of how to make designs. So be sure to gather your supplies.

The way the fabric is folded, or rubber banded and where the colors are squirted will determine the resulting design. With experience, the end result can be predicted and controlled to some extent, but surprise is part of what makes tie-dye an exciting and interesting art form - and there will be plenty of surprises.

Where did tie-dye come from?
Contrary to popular belief, tie-dyeing was not invented in 1960's America. Different forms of tie-dye have been practiced in India, Japan, and Africa for centuries. The earliest surviving examples include pre-Columbian alpaca fabric fragments found in Peru and silk from fourth century Chinese tombs. Indian Bandhani, one traditional form of tie-dyeing, began some 5000 years ago.

Japanese tie-dye is included among the many techniques of shibori, which has been used for many centuries to make different types of beautiful patterns on cloth used for elaborate kimonos.

As in ancient times, we still use natural fibers for tie-dyeing. Silks from China, cottons from Egypt, and rayon from Bali are still highly prized.
Many cultures still use tie-dye today to create beautiful fabrics and garments.

Want to learn more? Google: "History of Tie-Dye"

Test Your Knowledge

1. Name a natural substance that can be used to dye fabric:

_____

2. (True or False) Dye can be added to synthetic fibers as they are made.

3. (True or False) Fibers, such as cotton, that are comfortable and absorbent, also dye well.

4. (True or False) Today most of the dyeing of fibers and fabrics is done using natural dyes.

5. What is the dyeing technique called where blocks are used to create a design?

_____

6. Name a country besides the United States where tie-dying has been done:

_____

7. Name a natural dye substance that you would like to use to dye a garment:

_____

1-2 YEARS IN PROJECT

LET'S TIE-DYE

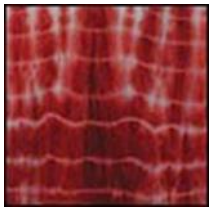
Supplies: Item to dye (t-shirt or other white item), rubber bands, apron or old clothes to wear, large garbage bags, disposable aluminum pan, dye for clothing, empty dishwashing detergent bottles or spray containers

Basic Steps to Tie-Dye:

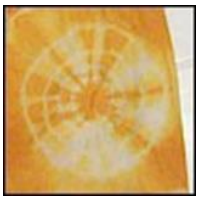
1. Before you dye your item, you should wash it to remove any sizing from the manufacturer or anything else that may have gotten on it.
2. In order for the dye to be more permanent on your project, you will want to soak your shirt or other items in a soda ash mixture. With the help of an adult, add ½ cup salt to the dye mixture.
3. Decide what sort of design you want for your finished project.
4. Cover your work area so the dye doesn't stain it. Lay down a few large garbage bags.
5. Lay your shirt or other item out flat then fold and tie, as desired.
6. Prepare your dye as directed by the manufacturer. You should carefully follow all instructions. (Add ½ cup of salt to every 1/2 gallon of dye to help set the dye if you haven't soaked your shirt in soda ash.). While preparing the dye and dyeing your item, you should wear rubber gloves to protect your hands from staining.
7. Now you are ready to start dyeing. Fill empty dishwashing liquid bottles or empty spray containers with the color (s) of dye you are using. Hold your item over a large disposable aluminum pan. Squirt or spray the areas where you want the color.
8. Allow the dye to soak in for 15 minutes. You can put this in a plastic bag to let the dye be absorbed. Then rinse thoroughly, remove you rubber bands or string and rinse again.
9. Admire your creation!
10. Be careful washing your tie-dyed items! Most should always be washed in cold water. The first few times they are washed, they might bleed, so wash them with like colors or alone.

Here are some examples on how to fold your fabric:

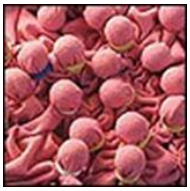
Lines by placing rubber bands at intervals


Sunburst by using a marble and rubber bands

Circles by using one marble and one rubber band, then repeated all over the fabric



What can you do with what you have learned?

- Try dyeing a white garment using natural dyes, such as tea.
- Meet with younger 4-Her's and teach them about tie-dyeing and have them create their own tie-dye.
- Create a poster or PowerPoint with information about the history of tie-dye and share with others.
- Interact with a person from another country and learn about their culture.
- Have someone take a picture of you tie-dyeing and save it to use later in making posters of your activities, scrapbook, or a portfolio.

Answers to "Test Your Knowledge":

1. Berries, flowers, etc.
2. True
3. True
4. False
5. Direct dyeing
6. India, Japan, China