SKILL MANUAL
CLASS VIII

Khadi

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COLLAGE


सत्य ही ईश्वर है
TRUTH IS GOD


Khadi India
खादी ही खरीदें
क्योंकि यह स्वदेशी है, जो कत्तिन एवं बुनकरों द्वारा
हाथ से तैयार किया जाता है।
क्योंकि यह हर मौसम के अनुकूल है।
क्योंकि यह वातानुकूलित है, जो सर्दियों में गर्म व गर्मियों
में ठण्डक का एहसास देता है।

FOREWORD

We cannot always build the future for our youth, but we can build our youth for the future."—Franklin D. Roosevelt

With an aim to overcome the social status hierarchy associated with Skill(Vocational) Education, the NEP 2020 has recommended integration of Skill Education Programme in mainstream education in all the educational institutions and exposing students at early ages to quality Skill Education through the middle and secondary school and smooth integration into higher education/vocation. The world of academia has an important responsibility to meet the requirements of the practical world and prepare students with the knowledge and skills that they require to adapt to the new world order. In this direction, it is prudent to expose them to such concepts early on their educational journey. This handbook on 'Khadi' is a step in this direction. This Khadi manual aims to introduce students to the world of textiles, primarily Khadi and its importance through hands-on activities. Khadi is very closely associated with India's freedom movement and it's a matter of pride for every Indian. The underlying thought behind creating this manual is to help young learners explore traditional as well as modern textiles along with its scientific understanding. We would like to congratulate Dr. Jyoti Gupta(Director Principal, K.R Mangalam World School, G.K-II), Princess Diya Kumari Foundation for their constant support to accomplish the project successfully. We would also like to thank all members of team who worked towards completion of this manual. Due care has been taken to keep the book content simple and easy to understand. The progression of topics too is carefully designed as it transitions from the most fundamental concepts of Khadi in a guided manner. We sincerely hope that the handbook is well received by the students, and they can leverage the learnings provided therein. Any suggestions for the improvement of the book are welcome.

INDEX

UNIT 1
KHADI - ITS DEVELOPMENT

Learning Objectives:

1. Learners will be able to list the varieties of khadi fabric available in India.
2. Learners will be able to analyse the reasons for rising availability of khadi in the market and the changing trends.

Learning Outcomes:

1. Learners will be able to analyse the development taking place in the making of Khadi.
2. Learners will be able to research and analyse the demand and market of Khadi cloth.

Development of Skills and Competencies:

1. Effective Communication, Citizenship and Critical Thinking
2. Thinking and comprehension skills

Introduction

In India, before spinning of cotton and silk yarn was influenced by technology in the early 19th century, all cotton and silks were hand-spun and hand-woven producing a highly popular fabric called Khadi.

Khadi is a naturally and indigenously sourced textile obtained from cotton, silk or jute fibres. The production of Khadi involves a machine called Charkha, operated manually to spin the threads into fabric. Its entire process of manufacturing is sustainable.

The symbolism of Khadi was immense during India's Independence struggle as it

signified self-reliance, a means for job creation in the rural areas and poverty alleviation; but post-independence, modernisation and industrialisation were the critical priorities for the Indian government. Hence, a large number of highly mechanised power looms and cotton mills were set up in the urban areas, which, to some extent, depleted the handloom industry in the rural areas.

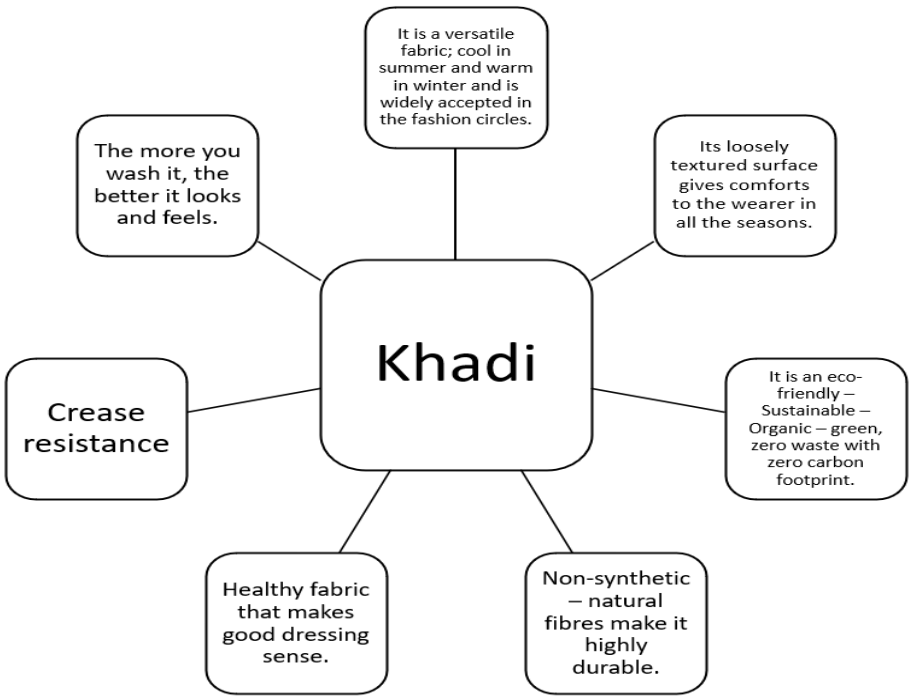
When trade restrictions were abolished in the textile sector from 2005, there was an upheaval in terms of competition. Developing countries, such as India, wanted to proceed in improving their market share using mechanised power looms and textile mills. Consequently, the Khadi Industry faced severe competition from power loom and mill sectors.

Promotion & Development of Khadi in India

In 1925, All India Spinners Association was established to produce and sell Khadi, the organisations worked day and night intending to improve Khadi production techniques and provide employment to India's improvised weavers.
The Indian government, after independence, established the All India Khadi and Village Industries Commission (KVIC) in 1957, taking over the former All India Khadi and Village Industries Board.
The Khadi and Village Industries Commission is charged with the planning, promotion, organization and implementation of programmes for the development of Khadi and Village Industries in rural areas, in coordination with other agencies engaged in rural development. Ever since then, KVIC has been making an effort to develop the Khadi industry in India.

Khadi - It's demand

Indian khadi production includes products such as fabric, garments, accessories and furnishing items such as curtains, bedsheets and napkins. For its uniqueness and translucent quality, there has been an increasing demand for Indian khadi products from global markets such as the US, the UAE, the UK and Germany. The properties of Khadi that makes it stand out of the box are-



Other than these:

- The fabric is approximately 3.24 times energy efficient than mill cloth.
- The rugged surface of the fabric gives it a unique texture because of which, no two fabrics will be identical, which further leaves it inimitable and exclusive in terms of feel and texture.

'Taking Khadi local to Global"

Indian Khadi fabrics are sold in both domestic & export markets. However, the share of "khadi export" in the total textile sector is very low, i.e., less than 0.22% of total textile exports. This may be due to its slow manufacturing process through hands resulting in less production, more demand globally & also the higher price.

Hence, focus on exports of this sector becomes important. End to end marketing strategy with support from trading houses is the need of the hour.

Khadi in Market- Trend and Fashion

There are several varieties of Khadi fabric available in the market. However, there are four major groups in which it is divided, based on the material with which has been woven. They are:
1. Cotton Khadi
2. Silk Khadi (Eri, Muga and Pat)
3. Woollen Khadi
4. Poly Khadi

1. **Cotton Khadi** - This fabric is generally made from pure cotton yarns. Khadi cotton also has multiple variations, according to the demand of the clothing and fashion industry, like "Textile Khadi Cotton" and "Handloom Khadi Cotton".

Fig 1.1 Cotton Khadi
https://www.flickr.com/photos/publicresourceorg/29728376942

2. Silk Khadi - This fabric has two subtypes of fabric, the first is pure Khadi silk which says the fabric is woven from completely silk yarns, the second type includes blending of several yarns. Khadi Silk with a mixture of other yarns produce varieties like- Matka Khadi Silk,

Tussar Khadi Silk, Printed Khadi Silk, and Pattu Khadi Silk.

Fig 1.2 Silk Khadi
Source: wuzhen-brocade-silk-weaving-old-technology-wooden-loom-silk-thread-82277

3.**Woollen Khadi** - Under this category, Khadi is woven from wool.
4. **Poly Khadi** - Khadi blends with other fibres to make raw Silk Khadi, Tussar Silk, Matka Khadi, Pondura Khadi and many more. All these are specially produced to make Khadi sarees.

The Indian market now has options of designer Khadi sarees and georgette Khadi sarees which are well appreciated by the buyers, but abroad, the demand for pure Khadi cotton fabric still tops the priorities. Printed Khadi Cotton with Geometric prints and many other prints are very much popular in the Khadi fabric world.

Khadi from Poor man's fabric to Couture

Since independence, the journey of khadi has been about maintaining a balance between traditions and modernity. Khadi stands for what's traditional, but every tradition has to undergo change to stay relevant. Khadi has seen a new wave of acceptance, thanks to many fashion designers like Sabyasachi Mukherjee, Ritu Kumar and Rohit Bal, to name a few. Brands like Fab India and Nature Alley have made their name with khadi products.

Even KVIC (Khadi & Village Industries Commission)has decided to take a time leap, appointing Ritu Beri as their advisor, who wishes to change khadi's image from boring to chic. Promoting khadi's organic and zero carbon footprint nature, going the e-commerce route, and partnering with non-khadi players like Raymonds are but a few welcome steps in this direction. Creation of new designs and products like denim, trousers, and T-shirts suited for youngsters have created a vibrancy in the market.

In 1989, KVIC organised the first Khadi fashion show in Mumbai, where around 80 styles of Khadi wear were showcased. The prestigious designer of the Indian fashion industry, Ritu Beri presented her first Khadi collection at Delhi's craft museum, and now Khadi is making a global appearance.

Fig 1.3 Khadi- Branding in trendy fashion circles

Source: https://www.pexels.com/photo/alluring-woman-in-yellow-sari-dress-7076756/

Khadi Selling units in India - Brands that deals in khadi

Post-independence, the Khadi & Village Industries Commission (KVIC) was formed to develop and encourage the production of the fabric in the country. Today, large-scale apparel manufacturers are collaborating with the KVIC to use khadi in new collections and product lines. The Aditya Birla group launched 'Khadi by Peter England' for its menswear brand in late 2017, while Raymond worked with 100 khadi clusters at the grassroots level to launch a luxury collection called 'Khadi, the Story Re-Spun' in its Indian and international stores in 2018.

Fig 1.4 Raymond used khadi in both menswear and womenswear to change the perception of khadi

Fig 1.6 Peter England

Fayakun Design Studio Metaphor Racha

Fig 1.7

Nature Alley Malkha Red Sister Blue

Fig 1.8

Usually, we associate khadi with beautiful and comfortable attires, but nowadays, Khadi is not only limited in making clothes but the variety of products we use in our day to day life are made from it. Apart from graceful garments, Khadi is now popular in bags, cushions, footwear, face masks and various other adorable products.

Fig 1.9

Source: https://pxhere.com/en/photo/1089129

There are so many well-established and emerging hand-spun Khadi manufacturer and exporter businesses growing rapidly and playing a pivotal role in the Indian economy along with textile industries by producing different types of Khadi Fabric.

In the age of growing mindfulness towards both the self and the environment, and with support from both the government and designers, there's hope for home-grown industries such as this one to flourish.

Khadi is not only about tradition or fashion but it’s more than that. It’s about promoting sustainable fashion and remembering the freedom struggle of India.

Post Learning Exercise:

Read the passage given below and answer the questions that follow:

The Khadi Sector in the Fashion industry has grown rapidly in recent times. KVIC through its marketing initiatives is rigorously working to make Khadi a global brand. Holding various exhibitions in India and globally, Khadi is trying to maximize its reach within its consumers. Also, to promote Khadi amongst the youth community, KVIC is approaching schools, colleges and industries to explain the importance of Khadi. Another effort by KVIC to promote Khadi is their collaborative efforts with big companies like Raymond, Aditya Birla Fashion and Retail, Arvind mill etc. to popularise this fabric. Over the period of time, Khadi export has also increased due to the surge in demand for handmade and sustainable fabric options in the global market. The recent growth of the Khadi sector speaks volumes about the importance of Khadi in contributing towards the Indian economy.

Q1. What do KVIC's market initiatives reflect?

Q2.How can we say that Khadi is contributing towards growth of the Indian Economy?

Q3. What steps are being taken by the KVIC to popularise Khadi among the youth?

Learning Engagement

Making of a Design Catalogue - Create your own brand that deals in Khadi fabric and prepare a design catalogue to brief your potential customers about your products.

UNIT II
LOOM- THE KARGHA

Learning Objectives:

1. Learners will gain knowledge about different parts of a loom.
2.They will learn about the differences between handlooms and power looms.

Learning Outcomes:

1.Learners will be able to identify the parts of Khaadi (Kargha) and operate Kargha.
2. Learners will be able to differentiate between different types of looms.
3. They will be able to define and demonstrate weft and warp as it applies to weaving.

Development of Skills and Competencies:

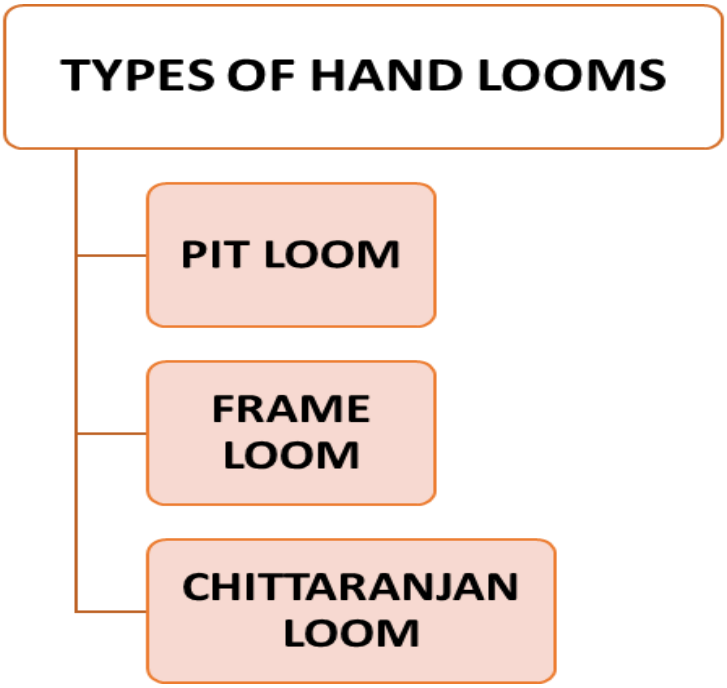
1. Effective Communication, Creativity, Citizenship and Critical Thinking
2. Initiative and problem solving

Introduction:

A loom is a device used for weaving cloth. It is the focal point of the whole process of cloth production. A loom is a mechanism or tool used for weaving yarn and thread into textiles.

TYPES OF LOOMS:

1. **HANDLOOMS**
2. **POWER LOOMS**



1.PIT LOOM:

This loom was invented in 1766 B.C. in Egypt.
The weaver places his legs in the pit where there are two pedals which enable the warp threads to open so that the weft shuttle can pass through freely.

https://youtu.be/fSs0_i3BFho

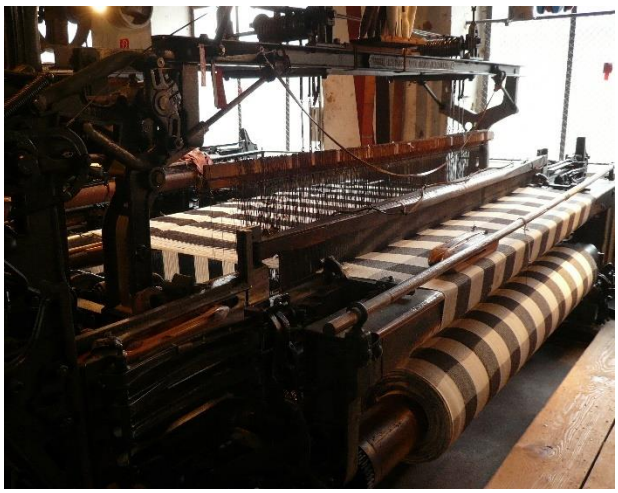


Fig. 2.1 Shuttle Pit Loom
Source: https://commons.wikimedia.org/wiki/File:Webstuhl_1939_Tuchfabrik_Mueller.jpg

Fig. 2.2 Weaving Machine
Source: https://www.geograph.org.uk/reuse.php?id=4094430

2. Frame Loom:

A frame loom is a weaving device where you apply the warp directly to the frame without the use of a warping board, mill, or peg first. The warp is generally hand manipulated during the weaving process either by manual weaving (with a tapestry needle) or through the use of shed tools.
Frame looms almost have a similar mechanism that ground looms hold. The loom is made of rods and panels fastened at right angles to construct a form similar to a box to make it more handy and manageable. Frame loom is being utilized even now because of its portability and economy.

Fig. 2.3 Frame Loom
Source: https://www.pexels.com/photo/photo-of-person-weaving-4219657/

Fig. 2.4 Frame Loom Weaving

Source: https://commons.wikimedia.org/wiki/File:Loom,_wooden_frame_by_Philander_Chace,_iron_work_by_Seth_A._Capron,_c._1870_-_Old_Colony_History_Museum_-_Taunton,_Massachusetts_-_DSC03908.jpg

Chittaranjan Loom:

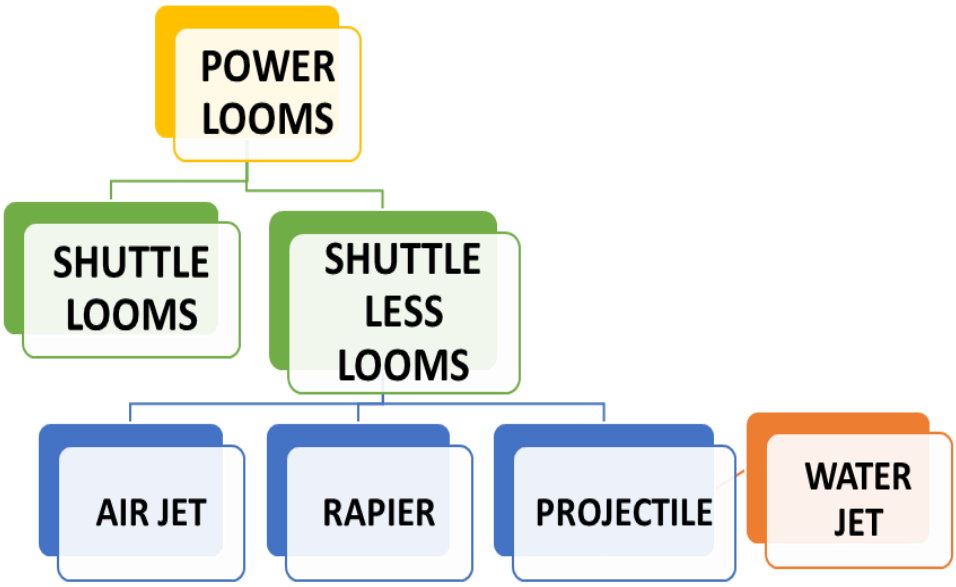
Chittaranjan loom is a type of semiautomatic loom of sturdy construction made of iron and wood commonly used in Bengal.

Fig. 2.5 Chittaranjan Loom

Source: https://commons.wikimedia.org/wiki/File:Pedal-driven-weaving-machine.jpg

- The principal characteristic of this loom lies in its beating up, take up and let off motion.

- For beat up, two wheels upon the top shaft connect the slay at two ends with two livers.
- A five wheel positive take-up motion has been adopted to regulate pics per inch.
- Production rate is high.
- Shedding & picking motion in this loom work as a fly shuttle loom.



Power Loom:

A power loom is a mechanised loom, and was one of the key developments in the industrialization of weaving during the early Industrial Revolution.

This innovation sped up the process of weaving cloth immensely, allowing for much more cloth to be produced, and at a much faster rate. Also, the process of weaving was simplified considerably, allowing for less skilled labourers to operate the looms, cheapening labour costs for the manufacturers. This invention, in its perfected edition, made the weaving process faster, cheaper, and generally less complicated for textile manufacturers.

Shuttle Loom:

A shuttle loom is a conventional loom type. It is a tool designed to neatly and compactly store a holder that carries the thread of the weft yarn while weavingwith a loom. Shuttles are thrown or passed back and forth through the shed, between the yarn threads of the warp in order to weave in the weft.

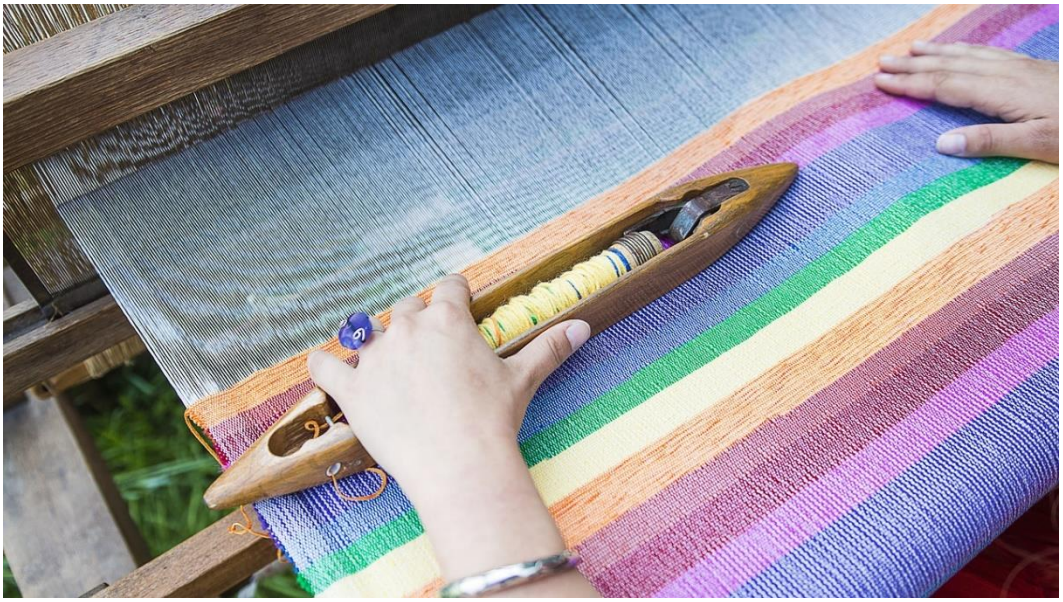


Fig. 2.6 Shuttle Loom

Source: https://www.needpix.com/about

The simplest shuttles, known as "stick shuttles", are made from a flat, narrow piece of wood with notches on the ends to hold the weft yarn. More complicated shuttles incorporate bobbins or pirns.

Shuttleless Looms:

Fig. 2.7 Air Jet Loom
Source: Textile_manufacturing

1.Air Jet Loom:

This loom uses a jet of air to propel the filling yarn to strengthen the shed and requires uniform filling yarn. They are more suitable for use with medium weight yarns than very light and very heavy yarn.

FEATURES:

- Less power consumption
- Light to medium fabric produced
- Air jet std. - width 190 cm.
- Highest weft insertion perform (600 ppm)
- Multicolor weft insertion up to 8

2.Water Jet Loom:

Fig. 2.8 Water Jet Loom

Source: https://commons.wikimedia.org/wiki/File:Waterjet-MidRailGantry-jetedge.jpg

A pre-measured length of filling yarn is carried across the loom by a jet of water. It can produce superior quality of fabrics.

FEATURES:

- This type of loom is suitable for non absorbent fiber like synthetic fabric.
- Less power consumption
- Highest weft insertion (600 ppm)
- Weft yarn package weight 3.6-4. I kg
- Treated water is used by a pump nozzle.

3.Rapier Loom:

Fig 2.9 Rapier Loom

Source: https://commons.wikimedia.org/wiki/File:Bradford_Industrial_Museum_Saurer_400S_Rapier_Loom_%281980s%29_4961.jpg

There are two types of rapier looms. Long rapier & double rapier long/single rapier that carries the weft across the width from one side of the loom to another.Double rapier that is one on each side of the loom. One rapier feeds the filling yarn halfway through the shed of warp yarn to the arm on the other side, which reaches in and takes it across the rest of the way.

FEATURES:

- Fancy fabric produced
- Production costly
- Power consumption moderate
- Simple mechanism
- Suitable for weft patterning
- Standard rapier width 190 cm.

4. Projectile Loom: This picking action is accomplished by a series of small bullet projectiles which grip the filing yarn and carry it through the shed and return empty.

Fig. 2.10 Projectile Loom
Source:
https://commons.wikimedia.org/wiki/File:Sulzer_projectile_weaving_loom.jpg

FEATURES:

- Accommodator used to reduce tension
- Power consumption is less (3 km-hr)
- Of Projectile Il to 17
- Width minimum of 190 cm
- Width maximum of 540 cm
- Multiple fabric produce
- A double beam single fabric can be produced in the projectile.

Post Learning Exercise:
Q. Research and find out the advantages and disadvantages of:

a. Pit Loom
b. Frame Loom
c. Chittaranjan Loom

Reference Source:
https://textiletutorials.com/pit-loom-in-weaving-definition-features-advantages-and-disadvantages/#:~:text=What%20is%20Pit%20Loom%3F,of%20slay%20and%20shuttle%20boxes.

Learning Engagement:

DIY - Make your own Frame Loom

Reference Source:

- https://foxonanisland-com.cdn.ampproject.org/c/s/foxonanisland.com/2014/10/22/how-to-make-a-diy-lap-loom/amp/
- https://youtu.be/GQHf8TlYC50

UNIT III
KHADI IN MAKING (Practical)

Learning Objectives

1. Learners will make the yarn by using Amber Charkha and Solar Charkha
2. Learners will make a cloth by using Loom

Learning Outcome

A. Learners will be able to use charkha and make thread.
B. Learners will be able to use the Kargha.
C. Learners will be able to weave khadi cloth out of the thread using Kargha

KHADI IN MAKING

Khadi is a hand-spun and hand-woven fabric from India, Bangladesh and Pakistan mainly made out of cotton. This is an artisanal heritage handloom textile, made entirely in hand crafted processes—from spinning the threads on a *charkha* (spinning wheel) to weaving on handloom.

The major process steps are: Pre-loom process

- Sorting of Yarn.
- **Dyeing**- Dyeing for handloom is normally done in and around weaving villages.
- Winding- Yarn in the hank form is wound onto bobbins in this process. This is the first step in transforming the yarn from the hank form to a linear form. Dyed hank yarn is wound onto bobbins with the help of charkhas. This process enables the laying out of yarn lengths for weaving. Bobbin winding is done by the weaver.
- **Warping-** The warp is a set of threads attached to the loom lengthwise before weaving begins. Warping is the process of creating the base yarn that runs along the length of fabric through which the "weft" yarns are filled in to make the fabric. Typically, a yarn is aligned by wrapping them around the circular warping drum.

Street Sizing- The warps are stretched out onto two beams and natural adhesives are applied to add strength to the yarn and lubricate it to withstand the rigours of weaving. In most handloom centres, rice starch / gruel is mixed with coconut / groundnut oil and applied as "size"

• **Material-** Sizing is carried out by weavers or specialists in the village. Since this activity is done on the street, it is called "street sizing".

• **Attaching the Warp onto the Loom-** Individual warp threads are drawn through heddles taken through a set of reeds and tied onto beams located on both ends of the loom. The heddles separate the warp into two sections which allows the weft threads to pass between them easily. Checks and stripes are created by segmenting the warp and weft yarn. For motifs, looms are equipped with "dobbies" or "jacquard" cards which help in lifting segments of warp yarn into the weft. Heddles are made out of rods or cords, each with an eye through which the warp thread is drawn. Reed is a comb like frame that pushes the weft yarn firmly against the finished cloth after each insertion.

Weaving- Weaving is the oldest and most popular method of creating a fabric. It is a method of textile production in which two distinct sets of yarns or threads are interlaced at right angles to form a fabric or cloth. A woven fabric has lines of interlaced yarn creating a cross-like pattern as the thread or yarn used in weaving is interwoven in two directions,at right angles. The longitudinal yarn that runs down the fabric is known as Warp, lateral thread that runs across the width is known as Warp.
https://youtu.be/QlpFDsWipI8
https://youtu.be/X1W5Qw_ul6c

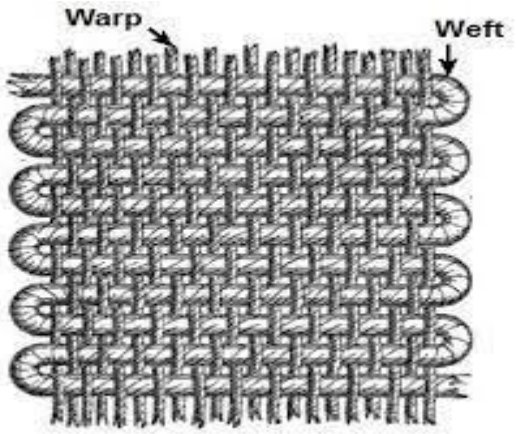


Fig 3.1 Weaving
Source: https://commons.wikimedia.org/wiki/File:Warp_and_weft_2.jpg

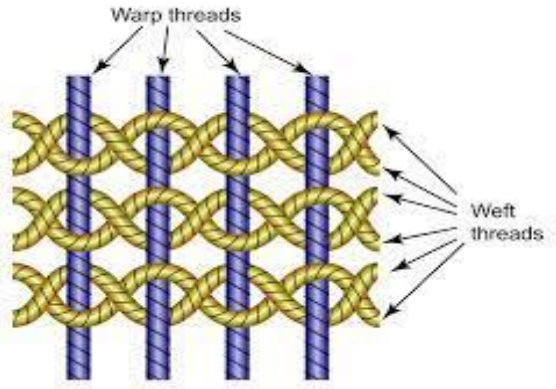


Fig. 3.2 - Source: https://commons.wikimedia.org/wiki/File:Gauzeweave.svg

Fig 3.3 Weaving

Source:
https://commons.wikimedia.org/wiki/File:WEAVING_WITH_A_LOOPED_PILE_WEFT_ON_THE_WARP-WEIGHTED_LOOM.jpg

LOOM

Loom is a machine which is used to manufacture woven fabric. Looms are the devices used to weave. They are what hold the longitudinal warp threads in place, as the weaver weaves the "filling" or weft threads through them. The weaver can choose different colours to create specific patterns. They can also change the method of this weave to create different textures or patterns.

https://youtu.be/29yW-hL4NfI

PARTS OF LOOM

Warp beam
The warp beam, which holds the lengthwise yarns, is located at the back of the machine and is controlled, so that it releases yarns to the weaving area of the loom, as needed.
Whip roll
This is a guide roller which directs the warp threads on their way to the lease rods and heddles.
Heddle or Heald:
It holds the warp yarns in a place. It also helps in shed formation. It is used for determining the warp thread density in a fabric.
Heald shaft:
It is also known as harness.A harness is a frame to hold the heddles.The wood or metal frame that holds the heddles in a certain position in the loom is called harness. Number of harnesses available in the loom usually has more than one.The harness position, the number of

harnesses, and the warp yarns that are controlled by each harness, determine the weave pattern or interlacing.

Shuttle:

This is used for the interlacement of the warp & weft yarns.The filling thread is wound on a bobbin which sets into a shuttle or bobbin container. As the shuttle passes back and forth through the warp shed, it releases thread from the bobbin and so forms the filling cloth.

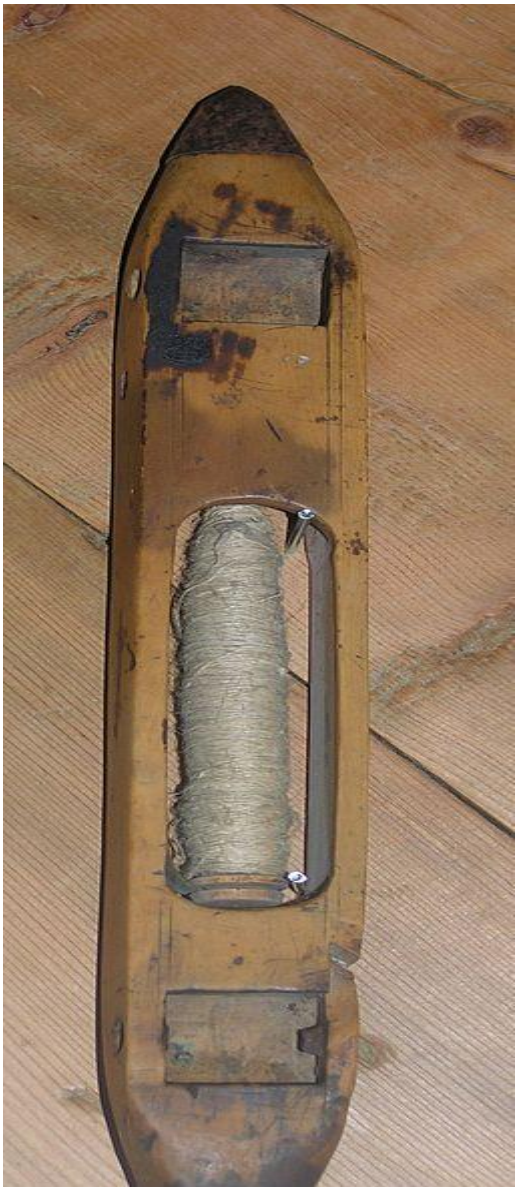


Fig 3.4 Shuttle
Source: Gandhi Museum, Delhi

Shuttle box:

It is a box which is used to retain the shuttle in the picking motion.

Picker:

It is placed in the shuttle box. It may be formed by leather or other metals. It is a part which is attached with a spindle. It gets motion from picking arm and this motion helps the shuttle to pass one side to another side.

Fig: 3.5 Picker
Source: Gandhi Museum, Delhi

Beams:
It is a cylindrical body in which the multiple warp ends are used in such a way that permits the removal of yarns as a warp sheet.

Front rest:
It is a fixed roller placed in front of the loom. It is situated above the cloth beam & works as a guide for the cloth to wind.

Lease rods:
The division of warp yarns into one & one, two & two etc is termed as lease. The two rods passed between the two divisions of warp yarns. Those are called lease rods.

Slay:
Slay contains the reed.

Reed:
It is generally comb which is used to separate yarns. It also beats up the yarns in weaving process.This is inevitably a combination made up of steel wire rods set vertically in a frame. The spaces between the wires are known as splits or dents and are kept even and parallel. This is the first function of reed.
Its second function is to feed the filling thread into position. To do this it has to move in a back and forth motion.

Treadle:
The treadle is a paddle or lever placed under a loom. Here a thread is connected with the help of cords.

Temple:
It is the roller device on a loom that hold the cloth at a proper width.

Weaving process

Weaving has three following main processes, which are common in all types of weave: Shedding, Picking, Battening

1) The loom has two pedals (also called treadles), in the pit at the feet of the weaver.
2) The pedals are attached to harnesses which in turn have heddles (or heals) attached to them.

3) The harnesses hang above the warp and the heddles are suspended from them. The heddles are loops of string which have a single thread from the warp running through them.
4) When the weaver pushes down on a pedal it raises the harness with the attached heddles which in turn raise the warp threads.
5) If the threads from the warp are numbered. One of the two pedals raises the even numbered warp threads and the other pedal raises all the odd numbered warp threads.
6) Pressing down on a pedal is called **Shedding** because it creates a shed, a vertical space, between the raised and unraised warp threads. Once the shed has been opened, the weaver then has to pass the weft through it.
7) The weft thread is spun on a quill, a type of spool, which is then placed inside a shuttle.
8) The shuttle (Fig:3.4) slide smoothly across the warp. In the past the weaver would have pushed the shuttle through the shed by hand. These days they use what is called a fly shuttle. There are two small loose boxes at each end of the weft which the shuttle fits into. These boxes have strings attached to them which are joined together in the middle of the loom. By holding the two strings and jerking to either the left or the right, the weaver can propel the shuttle across the width of the warp into the box on the opposite side. This action is called **Picking.**
9) The next job is to maintain the tightness of the weft. This is done through **Battening**. A Reed is used for Battening. It looks a bit like a comb. The reed is positioned across the weft, perpendicular to the warp. And it holds each thread of the warp apart.
10) After each picking the weaver pulls the reed towards themselves. Battening ensures that the weft, after it is propelled across the warp, is tightly pressed up against the previous weft thread and ensures that ultimately the fabric ends up strong and tightly woven.

https://youtu.be/pyOoro0vjPw
https://youtu.be/5pkEAqSuYKc
https://youtu.be/9OHbJQ90hfY
https://youtu.be/fa1WrHOTjxY

LEARNING ENGAGEMENT

1. Make khadi yarn by using solar charkha and Amber charkha
2. Dye the yarn made from the Solar Charkha using any colour of your choice.
3. Weave the yarn into a piece of cloth.

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GLOSSARY

1. **Sustainable** - Made in a way that causes little or no damage to the environment and thereforeable to continue for a longtime.

2. **Exports** - Goods that are produced in your own country and shipped to another country for sale.

3. **KVIC** - Established in 1956, Khadi Village Industrial Commission (KVIC) is a statutory body created by an act of parliament. It is credited with planning, promotion, organization, & implementation of the program for the development of khadi & other village industries in the rural areas along with the other agencies engaged in rural development.

4. **Apparel** - (Clothing & Fashion) Something that covers or adorns, especially outer garments or clothing.

5. **Loom -** A loom is a device used for weaving cloth.
6. **Tapestry needle -** A short needle with a long eye and a blunt point.
7. **Shuttle Loom -** A shuttle loom is a loom where weft yarn is inserted through the warp yarn by the means of a shuttle.
8. **Shuttleless Loom - I**n a shuttleless loom the weft yarn is inserted through the warp yarn by means of projectile, rapier, air or water.
9. **Weave:**Form (fabric or a fabric item) by interlacing long threads passing in one direction with others at a right angle to them.
10. **Warping:**The thread that is strung over the loom vertically, and holds the tension while you weave.
11. **Weft:** This is the thread that you weave between the warp threads, creating your patterns and structure in the weave.
12. **Textile:** A cloth made by hand or machine


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WORLD SCHOOL