

Fabric Structures: A Close Look

Leader Guide



Fashion
through science

WITH THIS ACTIVITY

- Handout
- Fabric Structures for Movement Presentation



We are
Engineers!



Movement
Improvement



Marvelous
Materials



Smart
Clothing



Patternmaking
Tools n' Tech

MODULE

Big Picture

Fabric is the medium of the fashion designer. It is important for a designer to understand fabric structure in order to select fabrics that will behave as needed for a particular design.

What's the goal?

To help young designers understand that there are different textile structures.

Grouping

Designers work individually

Preparation

Precut fabric into 2" squares.

Let's get started!

1. Introduce the activity by asking if they can name some ways to create fabrics.
2. Distribute fabric swatches, handouts, and magnifiers.

Materials

What they need: (per group)

- Hand magnifiers
- Fabric swatches: plain weave, jersey knit, nonwoven (interfacing)
- Handout

Prep Time: 15 Minutes

Activity Time: 15 Minutes

Difficulty: Level 1

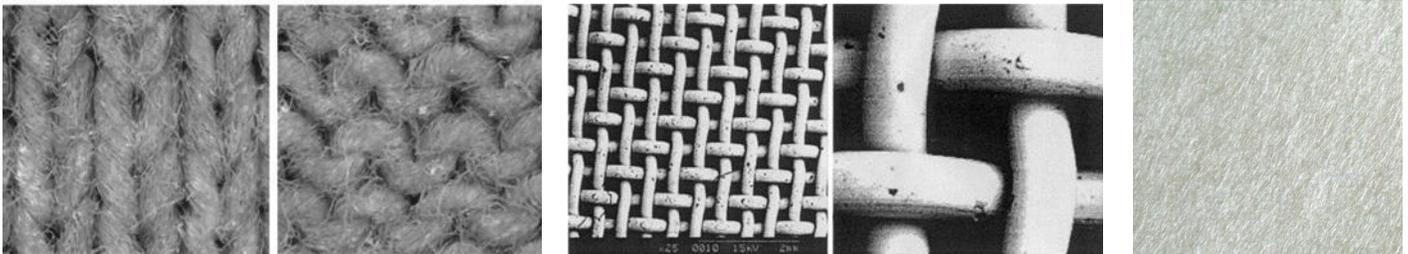


3. Have the young designers examine each of the three fabric swatches using the magnifier and record observations on the handout.

Discussion

1. Show the Presentation (PowerPoint), and have designers try stretching their swatches in different directions. Hold the swatches up to a light to see where light shines through.
 - **ASK:** Which fabric is the woven? What kind of clothing is usually made of woven fabric? What do you think makes woven fabric best for these uses?
 - **ASK:** Which fabric is the knit? What kind of clothing is usually made of knit fabric? Why would you choose knit fabric for these uses?
 - **ASK:** Which fabric is the non-woven? Where have you seen non-wovens used for clothing? Why would you use non-woven for clothing?

Handout Answers



KNIT

WOVEN

NON-WOVEN

Which fabric structure looks like loops? **Knit**

Which fabric structure looks different vertically and horizontally? **Knit**

Which fabric structure has interlacing at right angles? **Woven**

Which fabric structure looks the same in any direction? **Non-woven**

Which fabric is made of individual fibers instead of twisted yarns? **Non-woven**

Background Information

The most common fabric structures are woven, knit, or non-woven:

Weaving interlaces yarns at right angles. Remember potholder loop looms. Different patterns can be created by varying the number of vertical yarns a horizontal yarn passes over or under during the weaving process. Different patterns of woven may look different front to back (e.g. twill weave such as denim, satin weave, or napped fabrics like velvet). However, all wovens have threads that interlace at right angles.

Knits are formed by looping yarns into one another. Hand knitting generally creates what is called a weft knit, in which one yarn builds layers of loops one after another. T-shirt jersey is also looped this way. Knits can have a very open structure like lace or athletic mesh, too.

Non-wovens are made with randomly placed fibers (not spun into yarns). They may be glued, melted, or entangled to hold them together. Sometimes they have an embossed pattern on the surface. Felt is a common non-woven construction. Others you may be familiar with are interfacing inside collars and lapels, and Tyvek[®], used for disposable coveralls, mailing envelopes, and house wrap. Nonwovens are very inexpensive to manufacture.

Take it Further

Explore the many different weave and knit patterns by examining additional fabrics under a lens. Even the clothes you are wearing are worth a look!

Graph the over and under yarn interlacing pattern of a woven fabric on graph paper. Try this for plain weave and twill (denim).

Look at fabrics under a microscope so that young designers can see individual yarns. Find fabrics with larger yarns (wool can be a good choice). Tease a yarn out of the fabric and untwist it until you can see the individual fibers to observe that yarns are made up of many fibers.