



**Handicrafts and Carpet  
Sector Skill Council**

# Participant Handbook

Sector  
**Handicrafts and Carpet**

Sub-Sector  
**Bamboo Handicrafts**

Occupation  
**Bamboo Basket Maker**

Reference ID: HCS/Q 8704, Version 1.0  
**NSQF Level 3**



## Bamboo Basket Maker

Published by

Printed in India at

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Handicrafts and Carpet Sector Skill Council

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**Shri Narendra Modi**  
Prime Minister of India

“ Skilling is building a better India.  
If we have to move India towards  
development then Skill Development  
should be our mission. ”



## Certificate

### COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

HANDICRAFTS AND CARPET SECTOR SKILL COUNCIL

for

### SKILLING CONTENT : PARTICIPANT HANDBOOK

Complying to National Occupational Standards of

Job Role/ Qualification Pack: "Bamboo Basket Maker" QP No. "HCS/Q 8704, NSQF Level 3"

Date of Issuance:

Valid up to\*: April 10<sup>th</sup>, 2018

\*Valid up to the next review date of the Qualification Pack or the

'Valid up to' date mentioned above (whichever is earlier)

Authorised Signatory  
( Handicrafts and Carpet Sector Skill Council)

## Acknowledgements

Handicrafts and Carpet Sector Skill Council would like to express its gratitude to all the individuals and organizations who have contributed in the preparation of this trainee manual.

We would like to acknowledge the efforts put in by the HCSSC team, our Governing Body members along with our Industry Partners who collaborated in the preparation of the different modules. Sincere appreciation is also extended to all who provided subject matter inputs and review for the individual modules.

The preparation of this manual would not have been possible without the support of the Handicrafts and Carpet Industry. The Industry feedback has been extremely encouraging from inception to conclusion & it is with their inputs that we have tried to bridge the skill gaps existing today in the Industry.

This participant manual is dedicated to all the aspiring youth who desire to achieve special skills which would be a lifelong asset for their future endeavours and help them make a bright career in the Handicrafts and Carpet Sector.

## About this Book

This Participant Handbook is designed to enable training for the Bamboo Basket Maker Qualification Pack (QP) with Ref. ID HCS/Q 8704. There are 7 National Occupational Standards (NOS) under this qualification pack. Each National Occupational (NOS) is covered across 8 Units in this book.

Key Learning Objectives for the every NOS mark the beginning of the Unit for that NOS. In Table of Contents, you will find the module names with their corresponding NOS code. The symbols used in this book are described below.

## Symbols Used



Key Learning  
Outcomes



Steps



Time



Tips



Notes



Unit  
Objectives



Exercise

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The book on New Employability Skills is available at the following location: <https://eskillindia.org/Home/handbook/NewEmployability>













# 1. Introduction

Unit 1.1 - Bamboo Handicraft sector in India

Unit 1.2 - Bamboo Basket Making in India

Unit 1.3 - Job role of a Bamboo Basket Maker



## Key Learning Outcomes



**At the end of this module, you will be able to:**

1. Discuss the Bamboo handicraft sector in India, and its sub-sectors.
2. Define the artwork that comes under bamboo handicraft.
3. Identify the states that are suitable for bamboo handicraft work.
4. Identify the products that are made by bamboo.
5. Describe the work area of Bamboo Basket Maker.
6. Identify the opportunities for Bamboo Basket Maker.

## Unit 1.1: Bamboo Handicraft Sector in India

### Unit Objectives



At the end of this unit, you will be able to:

1. Discuss the Bamboo handicraft sector in India, and its sub-sectors
2. Define the artwork that comes under bamboo handicraft.
3. Identify the states that are suitable for bamboo handicraft work.

### 1.1.1 Introduction to Bamboo

Bamboo is a type of plant that neither has flowers nor any fruit. It grows in the form of hollow sticks as shown in Figure 1.1. 1. It is a plant from the family of grasses.



Figure 1.1. 1 Bamboo Plants

Bamboo species are found in cold mountains to hot tropical regions. They occur across East Asia, from Sakhalin through to Northern Australia, and in west to India Himalayas. They also occur in sub-Saharan Africa. In America, mid-Atlantic states south to Argentina and Chile. Continental Europe is not known to have any native species of bamboo.

### 1.1.2 Bamboo in India

India has the second largest stock of bamboo resources after China. These two countries together have more than half the total bamboo resources globally. There are 136 species of bamboos in India, out of which 58 species of bamboo belonging to 10 genera are distributed in the northeastern states alone and represent about 66% of the growing stock of bamboo in the country. It has a plethora of essential uses due to which it is often known by terms such as “bamboo culture”, “poor man’s timber”, “green gold” and “bamboo friend of the people”. Major bamboo production states in India are North Eastern States; refer to Figure 1.1. 2.



Figure 1.1. 2 North Eastern States

In India bamboos occur on 9.57 million hectares by conservative estimate, which constitutes about 12.8% of the total area under forests (Bahadur and Verma 1980). Out of the 22 types of bamboos in India, 19 are local and three rare. India produces about 4.6 million tonnes of bamboo per year; of which about 1.9 million tonnes is used by the pulp industries. The annual yield of bamboo per hectare varies between 0.2 and 0.4 tonnes with an average of 0.33 tonnes per hectare, depending upon the intensity of stocking and biotic interferences. The economic impact of the agroforestry-based bamboo system may influence general economic development considerably. On average, 500 air-dried culms weigh two tonne and one tonne of dry bamboo costs Rs 1000 (auction rate) .

### 1.1.3 Bamboo Handicraft in India

There are mainly three categories in which bamboo handicraft is flourishing in India; Bamboo Baskets, Bamboo Mat, and Bamboo Crafts, see Figure 1.1. 3 .



Bamboo Baskets



Bamboo Mat



Bamboo Craft



Figure 1.1. 3Bamboo Handicraft Products

The Handicrafts of Bamboo is one of the oldest crafts known to man. It is universally practiced at various regions throughout India. Generally the products of bamboo are of two types:

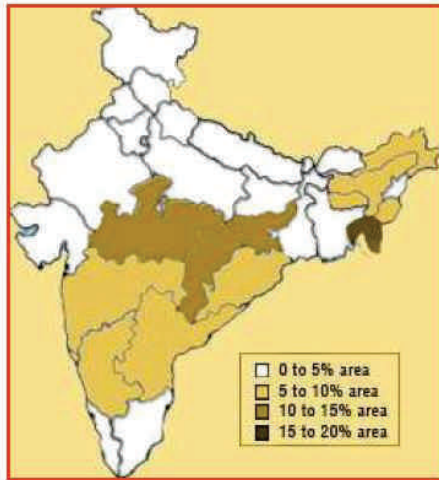
1. Normal articles required for day to day use and of medium quality, that are more suited to local requirements;
2. Another type is articles of finer quality, both decorative and functional, to meet the requirements and tastes of more sophisticated markets. Items like baskets, Chalani, Crossbows, Kula, Khorahi , Dukula or Tukuri, Dala Dukula or Tali , Doon or Kathi, Bamboo Mats etc.

Some of the Indian states are famous for creating beautiful bamboo items:

- Mugs for rice beer
- Hukkas
- Musical instruments
- Floor mats



- Fishing devices
- Handles.



No.	State/Region	Area %	Growing Stock %
1	North East	28.0	66
2	Madhya Pradesh	20.3	12
3	Maharashtra	9.9	5
4	Orissa	8.7	7
5	Andhra Pradesh	7.4	2
6	Karnataka	5.5	3
7	Others	20.2	5

Figure 1.1. 4 Bamboo Industry in India

The following states have a tradition of bamboo handicrafts:

- ☐ Assam
- ☐ Tripura
- ☐ Manipur
- ☐ West Bengal
- ☐ Arunachal Pradesh
- ☐ Jharkhand
- ☐ Chhattisgarh
- ☐ Orissa
- ☐ Kerala
- ☐ Karnataka
- ☐ Tamil Nadu

### Tips



**Where can we get the bamboo at low price?**

Think about this. Where do you find the maximum production of bamboo in India? If you said North Eastern States of India or Seven-sister states of India then you are right.

## Notes



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## Unit 1.2: Basket Making in India

### Unit Objectives



At the end of this unit, you will be able to:

1. Discuss the bamboo basket production in India
2. Discuss the type of bamboos used for producing bamboo baskets.
3. Identify the common type of bamboo tree found in India

### 1.2.1 Basket Making in India

The art of basket weaving is as old as making of a pottery. The nomadic food gathering cultures have also prepared baskets by using reeds in the past. Later, different materials and cultures developed a different type of basketry for home use and ritual purposes. They developed different styles based on their traditions and techniques.

Baskets are made of twigs, bamboo, cane and the wild monsoon grass. They are often covered with golden grass or the golden outer skin of the rice plant.



Figure 1.2. 1 Different type of basket

Punjab is famous for its dense spiral baskets. Sarkanda is a wild grass that grows in swamps and is used for the basic baskets which is stitched together with the use of the date-palm leaf. Dyed date-palm leaves are worked in patterns like the geometric patterns of the phulkar.



*Figure 1.2. 2Basket Made in Punjab*

The baskets of Kashmir are well known for their designs. The twigs of the willow tree are used to make different type of baskets to be used in households, sold to tourists as picnic baskets, and large presentation hampers. The best products made are however used locally. Small pliable twigs of willows are dyed with colorful dyes. Tassels worked with colored grass are suspended from the edges to make the finished object, a beautiful piece of craftsmanship and a present fit for a bride. A colored foil paper is pasted on the outer face of the clay bowl and an intricate lace pattern of the twigs, which allows the shining foil to be seen through, is created.



*Figure 1.2. 3 Willow Basket of Kashmir*

Uttar Pradesh has a tradition of making baskets out of a monsoon grass called moonj. Allahabad and the other nearby villages are famous for these kind of baskets.



*Figure 1.2. 4 Basket Made in Uttar Pradesh*

North Bihar has a special tradition of basketry. The coiled baskets are made with the local rough monsoon grass, which is covered with a golden colored sikki grass, dyed locally in different colors.





Figure 1.2. 5 Basket making in Bihar

Besides baskets, ladies of the world create several toys, birds and human figures out of identical staple. per native traditions, these baskets square measure bestowed to the bride at the time of wedding. in all probability poor peasants of the world, want to imitate the zamindars, made landowners, WHO gave fabulous dowries to their daughters within the variety of elephants and horses, got some satisfaction out of this practice. The peasant ladies fondly created these forms within the grass, seeking to compensate their daughters. these days these ladies, with the encouragement given by the handicrafts board, have developed this kind still more, by creating exquisite sculptural forms supported the Geeta Govinda, recreating scenes of avatar engaged smitten play with gopis.

In the Terai space of province, the semi-tribal community of Tharus carries on a practice of basket creating that is kind of distinct from that of the Brahmins of Mithila in north province. These baskets have a bolder kind and square measure adorned with conventionalized human and animal figures. Special baskets adorned with tassels created out of shells square measure created for presentation to the brides. A bride uses these baskets to hold lunch to her husband whereas he's employed within the fields. The shell tassels tinkle within the breeze, saying her arrival, in order that the elders of the family move to a different space.

Mysore district produces an oversized amount of cane. The tradition for basket-making here is thus supported the employment of cane. The north-eastern region of Asian nation, that contains of state, Manipur, Nagaland, Mizoram, Meghalaya, Arunachal Pradesh and Tripura has the best example of cane and bamboo work. after all one may say that their lives rely upon this material. They even designed their homes out of bamboo and cane. The bamboo creates the fundamental structure and therefore the cane is employed for lashing it along. Bamboos and cane are accustomed create bridges. Even elements of the garments worn by a number of the social group folks square measure created out of bamboo cane. there's a split cane belt of the Apa Tani with a tall tail hanging behind; there are the finely spilt bamboo woven ankle joint supports and therefore the intricately woven cane hats worn by the Apa Tanis, Daflas, Idu Mushmis and Gallongs that square measure structured to hold the ornamental horns and long feathers that square measure used for rituals and special ceremonies. till a few of decades past, the Konyak ladies wore a skirt and carried woven bamboo rain shades.

All over the area fine quality bamboo baskets are made which are put to various uses. The finest bamboo products are the fish traps, which are exquisitely woven and have a complicated but functional structure. Whole bamboos are also used for making containers as the solid knots or nodes of the bamboo make it natural tubular containers. These are used to carry water, store liquids like rice beer, chang, store precious pieces of textiles and also to make the ceremonial drinking cups, which are carved with figures of warriors carrying human heads.

Konyak and Phom Poker work on bamboo is of very fine quality and is found only on personal objects such as tobacco tubes, combs, ear plugs or the sword and the shuttles used for weaving. Strongboxes, as well as rounded baskets with lids and steel hinges and edged with metal are prepared here and given as part of dowry to the bride.

Tamil Nadu is famous for the Chettinad baskets. They have intricate patterns made with the help of date-palm leaves. These patterns are as fine as embroidery and are the specialty of the Chettiar community of the area.

The bamboo baskets of Bengal are used for a number of ceremonial purposes. Kulas, which are winnowing baskets, are not only used for winnowing; but a special variety is made and painted with auspicious symbols and is used in the marriage ceremony.

Experts also prepare pitaras (oval boxes), Jhampis (oblong caskets), phul saji (flower baskets) and chhalnis (sieves).

### 1.2.2 Type of Bamboo Used for Basketry

There are different types of bamboo species found in different parts of India. One of the best qualities of bamboo is *Ochlandra Travancorica reedi* or simply reeds which is a rare species of bamboo found abundantly in the forests of Kerala. Bamboo baskets woven from reeds is very popular in the state and so is bambooply, the resin bonded bamboo basket, which are a good substitute for wood/plywood based applications. Since the plant propagates rapidly and the collection method is by select felling, the ecological balance is not disturbed even if reeds are cut in large numbers. There is one simple rule to select bamboo for basket weaving, it should be as much straight as possible to a larger length. If there are joints in the bamboo at shorter distances then it is not good for basket weaving.



Figure 1.2. 6 Basket made by Reed Bamboo



Here is a list of bamboo types that are easily available in India and can be used for mat weaving:

Rupai baansh (*Dendrocalamus longispathus*)

Mritinga baansh (*Bambusa tuluda*)

Muli baansh (*Melocanna bambusoides*)

Bom baansh (*Neohuzeaua dallooa*)

Kailyai baansh (*Oxytenanthere Nigrociliata*)

## Notes



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## Unit 1.3: Job Role of Bamboo Basket Maker

### Unit Objectives



At the end of this unit, you will be able to:

1. Describe the work area of Bamboo Basket Maker.
2. Identify the opportunities for Bamboo Basket Maker

### 1.3.1 Job of Bamboo Basket Maker

A Bamboo Basket Maker is the one who prepares the bamboo slivers from bamboo split and makes the basket of desired shape & size by interlacing the slivers. A Bamboo Basket Maker should have good eyesight, hand-eye coordination and vision (including near vision, distance vision, color vision, peripheral vision, depth perception and ability to change focus).



Figure 1.3. 1Bamboo Basket Maker

If Bamboo Basket Maker is planning to sell his items, then he should know about marketing and negotiation techniques to sell his baskets. He should have a fair idea of cost of his product in market and the efforts he has spent to make the basket.

### 1.3.2 Opportunities for Bamboo Basket Maker

There are great opportunities of Bamboo Basket Maker in India as well as in foreign countries like China, Japan, USA, and many other countries. A Bamboo Basket Maker has following benefits:

- Exclusive woven baskets have good domestic and export markets
- Versatility in changing designs and texture with minimum investment
- Possibility of more value addition in very small cost

A Bamboo Basket Maker also gets job opportunities apart from easy entrepreneurship like, he can be:

- ☐ Bamboo Basket Maker for both local demand and foreign demand industries.
- ☐ Pattern designer in Bamboo Basketry Industries.

### Exercise



1. Which state/region of India has maximum of stock of bamboo?

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2. Write down the type of bamboos in India that can be used for creating bamboo mats.

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3. Which state is the second most bamboo producing state?

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4. What is the job of a Bamboo Basket Maker?

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5. Write a short note on baskets made in Punjab.

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## 2. Preparing Bamboo Silver



Unit 2.1 – Making Silver from Bamboo Splits

Unit 2.2 – Bamboo Silver Management



## Key Learning Outcomes



**At the end of this module, you will be able to:**

1. Describe the process of extracting bamboo silver from the bamboo splits.
2. Identify various tools used in making bamboo silver.
3. Describe the process of sorting and drying bamboo silver.
4. Describe the procedure of stocking bamboo silver.
5. Identify the common mistakes in handling bamboo silver.

## Unit 2.1: Making Silver from Bamboo Split

### Unit Objectives

At the end of this unit, you will be able to:

1. Understanding various parts of bamboo
2. Know the tools used to prepare bamboo silver.
3. Make bamboo silver from bamboo split.

### 2.1.1 Tools Used for Making Bamboo Silver

Various tools that are used to separate bamboo silver from bamboo are given next.

#### Hammer and Chisel

Hammer is used to apply force at concentrated location. Hammer increase the impact to a large extent.



Figure 2.1. 1Hammer



Chisel is used to cut through the bamboo walls.



*Figure 2.1. 2Chisel*

## Hand Saw

Hand Saw is used to cut the bamboo into smaller pieces.



*Figure 2.1. 3Hand Saw*

## Power Saw

You can use the power saw in place of hand saw if you have requirement to cut larger stock. The power saw is run by electricity so it saves the human efforts.



Figure 2.1. 4Power Saw

## Bamboo Splitter

Bamboo Splitter is used to cut bamboo into multiple splits.



Figure 2.1. 5Bamboo Splitter

## Bamboo Hatchet

The Bamboo Hatchet is used to cut the branches of bamboo or divide the bamboo.

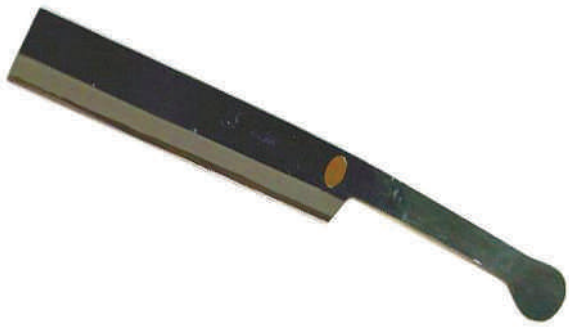


Figure 2.1. 6Bamboo Hatchet

## Bamboo Knives

Bamboo Knives are used to perform various works like shaving bamboo, cutting culms of bamboo and so on.



Figure 2.1. 7Bamboo Knife

### 2.1.2 Making Bamboo Silver from Bamboo Split



You can find the bamboo silver in the markets of desired shape and size but if you want to create bamboo silver by yourself then it is also a very easy task. There are seven steps in preparing bamboo for basketry which are explained by the images given next.



**Step 1: Scrap off the green skin of culm**



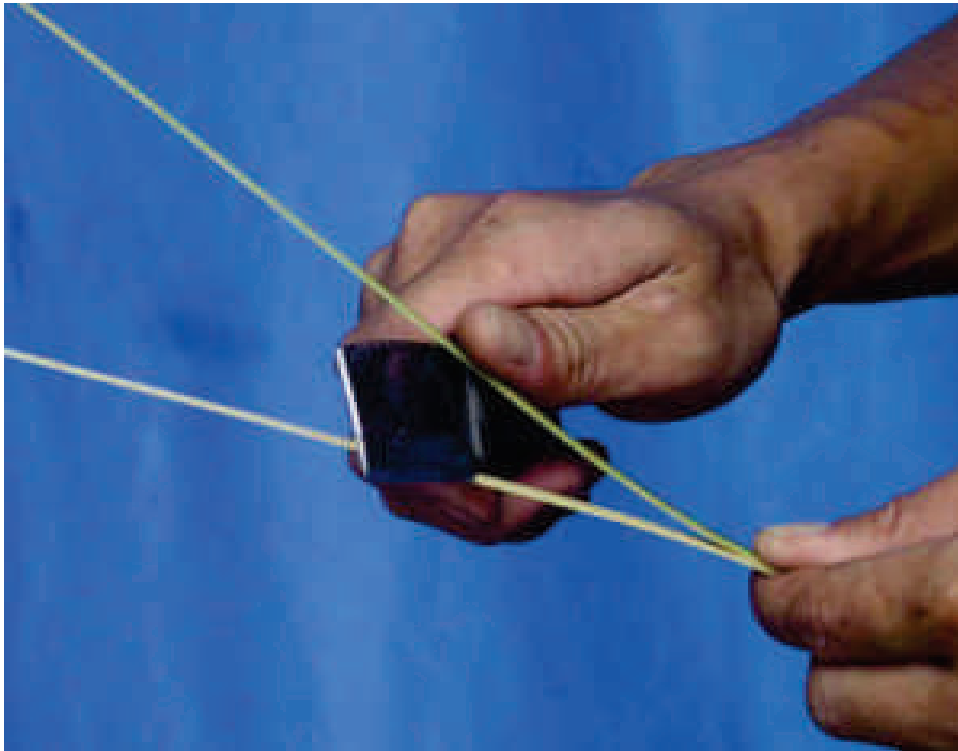
**Step 2: Flatten the edges of culm**



**Step 3: Divide the culm into silvers of equal width**



**Step 4: Separate the silvers**



**Step 5: Cut Silvers into fine layers**



**Step 6: Separate the layers into fine strips**



**Step 7 : Classify and group the sliver by color**



## Unit 2.2: Bamboo Silver Management

### Unit Objectives



At the end of this unit, you will be able to:

1. Understand the process of sorting and drying bamboo silver.
2. Understand the procedure of stocking bamboo silver.
3. Know the common mistakes in handling bamboo silver.

### 2.2.1 Sorting and Drying Bamboo Silver



#### Drying Bamboo Silver

Bamboo Silvers are dried in following ways:

1. Place the bamboo silvers in open air under sun to make them dry naturally. This process takes a lot of time depending on the moisture in bamboo strips.



Figure 2.2. 1Bamboo Silver in open air under the Sun

2. Place the bamboo silvers on a rack and dry the bamboo silver using fire under it at appropriate distance. This procedure takes relatively lesser time than open air procedure.



Figure 2.2. 2Drying Bamboo Silver using fire

3. Combine the bamboo silver in the form of common lot and feed it to the dryer machine. This procedure takes relatively lesser time than fire method.



Figure 2.2. 3Drying Bamboo Silver using dryer machine

Note that the drying of bamboo silver should be done very carefully so that all the bamboo silvers are dry before processing. The moisture content should be left 10% in the bamboo silver.

## Sorting Bamboo Silver

Sorting of bamboo silver is done on various parameters like, shape of silver, type of silver, color of silver, length of silver, width of silver and so on. Place the bamboo silver of same properties in same rack in your workshop.

## Exercise



1. Write a short note on tools used for making bamboo silver.

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2. Create bamboo strip from the bamboo given by your instructor and submit to your instructor. Also, write the steps below.

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3. Why it is important to dry bamboo silver prior to bamboo basket making?

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4. What are the benefits of sorting bamboo silvers and on what basis should they be sorted?

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5. Discuss the benefit of using bamboo splitter.

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6. What is the difference between bamboo hatchet and bamboo knife?

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## 3. Making Bamboo Basket

Unit 3.1 – Making Bamboo Basket



## Key Learning Outcomes



**At the end of this module, you will be able to:**

1. Know the process of weaving baskets.
2. Know the material used in weaving baskets.
3. Understand the important parameters required for bamboo basket making.
4. Understand the tools and procedures of trimming, rolling and inspection of bamboo baskets.



## Unit 3.1: Making Bamboo Baskets

### Unit Objectives



At the end of this unit, you will be able to:

1. Know the process of weaving baskets.
2. Know the material used in weaving baskets.
3. Understand the important parameters required for bamboo basket making.
4. Understand the tools and procedures of trimming, rolling and inspection of bamboo baskets.

### 3.1.1 Making Bamboo Basket

#### Terminology

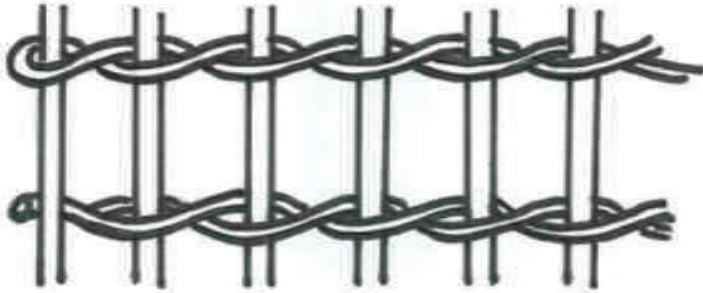
Due to the influence of many cultures, availability of materials, techniques of construction and creativity of the basket maker, a wide variety of basket styles have emerged. Most authorities have agreed that there are three basic weaves from which there are endless variations and styles.

1. Coiled – a group of needles, strands, or rods is stitched together in a spiraling round or oval form with a thin flexible material such as raffia or synthetic sinew.



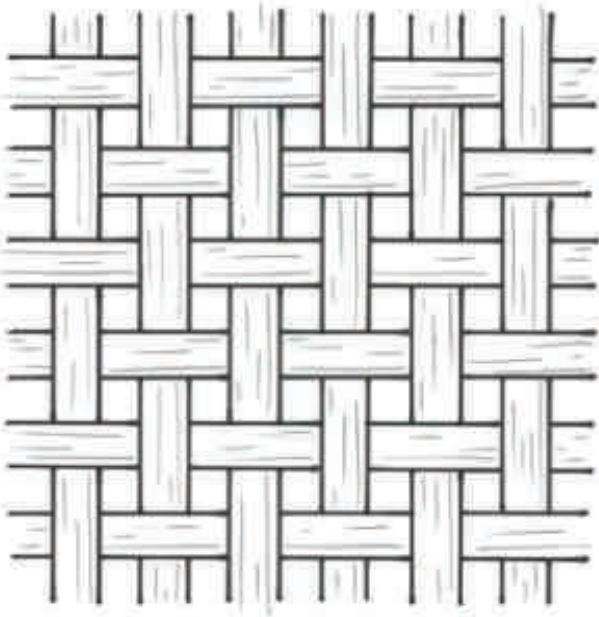
Figure 3.1. 1Coiled Weaving

2. Twining – may be the earliest type of construction. Spokes or rods form the upright of the basket and two or more flexible fibers (weavers) are twisted around the uprights. There are many patterns to weave.



*Figure 3.1. 2Twining*

3. Woven and/or plaited – made from splints or weavers, which form the major component in making the woven basket. The spokes or stakes form the frame or shape of the basket.



*Figure 3.1. 3Shape of Woven Basket*

## Parts of Basket

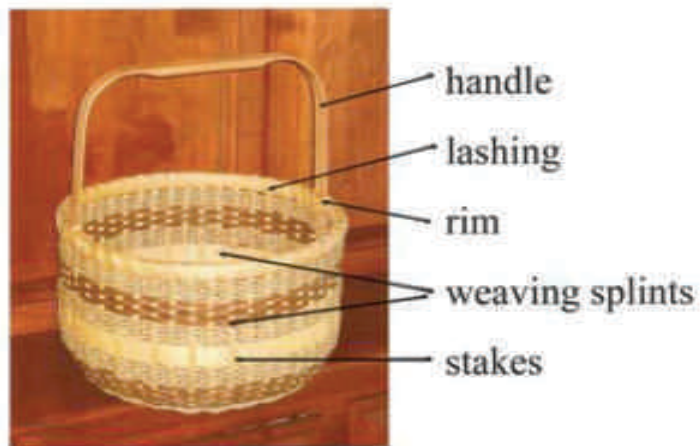


Figure 3.1. 4Parts of Basket

### 3.1.2 Procedure of Basket Making



**Make the base of the basket.** You'll need to put out five bamboo silver parallel to 1 another, with regarding  $\frac{3}{8}$ ths of an area between them. Weave a sixth silver sheer through the opposite five. Bring the sixth silver over the primary silver, below the second, over the third, below the fourth and over the fifth reed. Weave four a lot of bamboo silvers during this manner, ensuring that they're parallel to the sixth silver.

- Ensure that the squares formed by the base weaving are no bigger than  $\frac{3}{8}$  inch (.9 cm).

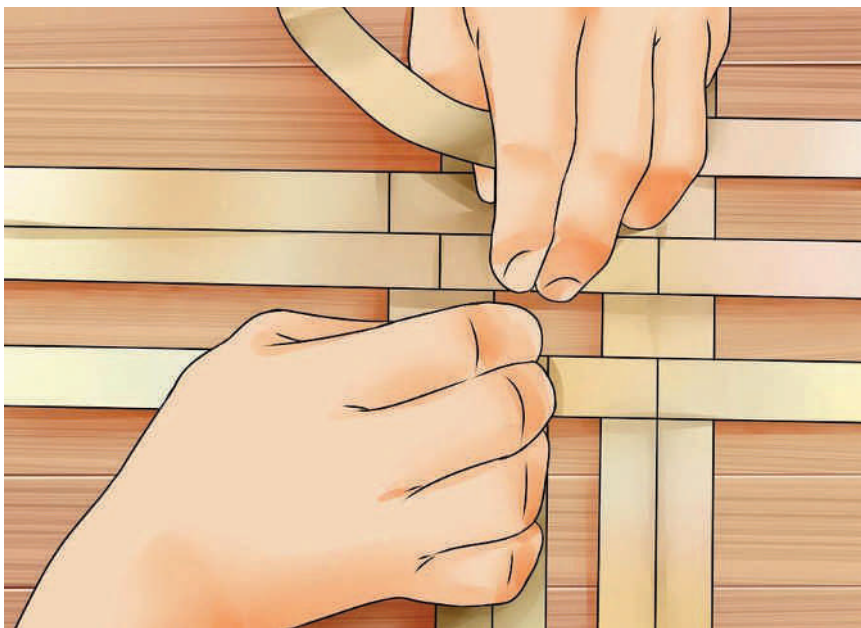
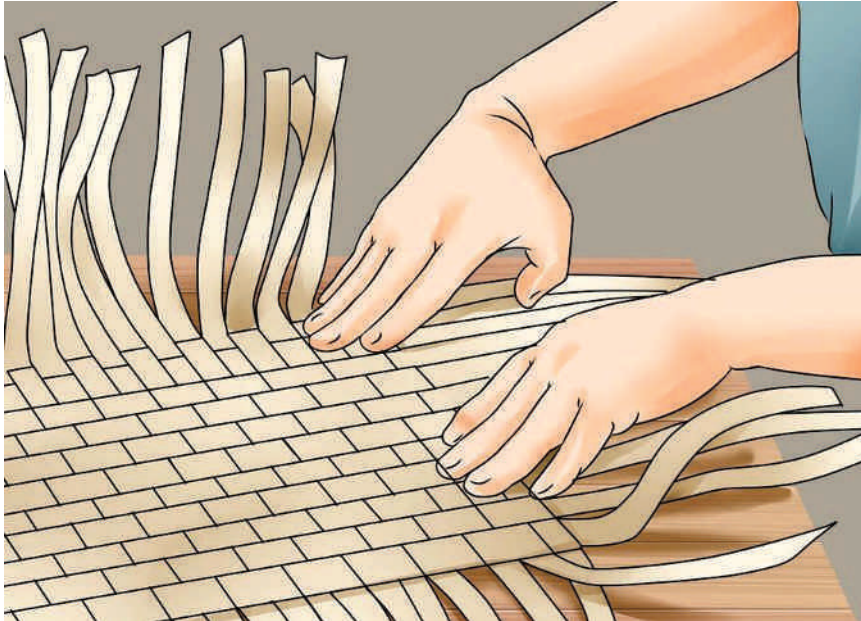


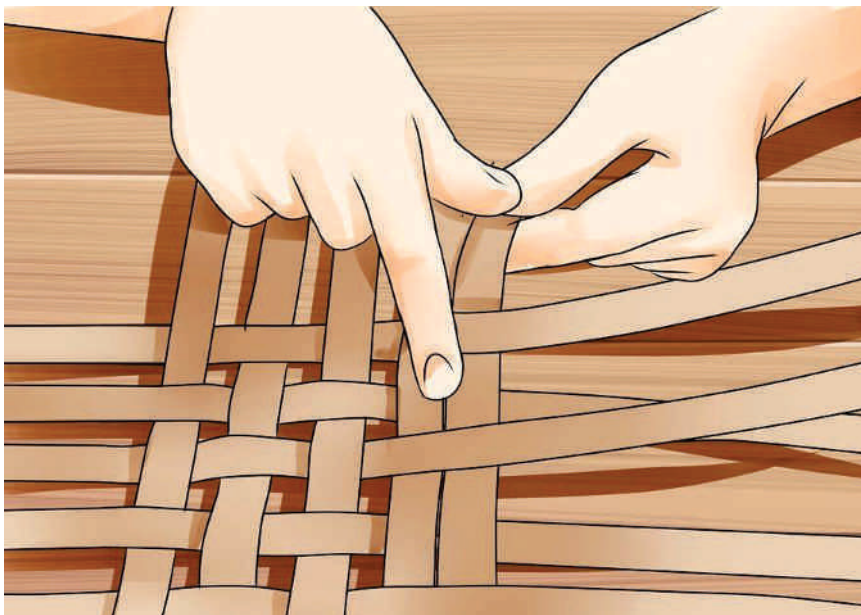
Figure 3.1. 5Forming Squares for base weaving

**Bend the bamboo silver.** Bend the bamboo silver that stick out from the sq. base into associate degree upwards position. These bent silvers are a unit known as spokes. Bending them can create it easier to weave and these spokes can act because the supports for the basket.



*Figure 3.1. 6 Bending Bamboo Silvers*

**Split a center spoke.** Split one finish of either the third or eighth spoke, beginning wherever it comes out from below the last spoke to cross it. you'll currently have eleven spokes. you will be swing the weaver into the split.



*Figure 3.1. 7 Splitting center spoke of bamboo basket base*

**Weave the basket.** Put the tapered finish (the smaller end) of a weaver silver into the split spoke and hold it in situ with a holdfast. Keep the weaver silver close to the bottom of the basket and weave, by going over one spoke and beneath succeeding.

- If you are going for a sq. form, hold the bottom corners in conjunction with clothespins. this may facilitate maintain the form of the bottom.
- Continue to connect and weave new bamboo silvers through the spokes for three or four rows, reckoning on the specified height of the basket. every new silver ought to be stacked higher than the silver plain-woven before it.
- Do your best to create the weave cosy and tight, however not too tight otherwise you will screw up the bottom of the basket. You, also, wish to create certain th at the weave is not too loose.



Figure 3.1. 8 Weaving the basket

**Foot the base.** This means closing those sq. holes that are still within the base. beginning within the left corner of your basket, take the corner spoke and tug it gently. Tug a lot of firmly on the second spoke. You would like to tug quite firmly on the center spoke because of this may produce Associate in Nursing arch within the bottom of the basket. Move to the fourth spoke and tug gently once more.

- Straighten your spokes and repeat on all four sides of the basket, till the holes within the base are closed.



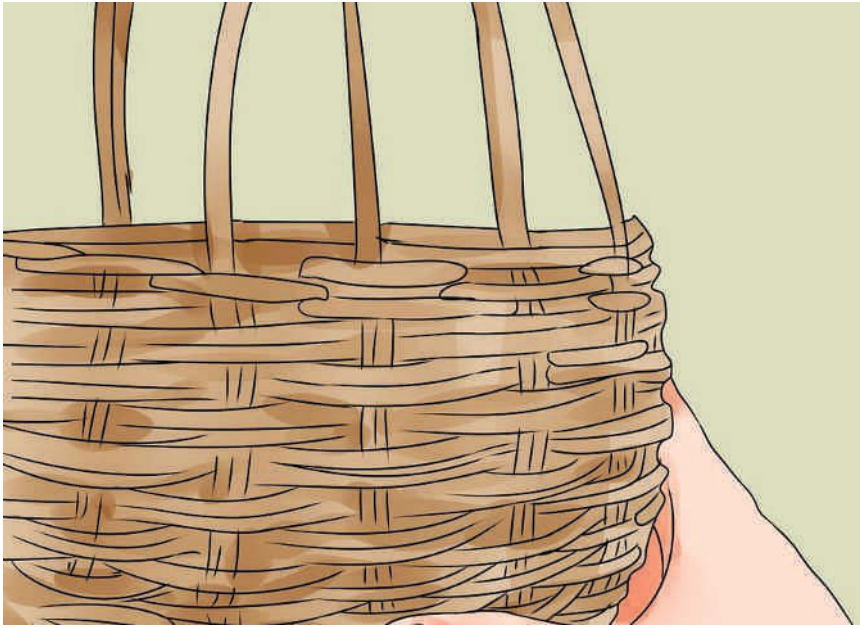


Figure 3.1. 9 Closing the base holes

**Continue weaving.** Keep attaching and weaving new reeds through the spokes. ensure that you just do not pull too exhausting on the corners, because of that may create your spokes bend inward and you will lose your basket's form.

- You conjointly don't desire your corners to be too loose, which might happen if you are not keeping your spokes upright and parallel whereas you weave.
- Stop weaving once you have reached your required height.

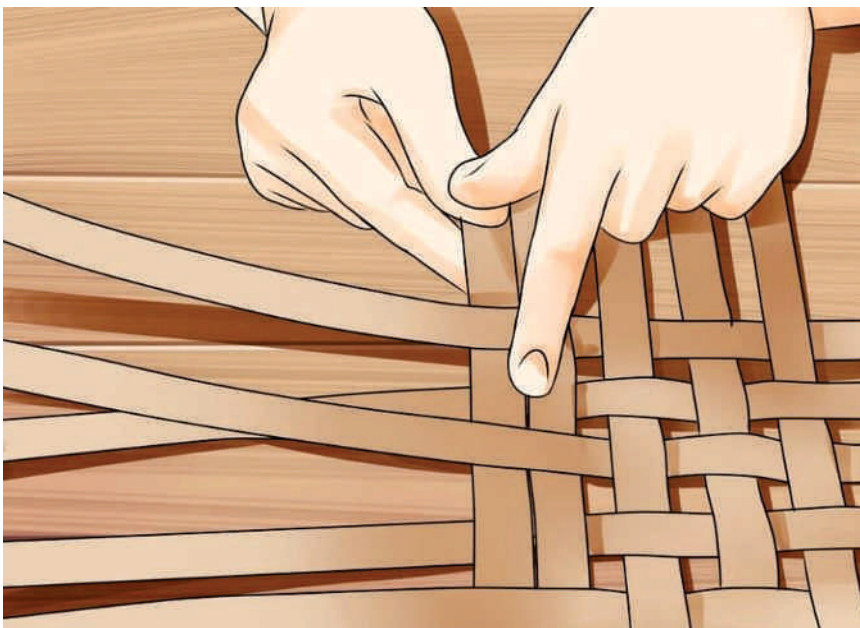
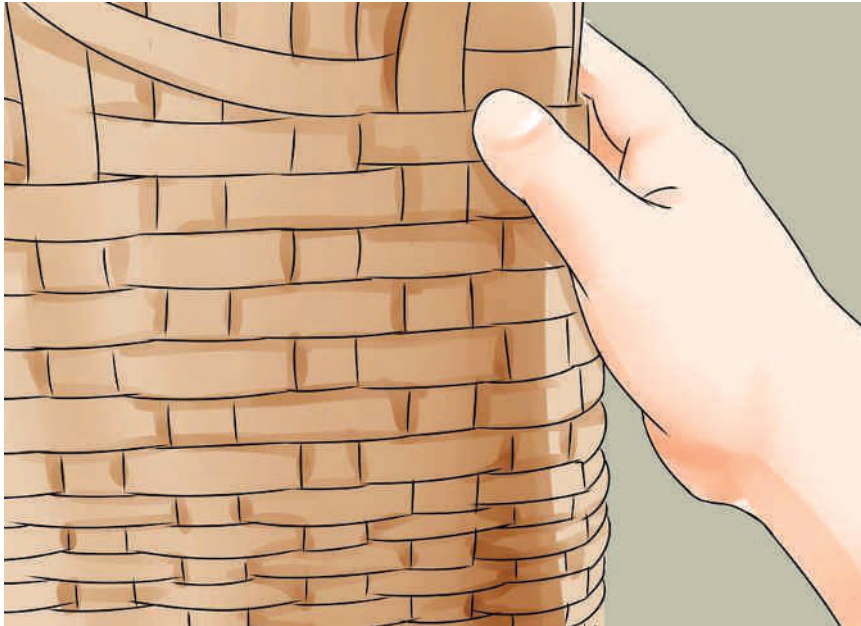


Figure 3.1. 10 Weaving upto the height required

**Pack the base.** Push or pull the plain-woven rows down towards the bottom as you weave. make sure that there's no area between the bottom and the rows. begin pressing or actuation from the bottom and move up to the newer reeds as you go.

- A properly packed basket ought to have a nicely arched base, straight, parallel spokes, properly spaced corners, and tight weaver rows.



*Figure 3.1. 11 Setting the woven silvers by pressing and pulling*

**Finish the top of the basket.** Stop weaving your last bamboo silver once you have got woven four spokes past the split spoke. Taper the silver with scissors, moving from the fourth spoke to the tip of the silver. Weave till the complete final silver has been woven into the spokes.



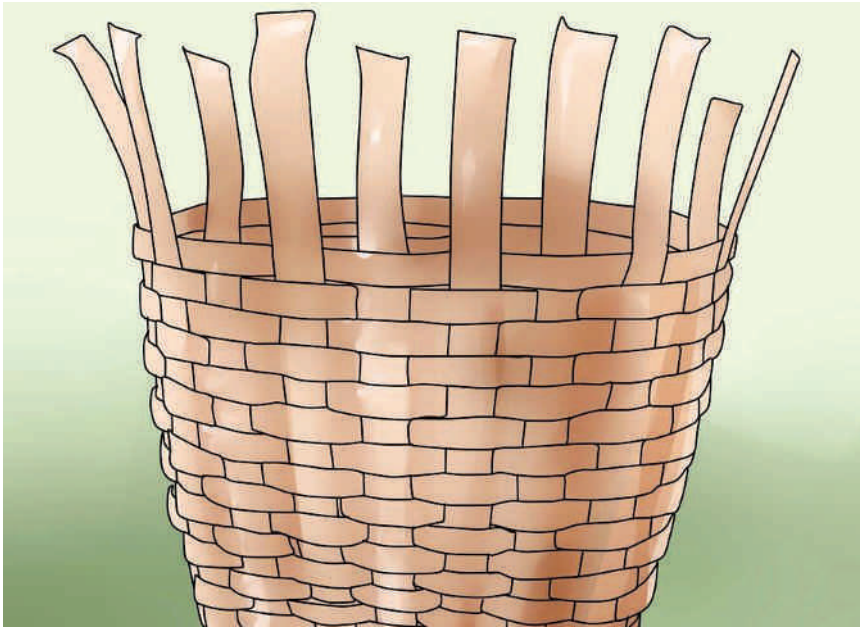


Figure 3.1. 12 Finishing the top of basket

**Trim the basket.** Cut the spokes with scissors. The spokes ought to be 1/2 to two inches (1.3 to five cm) on top of the last plain-woven silver. Fold the spokes towards the within of the basket over the highest row of silver. Insert the top of every spoke into the third row from the highest. make sure that every spoke lies flat against the within of the basket.



Figure 3.1. 13 Trimming the basket

**Make the rim.** You'll wrap a bamboo silver round the prime row of the basket and pin it to the basket with a fixing. Now, anchor the new silver by weaving its bottom finish into the highest few rows within the basket. This silver is named the working person.

- ❑ Bring the lacer up and over the silver pinned to the basket and insert it through the front of the basket into the woven rows. Now pull the lacer inside the basket.
- ❑ Continue wrapping the lacer around the pinned silver, circling the circumference of the basket.
- ❑ Glue the end of the lacer inside the basket.

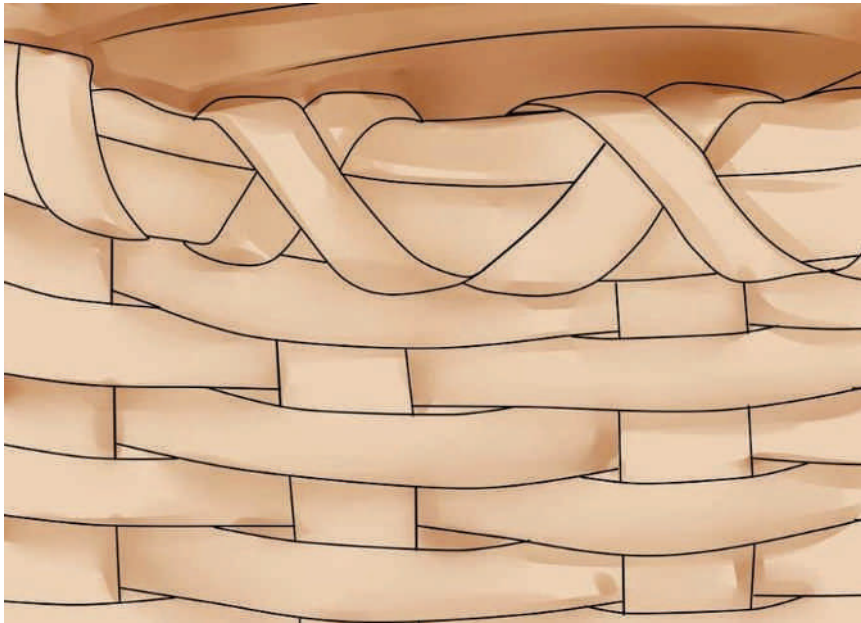


Figure 3.1. 14 Making Rim for basket

### 3.1.2 Basic Weave Structures

The manner within which teams of warp yarns area unit raised by the harness to allow the insertion of the filling yarn determines the pattern of the weave, and in massive live the type of cloth created. Weave patterns will produce varied degrees of sturdiness in materials, adding to their quality and additionally to their look.

There are a unit 3 basic weaves. they're taffeta weave, twill and weave. All different weaves area unit a variation or a mix of those weaves. fabric and Rib weave area unit 2 variations of taffeta weave. within the same manner twill may have range of variations, e.g., warp visaged twill, thread visaged twill, even twill, uneven twill, pointed twill, herring bone twill, gabardine, corkscrew then on.

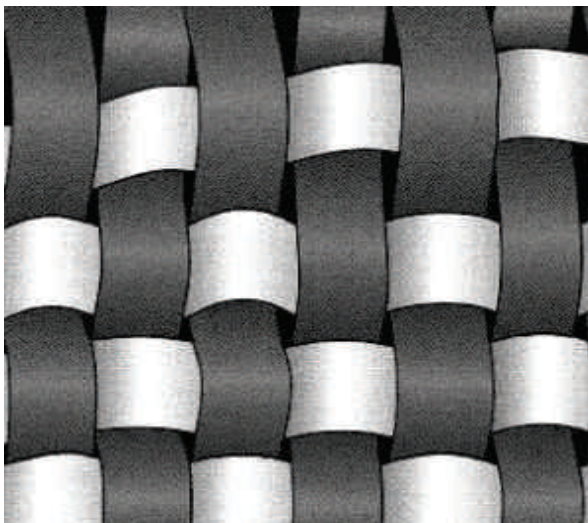
Graph paper (or pointed paper) is employed to point out the weaves or the order within which the yarns interlace in a very cloth. it's utilized by textile designers to portray their styles or to analyse cloth weaves. every vertical row of squares represents a warp yarn and every horizontal row of squares represents a filling yarn. A warp yarn crossover a filling typically shown by marking within the sq. known as a 'raiser'. A blank sq. over the warp known as 'sinker'.

The weave diagram does not show the number of yarns per inch between warp and filling. The yarn size and type are also not indicated. The completed design shows the interlacing from the face side of the cloth. Most weaves are analysed from the face side. You can use these different types of weaves while making baskets

**Plain weave:** A plain weave is a weave where each filling passes alternately over and under each warp in a square pattern. The interlacing is opposite in neighboring cells. The repeat is over two ends and two picks.

**Properties of Plain weave:**

1. Both sides are reversible until fabric is painted or printed from right side.
2. Fabrics have high abrasion resistance.
3. No yarn slippage.
4. There is no distinct design unless yarns have contrasting colors or thickness.
5. Easily produced; maximum yardage; inexpensive. Medium to dull lusture.
6. Adaptable for printing and other finishing process.
7. More durable. No floats. Medium drapability to very good drapability.
8. In old notation method, denoted by 'P'. Examples: Batiste, Cheese cloth, Cretonne, Percale, voile.



*Figure 3.1. 15 Plain Weave*

**The two main variations of plain weave are:**

**Basket weave:** Two or more yarns are taken as one set and are interlaced in plain weave pattern. Such weave creates interesting textures, but are not very stable.

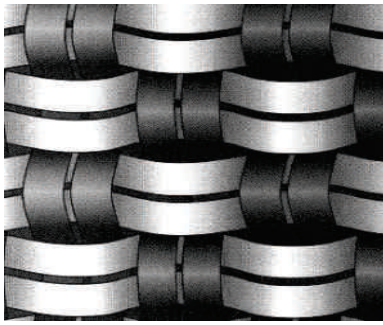


Figure 3.1. 16 Basket Weave

**Rib Weave:** A rib effect is produced by using several yarns as one or a thick yarn in either warp or weft direction which create ridge like effect.

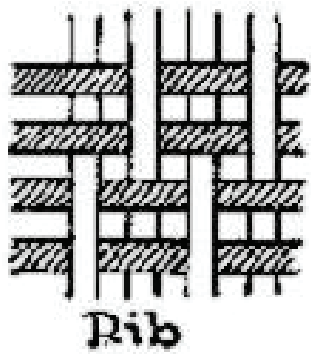


Figure 3.1. 17 Rib Weave

**Twill weave:** A weave characterized by diagonal lines on the face of the fabric. The weft or warp yarns interlace with more than one warp yarn but never more than 4 warp yarns. On each successive line weft moves the design one step to the right or the left forming the diagonal. Whatever the direction of the diagonal on the face of the fabric is, the direction is opposite on reverse. The diagonal can vary from a low 14° angle called reclining twill to a 75° angle called step twill. The most common is 45° and is regular or medium twill, steeper the twill stronger the fabric is likely to be. A 2 x 1 twill weave will be one where warp will go over 2 warp and under 1 weft. Suppose you have 4/2 weave, then it means that you will have  $4 + 2 = 6$  harnesses, (i.e) the repeat will have 6 boxes horizontally and 6 boxes vertically.

**Properties of Twill weave:**

1. Twill weave is one of the strongest weave.
2. It has fairly good drape.
3. More tightly woven.
4. A twill weave does not get dirt easily but once it gets dirt it becomes really difficult to clean them.
5. It has good wrinkle resistance.
6. Finer yarns with high twist are used in construction of twill weaves.

7. Denim is uneven warp faced twill weave fabrics. Wefts are in white and warps are in blue so denim is blue on one side and white from the other side.

8. Other variations of twill weave include: Pointed twill, Herring bone, Gabardine, Corkscrew twill and so on.

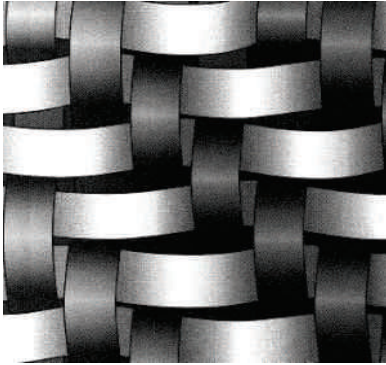


Figure 3.1. 18 Twill Weave

## Notes



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## Exercise



1. Write a note on the basic weave types used for basket making.

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2. Write down the steps of creating bamboo basket.

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

3. Discuss the properties of plain weave and twill weaves.

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4. Write a note on parts of bamboo baskets?

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5. Why do we always start weaving basket from base?

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6. Why do we perform trimming while making basket?

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7. Write down the steps of making rim of basket.

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8. Write a short note on plain weaves.

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9. Write a short note on twill weaves.

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## 4. Finishing and Storage

Unit 4.1 – Finishing and Storage



## Key Learning Outcomes



**At the end of this module, you will be able to:**

1. Describe the process of finishing bamboo basket.
2. Identify the tools and techniques required for bamboo basket finish.
3. Identify the procedure to safe storage of antique bamboo baskets.
4. Cut the extra edges neatly to give the fine finished look.
5. Analyze and apply glue to fix the edges.
6. Handle the bamboo basket properly to avoid any breakage.
7. Dispose the waste materials in the approved manner.

## Unit 4.1: Finishing and Storage

### Unit Objectives



At the end of this unit, you will be able to:

1. Describe the process of finishing bamboo basket.
2. Identify the tools and techniques required for bamboo basket finish.
3. Describe the procedure to safe storage of antique bamboo baskets.
4. Cut the extra edges neatly to give the fine finished look.
5. Analyze and apply glue to fix the edges.

### 4.1.1 Finishing and Preservation



Whether one collects antique or contemporary baskets or makes his or her own baskets, they should be cared for so they will last. A basket will last indefinitely if treated properly; even if it is used for its intended purpose. An antique basket is identified by the patina, so it should be carefully preserved. Consider the following:

1. If the basket material is unfinished, use a gentle vacuum cleaner; one-inch paint brush, feather duster or cloth to remove dust and dirt. When dusting, be aware of any mildew, cracking of fibers or paints, change in color, or damage by insects or rodents who love to eat plant fiber. If insect damage is evident, a few mothballs near – not touching – may help.



Figure 4.1. 1 Vacuum Cleaner

2. Unfinished wood baskets should not have water applied directly, as this can cause staining. Wood always enjoys humidity, so if the basket is in a dry environment such as a heated house, one may mist it with warm water to evenly moisten the inside and outside of the basket. Avoid excessive water. Baskets may be put in a shower room to add humidity.



Figure 4.1. 2 Sprayer

3. Any finished surfaces of baskets can be gently cleaned with a wood cleaner product.



Figure 4.1. 3 Wood Furnisher and polish

4. Reed or other grass baskets can be cleaned with water or gentle vacuum.
5. If a basket is damaged or badly soiled, consider what effect repair will have on the value. Unless it is done professionally, the value of the basket may be lost.
6. Handle old baskets gently. Handles and rims are particularly vulnerable and should be treated so. Never pick up an unfamiliar old basket by its handle or one side. Use hands, placing them on each side of the basket and lifting it carefully.
7. Shellac and varnishes applied to old baskets will completely destroy the value and make them brittle.



Figure 4.1. 4 Shellac / Varnish

8. Linseed oil will imitate the effects of age by darkening and adding a pleasing sheen to a basket in the short term, but over time it will attract and retain dirt until the surface is black. The use of linseed oil is largely irreversible.

9. Some add mineral oil to willow baskets.

10. Exposing baskets to direct sunlight will bleach and dry out materials. Dry baskets can become brittle and fragile.

### 4.1.2 Storage of Bamboo Baskets



Bamboo baskets should be stored properly for long life and good sale. Sale of handicraft products depends directly on their look and feel. Here are a few tips for storing bamboo baskets.

1. Place the finished baskets in cool and dry place.
2. Cover the baskets with polythene covers so that they do not get dirty.
3. Apply right quality of polish on the baskets before placing them in store.
4. If the baskets are fragile then keep distance between the two units while placing them in store.
5. Get some containers from the market to place the items safely.
6. It's best to handle your baskets with clean hands; free of lotion, oil or grease of any kind. Body oils can damage the baskets as can high humidity, by causing stains, mold and mildew. Also pick up baskets by supporting the bottom, especially if it has any contents inside and wear latex or cotton gloves when you handle them.
7. If baskets are to be stored for long time be sure the storage site is free of insects and rodents. Be sure the baskets are professionally packed in bubble wrap and Styrofoam peanuts and double box fragile baskets. Be sure no heavy items are placed on top of stored baskets.



### 4.1.3 Packing and Shipping Baskets



*Figure 4.1. 5 Packaging of Bamboo Basket for shipping*

First, make sure the boxes and wrapping materials are clean and free of rodents or insects. Double boxing of the basket is the best and safest way to pack a basket. Make sure basket is completely dry and if stained, the stain is dry and fumes free. As an added protection against loss during shipping, always include the name, address and phone number of the basket maker or owner and the recipient on a 3 x 5 card.

Place the card inside the basket and another card at the top of the packing materials before sealing each box to guarantee correct delivery.

Type address information on a packing label or print the information legibly in block letters, and attach to outside top of the box. It's a good idea to pack baskets in boxes within another box for best stability and protection.

Begin by carefully wrapping the basket in several layers of archival tissue paper and bubble wrap, placed inside a plastic bag.

Then place the wrapped basket in the center of a new cardboard shipping box, allowing at least four inches in every direction to place Styrofoam peanuts (pre-packed in individual plastic bags), newspaper or other packing materials.

Place this box in a second box that is at least four inches larger in each direction, and fill again with packing materials.

To assure ease of shipping, make sure there are no other writings, advertising or bar codes on the box, other than your shipping label, and that it is legible. Do NOT use a liquor box with writing on the outside, as the Post Office will reject it immediately.

## Notes



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## Exercise



1. Write down some tips on preservation and handling of bamboo baskets.

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2. What are the things to be noted for long term storage of bamboo baskets?

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3. Discuss the procedure of packing and shipping good quality bamboo baskets for export?

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4. What are the materials used in packing bamboo baskets?

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5. What is the effect of linseed oil on bamboo baskets?

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6. What type of baskets can be cleaned by water? Can we clean unfinished baskets by using water?

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## 5. Quality Management

Unit 5.1 – Quality Check and Rectification



## Key Learning Outcomes



**At the end of this module, you will be able to:**

1. Describe the importance factors to be checked in the bamboo basket products.
2. Perform various tasks to rectify common faults in manufacturing bamboo baskets.
3. Carry out quality checks at specified intervals according to instructions
4. Apply the allowed tolerances
5. Identify faults and take appropriate action for rectification
6. Maintain the required productivity and quality levels



## Unit 5.1: Quality Check and Rectification

### Unit Objectives



At the end of this unit, you will be able to:

1. Understand the important factors to be checked in the bamboo basket products.
2. Understand the steps for raw material check.
3. Perform various tasks to rectify common faults in manufacturing bamboo baskets.
4. Report and replace identified faulty materials and component parts which do not meet specification
5. Identify modifiable defects and rework on them
6. Carry out work safely and at a rate which maintains work flow

### 5.1.1 Raw Material Quality Check



1. Make sure the bamboos are of good quality by performing bending test and strength test.



Figure 5.1.1 Bending Test of Bamboo

2. Check whether the bamboos are of desired type or not.
3. Check if the bamboos are dry or not.
4. Make sure the surface of bamboo is smooth.



*Figure 5.1 2Checking surface of bamboo*

5. Check the color of paint as per the specifications



*Figure 5.1 3Checking paint color on bamboo basket*

6. Check the quality of paint and primer.
7. Check whether the strips made from bamboo are of required size or not.
8. Check the moisture content of bamboo strips (silver).
9. Check if the bamboo strip surface is smooth or not.



*Figure 5.1 4 Checking smoothness of bamboo strips*

### 5.1.2 Bamboo Artwork Quality



*Figure 5.1 5 An artwork of bamboo*

1. Check the sharp edges of the artwork and make them soft.
2. Check the dimensions of the artwork as per the specification.
3. Check the shape of artwork and make sure it looks as per the requirement.
4. Make sure the surface of the artwork is smooth and free from burrs.
5. Apply the allowed tolerances to the artwork.
6. Make sure the appropriate method is used to make the artwork.
7. Make sure the painting is done evenly on the artwork
8. Make sure the paint is done in two coats after applying primer.

### 5.1.3 Fault Identification and rectification

1. Perform the quality checks on the artwork as per the schedule.
2. Identify the repairable faulty artwork and perform necessary steps to make it correct.
3. Check for non-repairable faulty artwork and put them in scrap.
4. Check the faulty components in the artwork and replace them as per the work instructions.
5. Check the faulty paint and re-paint it after rubbing and primer application.

### Exercise



1. Write down the steps for quality check of bamboo raw material.

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2. Write down the steps for Bamboo Artwork Quality.

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3. Write down steps for bamboo artwork fault identification and rectification .

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## 6. Work Area Management

Unit 6.1 – Work Area Management





## Key Learning Outcomes



**At the end of this module, you will be able to:**

1. Handle materials and tools safely and correctly
2. Use materials to minimize waste
3. Maintain a clean and hazard free working area
4. Maintain the tools
5. Carry out maintenance and/or cleaning within one's responsibility
6. Dispose of waste safely in the designated location
7. Store cleaning equipment safely after use
8. Carry out cleaning according to schedules and limits of responsibility

## Unit 6.1: Work Area Management

### Unit Objectives



At the end of this unit, you will be able to:

1. Describe the importance of managing work area properly.
2. Describe the benefits of work area management.
3. Describe how to build a good housekeeping plan
4. Identify the elements of housekeeping
5. Handle materials and tools safely and correctly
6. Use materials to minimize waste
7. Maintain a clean and hazard free working area
8. Maintain the tools
9. Carry out maintenance and/or cleaning within one's responsibility
10. Dispose of waste safely in the designated location
11. Store cleaning equipment safely after use
12. Carry out cleaning according to schedules and limits of responsibility

### 6.1.1 Reasons to Manage Workplace

A clean workplace means more than just having a sparkling, fresh building. A clean workplace also ensures the safety and health of employees and visitors. In 2012 alone, nearly 3 million nonfatal workplace injuries and illnesses were reported by private industry employers. Workplace injuries can be prevented by taking action to ensure a clean, safe work environment.

Here are six reasons why a clean workplace also means a safe workplace:

#### 1. **Clean, dry floors to prevent slips and falls.**

Maintaining clean, dry floors is essential for the prevention of slips and falls in the workplace. Different categories of floor cleaners serve different purposes. For example, alkaline cleaners are good for cleaning restaurant floors while acidic cleaners remove rust, scale, and oxides from floors. However, some products may contain chemicals that can be detrimental to your flooring, so be sure to talk with a cleaning professional about what is best for your facility. In addition, keep your floors dry by using absorbent materials, such as floor mats, in functional locations to remove moisture and soil from the bottom of shoes.



*Figure 6.1 1 Using Mop on floor*

## **2. Disinfectants prevent the spread of germs and illness, including the flu.**

Germs can easily spread throughout a workplace, particularly during flu season—but disinfecting surfaces and objects with EPA-registered, hospital-grade disinfectants can stop germs in their tracks.



*Figure 6.1 2 Applying Disinfectants on work area*

## **3. Proper air filtration lowers employee exposure to hazardous substances.**

You may not see them, however dusts associated vapors are venturous substances that may produce an unsafe atmosphere for workers. Building ventilation is one necessary step you should think about for reducing transmission mechanism of metabolic process infections and maintaining the health and productivity of staff. Frequently exchange HVAC system filters to prevents them from turning into saturated, that could lead on to potential microbe growth and odour considerations.

Vacuum cleaners fitted with HEPA filters can also capture fine particles. Maintaining humidness around thirty to fifty % through the employment of a dehumidifier is additionally necessary in eliminating air pollutants and promoting clean air within the geographical point.



*Figure 6.1 3 Air Filtration*

#### **4. Clean light fixtures improve lighting efficiency.**

Dirty lighting fixtures will scale back essential light-weight levels, creating it troublesome and unsafe for workers to complete their daily tasks. Clean lighting fixtures considerably improve lighting potency within the work. Well-lit stairways and aisles also are vital in preventing accidents and maintaining a secure work atmosphere.



*Figure 6.1 4 Cleaning Light bulbs*

#### **5. Green cleaning products are safer for both your employees and the environment.**

Not all cleaning products are the same, and some are held to a higher standard than others. Products with third-party certifications, such as Green Seal or GREENGUARD, must meet specific

standards and guidelines, which ensures they're safer for both people and the environment. Also make sure you maintain and review Material Safety Data Sheets (MSDS) for proper handling and storage of the products used in your facility.



#### 6. Proper disposal of waste and recyclable materials keeps work areas clutter-free.

Allowing trash to gather not solely produces litter, however it conjointly presents a parcel for pests that cause a threat to your work surroundings. Putting “no-touch” wastebaskets in key locations throughout your facility ensures materials square measure disposed of and reduces the unfold of germs. Use materials victimization clearly tagged waste receptacles can jointly make a lot of property surroundings.

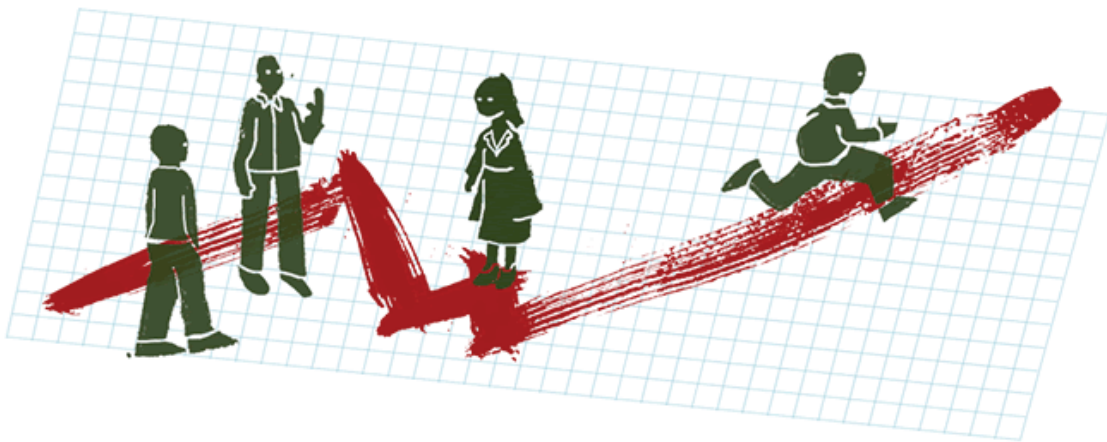


### 6.1.2 Benefits of Managing Workplace Properly

Effective geographical point management results in:

- reduced handling to ease the flow of materials
- fewer tripping and slippery accidents in clutter-free and spill-free work areas
- decreased health hazards
- lower employee exposures to risky substances (e.g. dusts, vapours)
- better management of tools and materials, together with inventory and provides

- more economical instrumentality clean-up and maintenance
- better sanitary conditions resulting in improved health
- more effective use of area
- reduced property injury by rising preventive maintenance
- less janitorial work
- improved morale
- improved productivity (tools and materials are simple to find)



### 6.1.3 Planning Good Housekeeping program

A good housekeeping program plans and manages the orderly storage and movement of materials from purpose of entry to exit. It includes a fabric flow commit to guarantee smallest handling. The set up conjointly ensures that employment areas don't seem to be used as storage areas by having employees move materials to and from work areas. A part of the set up might embrace finance in further bins and a lot of frequent disposal.



The costs of this investment could be offset by the elimination of repeated handling of the same material and more effective use of the workers' time. Often, ineffective or too little storage designing leads to materials being handled and hold on in venturesome ways. Knowing the set-up layout and therefore the movement of materials throughout the geographical point will facilitate plan work procedures.

Worker training is an essential part of any good housekeeping program. Workers need to know how to work safely with the products they use. They also need to know how to protect other workers such as by posting signs (e.g., "Wet - Slippery Floor") and reporting any unusual conditions.

Housekeeping request is "kept up" not "accomplished." Cleaning and association must be done routinely, not exactly toward the finish of the move. Coordinating housekeeping into employments can help guarantee this is finished. A decent housekeeping program recognizes and relegates obligations regarding the accompanying:

- clean up amid the move
- day-to-day tidy up
- waste transfer
- removal of unused materials
- inspection to guarantee tidy up is finished

Keep in mind off the beaten path places, for example, racks, storm cellars, sheds, and engine compartments that would some way or another be ignored. The precise course of action of operations, devices, gear and supplies is a vital piece of a decent housekeeping program.

The final addition to any housekeeping program is inspection. It is the only way to check for deficiencies in the program so that changes can be made.

## 6.1.4 Elements of House Keeping

### Dust and Dirt Removal

In a few employments, fenced in areas and fumes ventilation frameworks may neglect to gather tidy, soil and chips enough. Vacuum cleaners are appropriate for expelling light tidy and earth.

Modern models have extraordinary fittings for cleaning dividers, roofs, edges, hardware, and other difficult to-achieve places where tidy and earth may amass.





*Figure 6.1 5 Performing Housekeeping*

Unique reason vacuums are helpful for evacuating dangerous substances. For instance, vacuum cleaners fitted with HEPA (high effectiveness particulate air) channels might be utilized to catch fine particles of asbestos or fibre glass.

Hosing (wetting) floors or utilizing clearing mixes before clearing decreases the measure of airborne clean. The tidy and grime that gather in places like racks, channelling, conductors, light installations, reflectors, windows, pantries and lockers may require manual cleaning.

Compacted air ought not be utilized for evacuating dust, earth or chips from hardware or work surfaces.

## Employee Facilities

Worker offices should be sufficient, spotless and all around kept up. Lockers are vital for putting away representatives' close to home effects. Washroom offices require cleaning once or more each move. They additionally need a decent supply of cleanser, towels in addition to disinfectants, if necessary.

If laborers are utilizing perilous materials, worker offices ought to give unique precautionary measures, for example, showers, washing offices and change rooms. A few offices may require two locker rooms with showers between. Utilizing such twofold locker rooms enables specialists to shower off work environment contaminants and keeps them from sully their "road garments" by keeping their work garments isolated from the apparel that they wear home.



*Figure 6.1 6 Protection clothes for workshop*

Smoking, consumption of alcohol or eating at the work territory got to be restricted wherever toxic materials are being used. The consumption zone should be independent from the work region and got to be cleansed at every shift.

## Surfaces

**Floors:** Poor floor conditions are a leading cause of accidents. Cleaning up spilled oil and other liquids at once is important. Allowing chips, shavings and dust accumulated can also cause accidents. Trapping chips, shavings and dust before they reach the floor or cleaning them up regularly can prevent their accumulation. Areas that cannot be cleaned continuously, such as entrance ways, should have anti-slip flooring. Keeping floors in good order also means replacing any worn, ripped, or damaged flooring that poses a tripping hazard.

**Walls:** Light-coloured walls reflect light while dirty or dark-coloured walls absorb light. Contrasting colours warn of physical hazards and mark obstructions such as pillars. Paint can highlight railings, guards and other safety equipment, but should never be used as a substitute for guarding. The program should outline the regulations and standards for colours.

## Maintain Light Fixtures

Dirty light fixtures reduce essential light levels. Clean light fixtures can improve lighting efficiency significantly.

## Aisles and Stairways

Paths must be sufficient to suit individuals and vehicles serenely and securely. Walkway space considers the development of individuals, items and materials. Cautioning signs and mirrors can enhance locate lines in dazzle corners. Orchestrating passageways legitimately urges individuals to utilize them with the goal that they don't take alternate routes through risky territories.

Keeping paths and stairways clear is vital. They ought not be utilized for brief "flood" or "bottleneck" stockpiling. Stairways and walkways likewise require sufficient lighting.

## Spill Control

The best way of spills management is to prevent them before they happen. Frequently cleanup and maintaining machines and instrumentality is a way. Another is to use drip pans and guards wherever attainable spills may occur. Once spills do occur, it's necessary to wash them up straightaway.

Absorbent materials are helpful for wiping up greasy, oily or different liquid spills. Used absorbents should be disposed of properly and safely.

## Tools and Equipment

Tool housework is extremely necessary, whether within the tool space, on the rack, within the yard, or on the bench. Tools need appropriate fixtures with marked locations to supply orderly arrangement, each within the tool space and close to the work bench. Returning them promptly when use reduces the possibility of being misplaced or lost. staff ought to often examine, clean and repair all tools and take any broken or worn tools out of service.



Figure 6.1 7 Placing tools in Toolbox

## Maintenance

The maintenance of buildings and instrumentation could also be the foremost vital part of fine housekeeping. Maintenance involves keeping buildings, instrumentation and machinery in safe, economical operating order and in sensible repair. This includes maintaining healthful facilities and often painting and improvement walls. Broken windows, broken doors, defective plumbing and broken floor surfaces will create a geographic point look neglected; these conditions will cause accidents and influence work practices. So, it's vital to interchange or fix broken or broken things as quickly as potential. a decent maintenance program provides for the scrutiny, maintenance, repairs and repair of tools, equipment, machines and processes.

## Waste Disposal

The regular assortment, grading and sorting of scrap contribute to sensible work practices. It conjointly makes it attainable to separate materials which will be recycled from those getting to waste disposal facilities.

Allowing material to make au fait the ground wastes time and energy since beyond regular time is needed for cleanup it up. putting scrap containers close to wherever the waste is created encourages orderly waste disposal and makes assortment easier. All waste receptacles ought to be clearly tagged (e.g., useful glass, plastic, rubbish, etc.).

## Storage

Great association of put away materials is basic for conquering material stockpiling issues whether on a brief or changeless premise. There will likewise be less strain wounds if the measure of dealing with is decreased, particularly if less manual materials movement is required. The area of the stockpiles ought not meddle with work but rather they should in any case be promptly accessible when required. Put away materials ought to permit no less than one meter (or around three feet) of clear space under sprinkler heads.

Stacking containers and drums on a firm establishment and cross tying them where important, diminishes the possibility of their development. Put away materials ought not block walkways, stairs, exits, fire gear, crisis eyewash wellsprings, crisis showers, or medical aid stations. All stockpiling ranges ought to be plainly checked.



Figure 6.1 8 Cabinet for dangerous items

Flammable, combustible, toxic and other hazardous materials should be stored in approved containers in designated areas that are appropriate for the different hazards that they pose. Storage of materials should meet all requirements specified in the fire codes and the regulations of environmental and occupational health and safety agencies in your jurisdiction.

## Notes

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## Exercise



1. Discuss some important reasons to manage workplace properly.

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2. What are the benefits of managing workplace?

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3. What are the factors for planning good housekeeping program?

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4. Discuss the main elements of house-keeping?

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## 7. Health and Safety

Unit 7.1 – Safety, Health, and Hygiene

Unit 7.2 – First Aid



## Key Learning Outcomes



**At the end of this module, you will be able to:**

1. State some common reasons of accidents at site .
2. State common accidents and prevention techniques
3. State ways to stay healthy and hygienic (personal hygiene)
4. First-Aid for emergency

## Unit 7.1: Safety, Health, and Hygiene

### Unit Objectives



At the end of this unit, you will be able to:

1. State some common reasons of accidents at site .
2. State common accidents and prevention techniques
3. State ways to stay healthy and hygienic (personal hygiene)

### 7.1.1 General Safety Rules:

#### Work intelligently.

- ☐ Substitute safer materials when possible.
- ☐ Choose water-based products over solvent-based products.
- ☐ Choose products that do not create dusts and mists.
- ☐ Never hold brushes or tools in your mouth, tip brushes with your lips, etc.
- ☐ Never eat, drink, or smoke in studios.
- ☐ Store tools properly; keep them in good condition.
- ☐ Read the labels on your materials. You cannot tell the toxicity of materials by the absence or presence of a particular smell.
- ☐ Never use materials in unintended ways. For example, don't use standard paint for skin-painting.

#### Keep studio space neat and orderly.

- ☐ Keep floors clean and free of slippery spots.
- ☐ Keep extension cords, hoses and other tripping hazards off the floor when unused; keep traffic ways clear.
- ☐ Minimize the area in which hazardous substances are used.
- ☐ Keep art studios separate from living areas and clean yourself before entering living areas.

## Ensure appropriate ventilation.

- ☐ The mouth, nose, and skin can absorb hazardous materials. Ensure ventilation provides fresh air activity to decrease exposures to dusts, fumes, gases, mists, and vapours. Adequate ventilation means that clean air is flowing toward the artist and contaminated air is flowing away. Blowing air around with a fan without a source of clean air is not adequate ventilation, and can increase exposures to harmful substances.
- ☐ Prevent the accumulation of flammable vapours or spray mists to limit fire hazards with proper ventilation.

## Have proper protective gear and cleaning supplies available.

- ☐ Wear special work clothes and keep separate from other clothing, even during clothes washing.
- ☐ Keep cleaning supplies accessible.
- ☐ Clean up spills immediately, even small spills, and dispose of waste chemical and clean-up materials properly.
- ☐ Contain flammable spills with activated charcoal, diatomaceous earth, or deodorant-free cat litter.
- ☐ In the event of an accidental exposure calls the National Poison Control Centre Hotline or the number for the nearest certified Poison Control Centre.

## Wash hands and other exposed body parts after working, and before eating or using the bathroom.

- ☐ Avoid using toluene, turpentine, kerosene, or other solvents to clean your skin.
- ☐ Use soap and water or baby oil or a skin cleanser.
- ☐ Wash under fingernails. Keep nails trim and do not bite nails.

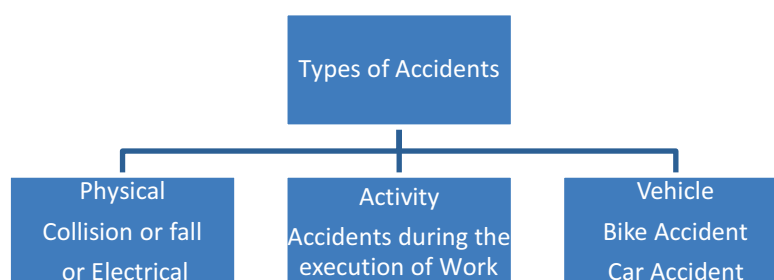
## Maintain your health and fitness.

- ☐ Recognize your physical, emotional, and mental limits.
  - o Alertness decreases with hunger and fatigue.
  - o Anger, sadness, hurrying and frustration increase chances of accidents and mistakes.

- ☐ Have regular health check-ups.
- ☐ Make sure your health care provider is familiar with the art and craft materials you use, your level of exposure, and your studio environment.

### 7.1.2 What is an Accident?

An **accident** is a specific, unpredictable, unusual and unintended external action which occurs in a particular time and place, with no apparent and deliberate cause but with marked effects.



### Frequently occurring accidents/hazards on Workshop

Some of the more frequently encountered hazards include:

- ☐ Electrical hazards
- ☐ Hazard due to scissors and needle
- ☐ Falling object hazards
- ☐ Equipment failure
- ☐ Fire Hazard

### 7.1.3 What is a Fire Extinguisher?

Fire extinguishers are a fire protection device used to extinguish or control small fires.

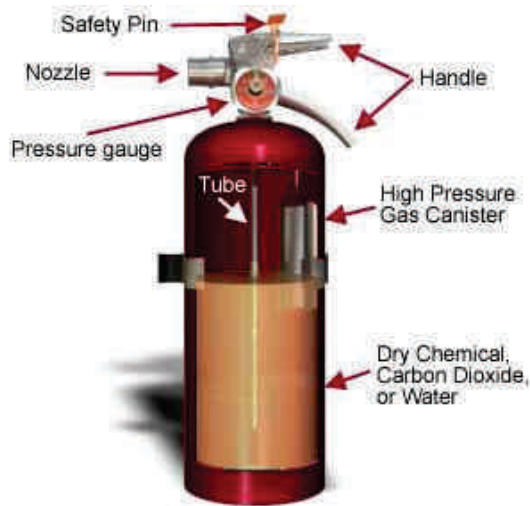


Figure 7.1 1 Fire Extinguisher

### How does a fire Extinguisher Work?

Fire extinguishers contain carbon dioxide, which is the chemical that creates the pressure over the extinguishing agent. Once the lever is pushed, Carbon dioxide will push the agent and project it through the hose.

#### Types of Fire Extinguishers:

Fire extinguishers are classified based on the type of burning material



Figure 7.1 2 Classification of Fire Extinguisher

## General method to operate a Fire Extinguisher

### P A S S

**Pull the Pin** at the top of the extinguisher. The pin releases a locking mechanism and will allow you to discharge the extinguisher.

**Aim at the base of the fire**, not the flames. This is important - in order to put out the fire, you must extinguish the fuel.

**Squeeze the lever slowly**. This will release the extinguishing agent in the extinguisher. If the handle is released, the discharge will stop.

**Sweep from side to side**. Using a sweeping motion, move the fire extinguisher back and forth until the fire is completely out. Operate the extinguisher from a safe distance, several feet away, and then move towards the fire once it starts to diminish. Be sure to read the instructions on your fire extinguisher - different fire extinguishers recommend operating them from different distances. Remember: Aim at the base of the fire, not at the flames!!!!



### 7.1.4 What is Health?

Traditionally, health is defined as the absence of illness. WHO defines health in this positive way:

*Health is a state of complete physical, mental and social well-being – and not merely the absence of disease or infirmity.*

#### **Maintaining clean environment at work:**

- ☐ Designate storage space for everything.
- ☐ Provide sufficient housekeeping tools, including brooms, clean rags, and spill absorbers.
- ☐ Define areas for scrap storage and schedule regular collection, removal, and disposal.
- ☐ Assign clean-up responsibilities and make sure work sites are cleaned and cleared before quitting time.

**Hygiene** – It is a set of practices performed for preservation of health. It is maintained in personal, home, food and workplace.

**Personal Hygiene** - The cornerstone of hygiene. The body is the source and entry point of many illnesses. Appropriate personal hygiene can prevent all sorts of diseases

**Hygiene at home** – When you spend your time at home you may as well maintain hygiene as the air you breathe can affect your breath.

**Food** - Whether in the home, in industry or in catering, food hygiene should be second nature at this time when new food risks are sharply on the increase

**Instilling hygiene rules and basics** - These should rapidly become second nature and act as a safeguard for the health of the population at large. Setting an example, repetition and education are most important in successfully applying personal, domestic, food or pet hygiene. Likewise, vaccination is an invaluable preventive measure, and should be undertaken at the appropriate time, and booster schedule adhered to.

Each of us has a contribution to make to health, and this starts with basic day-to-day ground rules for hygiene.

Effective hygiene should be instilled in us from a young age so that it becomes second nature.

Hygiene is essentially a healthy attitude towards life in general, including a balanced diet, a well-ordered lifestyle, balanced sleeping patterns and avoiding smoking, alcohol and drugs. Living hygienically is the first step towards a healthier society

## Unit 7.2: First Aid

### Unit Objectives



At the end of this unit, you will be able to:

1. Know the common components of First Aid Kit.
2. Emergency procedures of First Aid in different situations
3. Report hazards and potential risks/ threats to supervisors or other authorized personnel
4. Participate in mock drills/ evacuation procedures organized at the workplace
5. Undertake first aid, fire-fighting and emergency response training, if asked to do so
6. Take action based on instructions in the event of fire, emergencies or accidents

### 7.2.1 First Aid and First Aid Kit

**First aid** is the assistance given to any person suffering a sudden illness or injury with care provided to preserve life, prevent the condition from worsening, or promote recovery.

#### Components of First Aid kit

Kits vary in contents but most kits have the following items:

- ☐ Band-aids / Adhesive bandages
- ☐ Gauze pads and tape
- ☐ Scissors, cold pack
- ☐ Wound bandage / compress
- ☐ Eye pads / eye wash solution
- ☐ First aid / burn cream
- ☐ Antibiotic ointment
- ☐ Face shield or barrier mask for providing CPR
- ☐ Forceps / tweezers
- ☐ Disposable thermometers
- ☐ First aid instruction booklet



## 7.2.2 Common Procedures for First Aid in various situations

### Adult / Child Choking: Severe Airway Blockage



Quickly ask, “are you choking?”

- ☐ If the victim nods yes, or is unable to talk, speak, or cough – act quickly.
- ☐ Stand behind the victim.
- ☐ Make a fist and place the thumb side of that hand against the victim’s abdomen, just above the navel and below the ribs. Grasp fist with the other hand.
- ☐ Quickly thrust inward and upward into the abdomen.
- ☐ Repeat thrusts until object is expelled or victim becomes unresponsive.



### Victim is unresponsive:

- ☐ If needed, help the victim to the ground and alert EMS / call 911.
- ☐ Begin chest thrusts as you would with CPR. Each time the airway is opened look for the object in the victim’s throat and if you can see it, remove it – being careful not to lodge the object further into the victim’s throat.
- ☐ Continue chest thrusts until EMS / Paramedics arrive, or the victim shows signs of breathing /responsiveness.

### Minor Wounds

#### Signs and Symptoms:

- ☐ Break, cut or opening in the skin
- ☐ Bleeding – may be minor, moderate or severe
- ☐ Bruising and pain
- ☐ Infection
- ☐ Progressing shock

## First Aid:

- ☐ If bleeding, apply direct pressure with a clean cloth or absorbent pad.
- ☐ Wash area with antibacterial soap and clean until there appears to be no foreign matter in the wound.
- ☐ Cover area with an adhesive bandage or gauze wrap.



## Bruising

It is caused by broken blood vessels leaking blood under the skin. Bruising can be minimal or large and severe.



## Signs and Symptoms:

- ☐ Pain and swelling
- ☐ Discoloration: new bruising will be dark purple / older bruising will fade to greenish yellow

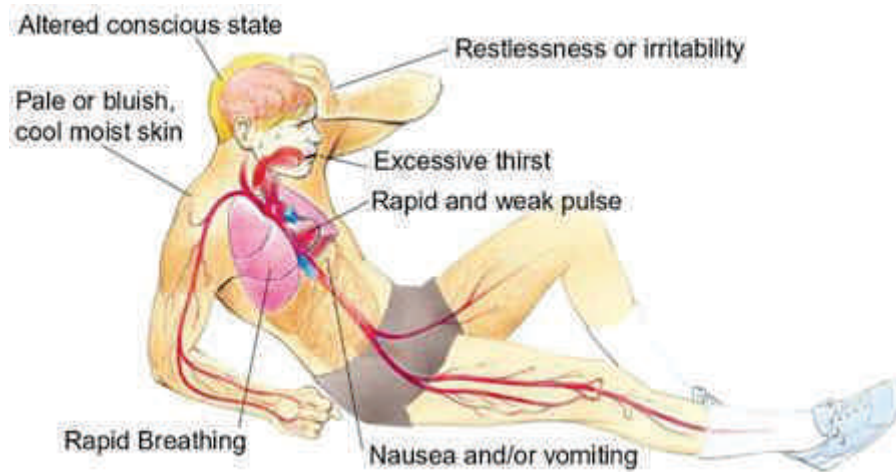
## First Aid:

- ☐ Apply ice to injury to reduce pain, bleeding and swelling.

- ❑ To prevent frost bite to the injured area, place a thin towel or cloth between the skin and ice. Limit ice application to 20 minutes on, 20 off.

## Shock

Shock develops when not enough blood flows to the vital organs of the body. Victims with shock may stop responding.



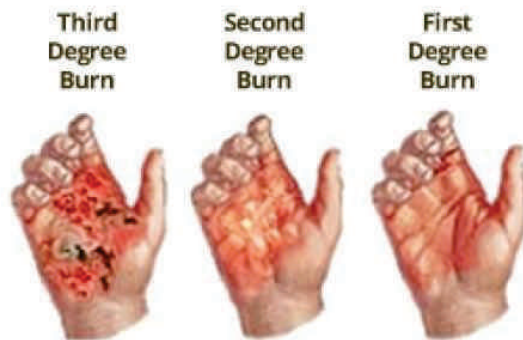
## Signs and Symptoms:

- ❑ Dizziness, faint or weak feeling
- ❑ Rapid, shallow breathing
- ❑ Anxiety, restlessness, agitation, or confusion
- ❑ Cool and clammy to the touch
- ❑ Pale or grayish skin
- ❑ Thirst
- ❑ Nausea or vomiting

## First Aid:

- ❑ Help person lie on their back.
- ❑ Keep victim lying flat with feet slightly elevated if possible.
- ❑ Cover person to keep him/her warm, but prevent overheating.
- ❑ Ensure an open airway for victim and adequate breathing.
- ❑ Monitor victim and administer CPR if necessary.

## Burns



### Signs and Symptoms:

- ☐ Pain, Redness
- ☐ Swelling, Blisters

### First Aid:

- ☐ Expose the burn.
- ☐ Cool burns with cold water and continue until pain lessens.
- ☐ After cooling, cover with a dry, sterile bandage or clean dressing.
- ☐ Protect from friction /pressure
- ☐ DO NOT pop blisters or apply any ointment or other substance.

## Bites and Stings First Aid



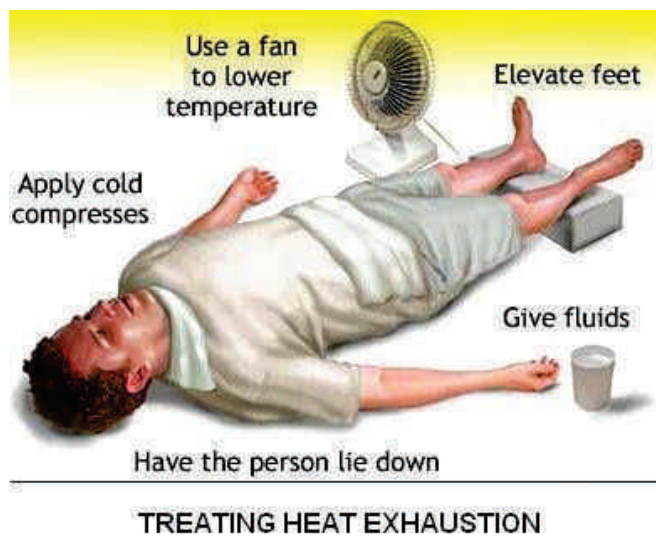
## General Signs and Symptoms

- ☐ Redness
- ☐ Swelling
- ☐ Pain
- ☐ Itching
- ☐ Nausea
- ☐ Problems breathing

## First Aid

- ☐ Remove jewellery and constrictive clothing
- ☐ Wash the area with soap and clean water
- ☐ Cover the area with an adhesive bandage or gauze wrap
- ☐ Apply ice if needed to reduce pain and swelling

## Heat Exhaustion First Aid



## Signs and Symptoms:

- ☐ Cool, moist skin with goose bumps when in the heat
- ☐ Heavy sweating
- ☐ Faintness
- ☐ Dizziness
- ☐ Fatigue
- ☐ Weak, rapid pulse
- ☐ Low blood pressure upon standing
- ☐ Muscle cramps
- ☐ Nausea
- ☐ Headache



## First Aid:

- Stop all activity and rest.
- Move to a cooler place.
- Drink cool water or sports drinks.
- Contact your doctor if your signs or symptoms worsen or if they don't improve within one hour. Seek immediate medical attention if your body temperature reaches 104°F (40°C) or higher.

## 7.2.3 Personal Protective Equipment (PPE)

**Personal protective equipment (PPE)** refers to **protective** clothing, helmets, goggles, or other garments or **equipment** designed to protect the wearer's body from injury or infection. The hazards addressed by **protective equipment** include physical, electrical, heat, chemicals, biohazards, and airborne particulate matter.





## Exercise



1. Discuss some general safety rules for working in the workshop.

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2. What is PPE and are the common components of PPE?

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3. What is an accident and what are the types of accidents?

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4. Discuss the types of fire-extinguisher and their uses?

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5. Write a short note on health and hygiene?

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6. What are the common components of First-Aid kit?

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7. What are the symptoms of shock and what should be the first-aid?

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8. What are the symptoms of heat exhaustion and what should be the first-aid?

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## 8. Team Work

Unit 8.1 – Working in a Team



## Key Learning Outcomes



**At the end of this module, you will be able to:**

1. Know the benefits of team work.
2. Understand the stages of team building.
3. Understand the methods of working in a team effectively.
4. Be effective and efficient at workplace
5. Properly communicate about organization policies
6. Talk politely with other team members and colleagues
7. Adjust in different work situations
8. Give due importance to others' point of view
9. Avoid conflicting situations
10. Develop new ideas for work procedures

## Unit 8.1: Working in a Team

### Unit Objectives



At the end of this unit, you will be able to:

1. Know the benefits of team work.
2. Understand the stages of team building.
3. Understand the methods of working in a team effectively

### 8.1.1 Why work in teams?

There are several good reasons:

- Research shows that we all learn effectively from each other. Hence, your teams should be learning teams, with the focus on helping each other to learn.
- Teams are much more effective than individuals for work on complex projects.
- Teamwork develops your interpersonal skills in coping with conflict, in being a chairperson, in developing your interdependence and accountability and in developing your sense of self-esteem. This aids your personal development and your non-work-related relationships.

### 8.1.2 Effective teams

Why do some groups accomplish very little, while others achieve much more?

This difference stems very much from the **processes within the group** - its inner dynamics or workings. The features of an effective team include:

- combined group effort of all members
- clear goals
- group members focused on learning
- mutual trust and support
- open communication
- democratic processes.

### 8.1.3 Making the most of your team

There are many advantages of working collaboratively with other students. To make the most of your experience as a team member, remember to:

- Become actively. Don't wait for another team member to do all the work.
- Share - open communication and the contribution of ideas and information is essential for successful and highly performing teams.
- Learn to work cooperatively. The success of your team will depend on helping each other.
- Respect your fellow team members. Be aware that each team member will have unique talents and ways of learning. Not everyone learns by the same process.
- Use your time productively and effectively. Define clear goals - what needs to get done, by whom and why?
- Expect success - be enthusiastic and positive.
- Meet with your group members regularly.
- Ask your tutor for frequent feedback - that's the tutor's role.
- Maintain a sense of humour - keep things in perspective.
- Hang in there - developing a good team is hard work and demands commitment from all team members.

### 8.1.4 Group development Process

There is strong evidence that groups pass through a sequence of five stages of development. These are sometimes defined as:

- ☐ Forming, or coming together
- ☐ Storming, or conflict
- ☐ Norming, or working out the rules
- ☐ Performing, or getting the job done
- ☐ Mourning, or breaking up.

The length of time different groups take to pass through each of these developmental stages will vary, but it is generally not possible to achieve high team performance until the group has passed through at least the first three stages. The duration of each stage will depend on factors such as individual and team maturity, task complexity, leadership, organisational climate, and external climate.



## Forming ..... *Am I a member of this group?*

During this stage of group development new team members discover what being a member of this group means.

You may find that you and/or other group members need:

- clear goals and objectives
- definition of tasks and roles
- clear work plans
- to identify group behaviour, standards and norms and ways to handle behavioural problems

You and/or other group members may:

- demonstrate excitement
- participate hesitantly
- show tentative attachment to the group
- discuss problems peripheral to the task
- be uncomfortable and anxious about the new situation
- accomplish minimal work

This stage is complete when new members start thinking of themselves as part of a group.

## Storming ..... *Who controls this group?*

During this stage of group development, team members may become hostile or overzealous as a way to express their individuality and resist group formation.

You may find that you and/or other group members exhibit:

- infighting, defensiveness and competition
- doubts about success
- low group morale
- polarisation of group members
- concern over excessive work
- disunity and increased tension

You and/or other group members may:

- set unrealistic goals
- resist the task demands
- establish a pecking order
- criticise group leaders or other group members
- complain.

Many groups do not develop beyond this stage because they lack the ability to listen to each other and find mutually acceptable resolutions to the major issues.

## **Norming** ..... *What are the rules of this group?*

During this stage of group development, members accept the team, the team norms, their own roles and the idiosyncrasies of fellow group members. Emotional conflict is reduced by patching up previously conflicting relationships.

You and/or other group members may:

- Attempt to achieve maximum harmony by avoiding conflict
- develop a high level of trust and respect for others in the group
- discuss group dynamics constructively
- form friendships
- develop a sense of team cohesion with a common spirit and goals
- have high group morale
- establish and maintain group boundaries
- accomplish a moderate amount of work

During this stage, if the formally appointed leader is not effective, or there is no formal leader, a leader will emerge or should be agreed upon who can focus the group resources to solve problems.

## **Performing** ..... *How high can this group go?*

Now that the team has established its interpersonal norms, it becomes an entity capable of diagnosing and solving problems, and making decisions. This stage is not always reached by all teams.

You and/or other group members may:

- be willing to sort through group problems
- develop high conflict resolution skills
- understand members' strengths and weaknesses
- undertake constructive self change
- identify closely with the group
- accomplish a great deal of work

Groups reaching this stage will be effective and will devote energy to maintain good group relations.

## Mourning ..... *Where do we go from here?*

This final stage of group development applies more to temporary teams like task groups or committees. However, these days, with reorganisations occurring frequently this stage is not uncommon.

You and/or other group members may:

- feel elated at the successful attainment of goals
- feel disappointed at unattained goals
- feel a sense of loss when the group is disbanded
- feel relief at the end of the process
- congratulate each other
- celebrate.

McGourty, J & DeMeuse, KP 2001, Team developer: an assessment and skill building program, John Wiley & Sons

## Exercise



1. Why should we work in a team?

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2. What are the features of an effective team?

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3. Discuss the group development process?

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4. How can we get the maximum output from a team?

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