

3

Clothes : Fibre to Fabric

Learning Objectives

- To understand the importance of clothes.
- To know about the materials needed for making clothes.
- To understand and learn about the sources of fabrics.
- To learn about the development of clothing materials.

WEB OF CLOTHES

Imagine that in the month of December, you are wearing a cotton shirt while going to your school. What would be your mother's reaction to it? She would certainly ask you to wear some woollen clothes so that you are protected from the chilly winter and does not fall ill due to cold. Have you ever wondered why woollen clothes keep your body warm instead of cotton clothes? You must have observed people wearing particular types of clothes in different seasons.

Some of the important aspects of wearing clothes are as follow:

1. Clothes protect our body from heat and cold.
2. Clothes save human beings from insect bites.
3. In civilized society, clothes play a vital role in appearance.
4. Clothes enhance the personality of the person and instil confidence (if worn tastefully and intelligently).

Clothes are, actually, woven fabrics. Different types of cloth materials are made of

Season	Types of clothes people wear
Summer	Cotton, Linen
Winter	Woollen, Cotton, Synthetic
Autumn	Silk, Cotton
Rainy	Cotton, Synthetic



People wearing different clothes in different seasons.

Page no 2

different fabrics. Your school bag, travelling bag, footmat, carpet, curtain, rope, etc. are all made up of different fibres.

FIBRE AND FABRICS

The fabrics that are used to make clothes are made up of yarns and these yarns are further made up of fibres. The thin strands found at the end of a thread are again made up of very thin strands called fibres.



Objects made of different fibres

Activity 1

Visit a variety shop having all types of clothes. Touch a cotton shirt, a silk scarf, a woollen sweater, a synthetic jacket/wind cheater, a jute bag etc. Do you find them different from each other?

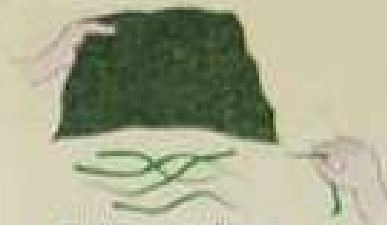
Now, at home, ask your mother to give you all types of clothes. Close your eyes and then try to find out if you can recognize the type of a cloth by feeling or touching it.

Activity 2

Take a piece of cotton cloth (you may collect left out pieces from a tailor). Now hold a loose thread from one end of this cloth and try to pull it out till it comes out completely. If you keep on pulling out these threads, soon the fabric will be converted into loose threads only. These loose threads are **yarns**.

Now hold a single thread (or yarn) and keep on scratching one of its ends with

your nails. What do you observe? You will observe many split ends of this thread. These split ends are **fibres** which are twisted together to form yarn.



Pulling out fibres

Test Yourself

1. What kind of clothes do you wear in winter season? Why?
2. Why do you need to wear clothes?
3. Draw a flow diagram showing relation between : yarn, fabric and fibre.
4. In India, where could you find people wearing woollen clothes even in the months of April and May? Why?

TYPES OF FABRICS

Fabrics are of two types: naturally occurring and synthetic fibres.

NATURAL FIBRES

The fibres of some fabrics are obtained from plants and animals. Such fibres which are obtained from natural things are known as **natural fibres**. Some of the natural fibres that come from plants are cotton, jute, linen, etc.

Cotton

The most popular natural fibre that comes from plants is cotton. It is a soft fibre which grows in the form of pods around the seeds of a cotton plant.

History of cotton : People in India usually wear cotton clothes as India's climate is generally warm. Cotton clothes are soothing in hot weather because they absorb sweat.

India was the first place where cotton was grown in the Harappan period. From archaeological survey, it has been found that cotton is in use since 2500 B.C. Cotton plant can

be considered as native to India. USA, Egypt, Russia are also producers of cotton. People in Europe came to know about cotton only 650 years ago but have evolved as the producers of cotton at the cheapest price.

Cultivation of cotton : Cotton is cultivated as an annual shrub. In India, it is grown mainly in the states of Maharashtra, Rajasthan, Punjab, Gujarat, Chennai and Madhya Pradesh.

Cotton is a warm season crop and needs moderate rainfall distributed throughout the growing season. Warm and humid climate having temperature of over 16° C with fertile soil having good moisture holding capacity are the most suitable conditions for cotton farming. Its growth is best in deep black soil as it can retain a large amount of moisture. Excessive rainfall causes damage to the cotton crop.

Obtaining cotton from plant : During spring season, cotton seeds are planted which grow regularly and within 50-60 days. These seeds develop into bushes bearing white flowers. Later the petals of the flower fall down leaving a small green seed which gradually turns into a spherical structure of the size of a lemon. These spherical seeds are called **cotton balls**.



Cotton ball

On maturing, these cotton bolls burst open and cotton fibres covering the seed can be seen. This cotton fibre becomes fluffy on drying in the sunlight. A ready field with cotton appears as if it is snow clad. From there, the cotton is picked up either manually or by machines.

Separation of cotton from seeds After handpicking the cotton bolls, the cotton fibre is



Cotton field

separated from the seeds; generally by combing or by passing the bolls through roller gins. This process is known as **ginning**.



Ginning of cotton

The cotton seed (known as *binola* in India) get separated from the fibre. The oil extracted from cotton seeds is used in soaps. (The separated fibres (known as *lint*) are then compressed and rolled in large bundles, known as bales and the process is known as **baling**).



Cotton bales

Preparing Cotton Yarn

On smaller scale, the clean cotton obtained after ginning is laid parallel and twisted to form **sliver** (known as *punee*). Then **sliver** is spun into yarn by using a hand spindle (known as *taklee*) or a spinning wheel (known as *charkha*). The

Page no. 4

spinning wheel was popularized by Mahatma Gandhi to protest against the use of imported clothes.



Gandhiji spinning charkha

Activity 3

Take a cotton ball obtained after ginning. Pull out some cotton with your thumb and forefinger. Slowly and carefully, pulling it out, twist the fibres gently. What do you obtain?



What you get in activity shown above is the cotton yarn.

In large industries, the cotton from bales is cleaned and then straightened which is gradually converted into thick rope like strands called **sliver**. This sliver is then twisted to form yarn.

Preparing fabric from yarn

The two main and popular processes to make fabric from yarn are weaving and knitting.

Weaving

You have already learnt that a fabric is a collection or arrangement of yarns. The method of arranging two sets of yarns to get fabric is

known as weaving.

You must have seen people weaving the seats of cane chairs, coils of plastic canes, mats etc.



Weaver weaving a cane chair

Activity 4

Take some strips of two colours of glazed paper, approximately 8 cm in length and 1 cm in breadth. Now lay parallel the strips of one colour (say, blue) on a chart paper and paste their ends on the chart paper. Now, weave strips of another colour (say, yellow) one by one through the previously laid strips



as shown in fig. What do you get?

You will get a woven mat which is similar to the woven fabric.

As you have done weaving in the above activity, similarly, two sets of yarns are woven together on looms to weave a fabric. These yarns are very very thin in comparison with the paper strips you have used. On a small scale,

Weaving is done by **handlooms** which are hand operated machines as shown below in the figure.



Handloom

On a large scale, in industries, looms are operated by electric power and are known as **powerlooms**.



Powerloom unit

In both kinds of looms, one set of yarn is placed lengthwise which is called **warp** and another set of yarn called **weft** are spread across the warp at right angle. A **shuttle** is used to weave the weft across warp. Yarns of the warp are lifted alternatively to let the shuttle pass through them. (In activity 4, strips of blue colour paper can be thought to be warp and strips of yellow colour symbolize weft. Your hand is working as shuttle).

Knitting

Knitting is another process to prepare fabric from yarn. Unlike weaving, it is done using a single yarn to make a piece of fabric. As they are knitted with a single yarn, hence the fabric gets unravelled on pulling a single string from

fabric. Knitting can be done either by hands or on machines. You must have seen your mother or grandmother knitting a sweater for you. Sweaters, socks, hosiery, T-shirts and many other cotton clothes are prepared by knitting.



Knitting

Uses of cotton

1. The main use of cotton is in textile industry.
2. Cotton is used as filling in pillows, quilts, mattresses etc.
3. Cotton finds use in hospitals in bandaging, cleaning etc.



Some of the commonly made varieties of cotton cloth are:

- **Muslin:** It is a sheer to coarse plain woven cotton fabric. It comes in natural colour or is dyed.
- **Organdy:** It is a very thin, transparent cotton with a crisp finish.
- **Poplin:** It is a plain weave fabric with a cross-wire rib.

Jute

Another important natural fibre is **jute**. It is comparatively cheaper than cotton or any other natural fibre. It is a long, shiny, soft plant fibre obtained from jute plant (known as *patsun*) that can be spun into coarse and strong threads.

Cultivation of Jute: In India, jute is cultivated during rainy season. It is mainly grown in West Bengal, Bihar and Assam. Other than India, it is grown in Bangladesh, Thailand, China, Nepal, Bhutan, Pakistan etc. Jute grows