# Chapter: 7
# Handicrafts and Handlooms

# PART - I

## Basket Maker of Andugula

Polaiah is a basket maker from Shankavaram village in Kanigiri Mandal, Prakasam district. He is about 35 years old. He belongs to Yerukala, a tribal community. His family has been weaving baskets for generations. Bagyamma, his wife, also works as a basket maker. Moreover, they have three children. Polaiah's father along with other 25 families came to Kandukuru and Ongole about 30 years ago as the demand for baskets had declined in their native village. He sells baskets on road side are near by villages.

Polaiah uses the spines of wild date palm *(eatha chettu)* leaves. Using a knife, he shaves off the leaves and keeps them in hot sunshine to dry them. The raw material, wild date palm leaves, are brought in bundles from Shankavaram, their native village. His relatives in Shankavaram collect the spines from bushes around their villages and sell to basket makers like Polaiah. Shankavaram is about 80 km from Ongole.

- What do you understand about raw material in the context of basket making? Who collects them?
- What are the tools used by the basket makers?

Each bundle of date palm spines costs Rs.120. Polaiah and other basket makers usually bring 10 bundles for two months. Polaiah's family makes 25 baskets from one bundle. Ten bundles of spines would give them about 250 baskets. It takes 30 minutes to make a basket. He weaves baskets from 10 am to 5 pm with a few breaks to eat and rest.

***Fig 7.1 Basket shop with bamboo products***

Polaiah sells each basket for Rs. 20. Sometimes, customers ask for a bigger basket for family rituals. These are sold at a higher price depending on the amount of raw material used. He sells baskets throughout the year. In two months he can sell Rs.5000 worth of baskets.

***Fig 7.2 Basket weaving***

The cost price is Rs. 1200 excluding the transportation charges of Rs.100 for every visit to his village. So, the income of his family is Rs.3700 for 2 months. He does not earn sufficient income to meet his family expenditure. To supplement his income Polaiah buys and sells bamboo products like trays and stands.

Basket making is a craft work that involves the use of wild date palm leaves, cane and bamboo, which are found in forests. There has been depletion of

forests due to their extensive exploitation for big industries. This affects the livelihoods of people who have traditionally depended on forest. Further, the demand for such products has reduced considerably. This forces them to move out of rural areas and migrate to urban areas for survival. This is true for many involved in traditional activities. However, they often have to live in urban areas without basic amenities.

## Urban Slum

Polaiah lives in a slum, which does not have proper drainage, so it emits foul smell, and breeds mosquitoes and flies. There is no electric connection or safe drinking water. Polaiah's hut is made of bamboo, mats and recycled plastic bags and tarpaulin. During the rainy season, their roofs often leak and the huts are flooded. Sometimes the Municipal Corporation officials evict Polaiah and other basket maker families.

Despite struggling hard, people like Polaiah have been denied voting rights in the city. In fact, they have been denied ration cards, as they don't have any proof of identity or proof of residence.Thus, they cannot either participate in the democratic processes of the city or avail the facilities for the poor.

## Basket Makers

People of *Yerukula* tribe are usually involved in basket making and live in different parts of Andhra Pradesh. They are called *'Yerukula'* after their women's traditional profession of fortune telling *'Eruka chepputa'* (*Sodhi*). People of this tribe speak *'Yerukula basha'* .

***Fig 7.3 Basket weaving***

Words from Telugu, Tamil and Kannada languages are used in this language.

Choose the correct option:

a. Forests are depleted largely because of the usage by (basket weavers / big industries).

b. Polaiah buys bamboo items from (a trader in mandi/a village in Andugula).

- Make a table showing expenditure for raw material and income from the produce.
- Do you think people like Polaiah should be given ration card and allowed to vote in Hyderabad?

By now, you have learnt that goods such as baskets made of bamboo and *etha chettu* require simple production – using very few materials mostly made of natural resources. There are many other goods which require raw materials to be processed in a more complex way with complex tools. Cloth materials made of cotton and silk are examples of such goods. Cloth can be manufactured today either in hand-operated looms or by power looms or in large mills. We will study here how it is produced by handloom weavers.

## PART - II

## Handloom Weavers in Dharmavaram

Dharmavaram is located in Anantapur district in the state of Andhra Pradesh. Dharmavaram Sarees are traditionally woven in the interlocked-weft technique Dharmavaram silk sarees are a benchmark in traditional craft industry. They are very famous for their striking colour combinations with contrast pallu and border woven with exquisite brocade gold patterns. It caters to the needs of the customers. The designs are decided by the designer according to the market demand. The additional design can be added to silk saree using kundans, chamkies, and stones and also opposite colours. Depending on the elaboration of the saree design, the cost varies. Recently Dharmavaram sarees received the patent right. (Please refer Animal Fibre lesson in your Science Textbook for more details of sericulture and reeling processes.)

The weavers would not produce the raw material required for manufacturing sarees such as silk yarn, colours and zari. They purchase from market. Farmers grow silk worms to produce cocoons on mulberry leaves from which silk yarn is made. Silk yarn is obtained from cocoon in reeling centers. This silk yarn is locally called "Katcha Pattu". Some of the merchants from Surat sale Zari to the weavers of Dharmavaram.

**Stages before weaving:**

The raw silk extracted from the silk cocoon undergoes some process before it reaches on Loom (Maggam). The strands of Katcha Pattu twisted together to make yarn in twisting centres. The raw silk is made convenient for warp (vertical threads) and weft (horizontal threads). This process is called 'Sappuri'. Later silk yarn is dyed with colours. Dyeing is the colouring process by dipping the yarn in boiled colour water at very high temperature. Repeated boiling and cooling of the yarn helps in the uniformity of dye application. After colouring the silk yarn is dried in shade. This process is called 'Tye and Dye'.

**Tools and machinery :**

Weavers own the wooden loom which is the main tool for weaving. Apart from it they also use small knives, trunks of maize, horns and other tools like huge container for boiling, iron rods for drying, spinning wheel for turning fiber into thread or yarn, fly shuttle, paddle which help in the designing and weft formation, computers and punched Jacquard cards for designing.For weaving a saree, they give priority for designing. If you look at the saree, you will notice that there are very intricate designs on them. Previously they used to plotting the design on graph paper. But now computers are used. They are designing different designs very easily on Jacquard cards. For this purpose there are special designing centres, which facilitate many attractive designs.

*Fig 7.4 Jacquard card printing*

- Look at a saree and draw any of the common designs on them in your notebook.

**Process of weaving a Saree:**

Weavers use warp, wept and zari in this process. First of all weaver put the thread roles on the vertical frame of the warping machine (Dolu) which is octagonal in shape.

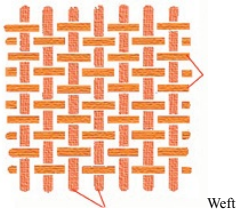
The warp is nearly 75 meters long which can make 10 sarees at a time.

The most basic process in which two different sets of yarns are entwined to form a fabric or cloth. One of these sets is called a warp which runs from the rear end to the front of the loom lengthwise. The other set of crosswise yarns are the filling, called the weft or the woof.The warp is loaded in to the loom by attaching each strand of warp to the loom. This process is locally called '*achhu'*.

After setting the warp the weaver arrange Jacquard cards as per the design and enters into the loom to starts weaving. The pit loom which is locally called '*Maggam'*. *Zari, Kundans, Stones* also used in the weaving where design occurs. The weavers use hands and legs to weave the saree. It requires approximately 4-8 days (depending on the variety of saree) of continuous efforts of two persons for weaving a saree.

**Warp and Weft**

You will notice that cloth has threads passing from top to bottom and sideways something like this #. Warp is the yarn that goes from top to bottom and weft is the yarn that go from left to right.




## A case Study

Let us look at the account of a visit to a weavers' house in Dharmavaram to know more about makng of silk sarees.

*Fig 7.5 Katcha Pattu*

*Fig 7.6 Coloured Pattu*

Venkatesu is a resident of Dharmavaram. All of his family members – he, his wife, his son and daughter-in-law work as weavers. When we visited his house, we found all members in the family engaged in different tasks. While he was winding yarn, his son Nagendra was engaged in weaving on the *maggam* (pit loom) set up inside the house. Silk sarees are manufactured by following different tasks like dyeing of Katcha Pattu, Spendiling of Yarn etc. Since he has become old, Venkatesu spends most of the time winding yarn and his son weaves on the loom.

***Fig 7.7 Dyeing Fig*** ***7.8***

***Weft making***

Venkatesu's wife and daughter-in-law do bobbin winding. There is some work like making saratas for warping done collectively by group of weavers on streets or outside their house.

*Fig 7.9 Warp making*

His son Nagendra brings all the raw material like dyed silk yarn, zari and design from master weaver and sometimes from cooperative society of which he is a member. Venkatesu gets raw materials at a time to weave ten sarees. The whole family has to work for 12-15 hours a day for nearly 40- 50 days to weave 10 sarees. They earn about Rs.1300 per saree for the work.

*Fig 7.10 Pitloom*

Weaving saree is a hereditary occupation for Venkatesu's family. The income Venkatesu's family gets from weaving silk sarees is insufficient to run his family.

Between March and May, Venkatesu's family is able to weave only for a few hours a day. If there is high temperature, thread will get cut. The whole family works only till afternoon during these days. Women are distressed a lot as they have to do not only weaving but also the household chores like cooking food, fetching water,preparing children to go to school etc.

Earlier, Venkatesu's family used to weave only for the cooperative society. The cooperative societies provide financial assistance through insurance in case of unexpected illness or death in the weaver's family. They also help in getting loan for construction of houses. Now-a-days the cooperative society is not giving sufficient work, so they had to look for additional sources of income to run their families. Since a master weaver in Dharmavaram agreed to give work and remuneration Presently Venkatesu's family weaving silk sarees for the master weaver. Venkatesu has not given up the membership with the cooperative society with a hope that it will improve its functioning in future. Though they have own loom due to lack of investiment, raw materials, new designs, market facilities they have to depend on he master weavers. Recently number of factories started in and around Dharmavaram with more number of looms. In each factory there are about 100-300 looms. Here weavers are provided shelter and salary.

## Weaver's Problems and Cooperative Societies

*Fig 7.11 Weaving*

Andhra Pradesh has the second largest number of handlooms in the country, next only to West Bengal. Handloom weavers are facing a serious problem. They face a stiff competition from power loom and mill made cloth -these are cheaper as they are produced on machines and also because they use synthetic yarn which is cheaper than cotton or silk. Even though it is popular due to its high quality and unique beauty, the Dharmavaram saree seems to be expensive. But the weavers do not get good rate due to middle men's involvement.

*Fig 7.12 Powerloom*

The sarees that are manufactured on powerlooms are entered in the Dharmavaram market by the middle men. There is a degrees in the demand for the sarees woven by the handloom weavers. Due to these reasons the living conditions of the weavers fall in danger. lack of investment and ill wealth weavers faced many problems.

*Fig 7.13 Jacquard centre*

The buyers are spread all over the world and weavers do not have any direct contact with them. Fashions in the cities change fast and it is difficult for the weavers to know what kind of designs are in demand. Therefore, they have to rely on middlemen and master weavers to know about the designs in vogue and change their designs accordingly. They have to depend up on middlemen for getting raw materials and investment. Middlemen playing key role in handloom sector and getting huge prficts from consumers.

In order to overcome these problems the weavers are encouraged to form cooperative societies. The cooperative societies are meant to help the weavers in buying raw materials at low price and to arrange for marketing of their cloth. This reduces their dependence upon middlemen and traders. The cooperative societies should setup training centers to help the weavers by training in new designs.

***Fig 7.14 Saree before packing***

However, now-a-days, a large section of weavers in many parts of Andhra Pradesh do not get sufficient work from cooperative societies. In some cooperative societies, weavers are not given any role in making decisions regarding the procurement of raw materials and the sale of cloth and dress materials. They do not provide opportunities for weavers to produce sarees to suit the changing preferences of consumers. This has once again pushed the weavers into the clutches of the middlemen and traders.

A large amount of handloom cloth materials in Andhra Pradesh are produced and marketed by master weavers and merchants. The master weavers and merchants procure all the raw materials, supply them to weavers and collect the woven cloth. Then they sell these materials to wholesale cloth merchants.. They pay a stipulated amount as wages for the weaving work. Many master weavers also provide loan to weavers to set up loom, to buy other tools and thus restrict them not to weave sarees for other master weavers. They also decide the wages for the work done by the weavers. Since they are interested in raising their incomes, it is natural for them to look for ways to pay less to the weavers. So, the cooperative societies should provide work and save the distressed weaving families from the master weavers. Along with Dharmavaram there are many amazing weavers in Andhra Pradesh at Uppada (East Godavari), Mangalagiri (Krishna), Ponduru (Srikakulam), Venkatagiri (Nellore), Chirala (Guntur) and Srikalahasti (Chittoor).

- Prepare a table showing raw materials and tools used to makeing Dharmavaram Silk sarees.
- Why Venkatesu's family has begun to weave for a master weaver?

**Key words :**

1. Raw materials 2. Jacquard Cards 3. *Sappuri 4.* Katcha Pattu
5. Patent 6. Warp - Weft 7. Tie & Dye 8. Co-operative Societies

## Improve your learning

1. Do you think people have enough earnings from work like basket making and weaving? $AS_1$
2. Prepare a list of goods which could have substituted the basket. Discuss with your parents before preparing the list. $AS_3$
3. Many new products have replaced handicrafts – identify them and find out where they are produced. Discuss how this could affect the lives of handicrafts persons. $AS_4$
4. Why did Polaiah's family come to Kandukuru? Why does he have no right to vote in Kandukuru? $AS_1$
5. You may find crafts persons like Polaiah producing goods other than baskets. Meet two such persons, collect the following details and discuss them in the class. One sample is given for you. $AS_3$

| Sl. No. | Name of the crafts person | Goods produced | One or two important raw materials used | Source of raw materials |
|---|---|---|---|---|
| 1 | Polaiah | Baskets | Spokes of date palm leaves | Shankavaram – native village |
| 2 | | | | |
| 3 | | | | |

6. Why do you think patenting Dharmavaram silk saree weaving would help weavers in and around Dhrmavaram? $AS_1$
7. Should weavers procure raw materials, weave Silk sarees and sell them directly to the people? What are the challenges in it? $AS_1$
8. Prepare the flow diagram depicting the organisation of production in basket making and handloom textile weaving. $AS_3$
9. Compare the similarities and differences between basket making and Ikkat saree weaving and fill in the following table: $AS_1$

| Work | Raw materials used | Tools used | How goods are sold |
|---|---|---|---|
| Handloom weaving | | | |
| Basket making | | | |

10. List various handicrafts with location in Andhra Pradesh and prepare a chart. $AS_3$

## Project :

1. Invite a craftsperson to your classroom or visit their work place. Make a wallpaper showing different processes of their production.
2. Meet different artisans in your village/locality fill in the following table and discuss in the classroom.

| Sl. No. | Name of the artisan | Profession | Continuing/ Discontinuing | If discontinued reasons | If continued whether they are satisfied |
|---|---|---|---|---|---|
| | | | | | |

# Chapter:8
# Industrial Revolution

In the previous lesson, you learned about various ways in which things are made by artisans. We also read that many of them are not able to compete with machine-made products and that many people have stopped practising their professions. In this chapter, we shall explore how machines have come to dominate the way in which products are made and how they impacted the lives of people.

### Increasing control of Traders

During 1500 AD to 1800 AD trade between countries in America, Europe, Africa and Asia increased manifold. Textile trade too began to expand. Now European traders began to use putting out system – that is they gave advances to small farmers and artisans to produce textile goods. During this period, income from farming was low and many peasants lost their farm and grazing land. Therefore, doing textile work helped them to make a living.

Under putting-out system, a cloth trader in Britain purchased cotton from a supplier and carried it to the spinners. Then the yarn was taken by the trader to the next stage of production - the weavers. The cloth was taken to the fullers and finally to the dyers who gave it colour. These different activities could be done in different parts of the

country. But all finishing work was done in London before it was sold in other countries. Thus, textiles goods were produced by a large number of producers who were controlled by traders. There was no system as in a factory - that is, the different stages of producing cloth did not happen in the same place but in different households. Each trader engaged 20-25 craftspersons at each stage of production.

Sometime later, the traders brought the craftspersons under one roof so that they could explain their requirements and organise the production more effectively. They set up small workshops called *manufactories*. The craftsmen brought their own tools and worked with raw materials given by the trader. Then, the trader took the product and sold it in the market. In this way, slowly the control of the trader over the craftpersons increased. This phase is called 'proto-industrialisation' – a phase in which more and more people entered craft production; traders established control over the workers; and a large market for craft products developed across the world.

## Beginning of Industrial Revolution 1750-1850 AD

Many changes occurred during this period. In about 1750, machines and steam power began to be increasingly used to produce goods, to move goods and people from one place to another. Several people living in villages moved to towns and cities for work. Today we use many machines and machine-made goods in our daily life. This was the beginning of the 'machine age' in Britain.

As the demand for cloth, and other handicrafts increased many times, many artisans wondered how they could increase the production to cope with the demand. Some of them began thinking, 'These days there is a great demand for our cloth, but we are not able to produce more cloth to meet this demand. Besides, the cloth made with our looms is expensive. If we can make machines which can spin yarn faster and weave cloth faster, we will be able to produce more cloth at a lower price. Then more people will buy our cloth and we can earn more money.'

As a result of the pressure of trade and work, several people attempted making such machines.

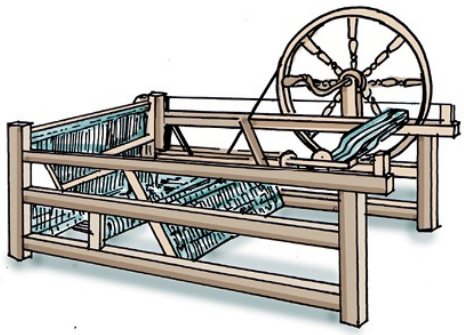
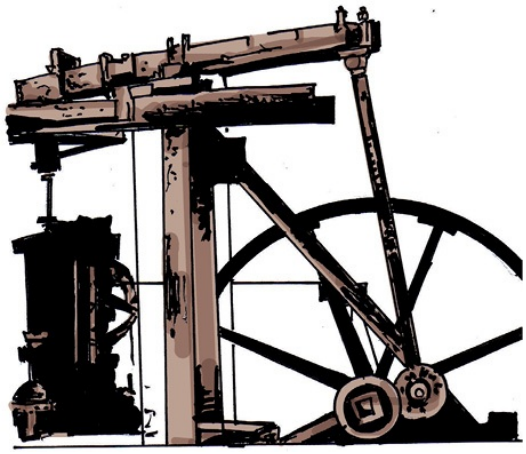


***Fig 8.1 Spinning Jenny - A new machine to spin yarn.***

Then came the long awaited invention – a machine which could spin lots of yarn in a short time. However, these machines were very heavy and the artisans thought, 'It is so tiring to turn these machines with our hands or feet. How nice it would be if these machines could turn by themselves.' Their dream also became true with the famous invention of James Watt – the steam engine.

## James Watt's Invention

James Watt was an English craftsman who invented machines. He noticed that steam had so much strength that it could move enormous weight. To tap this energy, he made a machine which would run with the help of steam and would not need men or animals to drive it.



*Rod connecting piston and the wheel*

*Fig 8.2 This is one of the steam engines made by James Watt. The piston under the pressure from the steam pushes the rod up and down which in turn turns the wheel.*

He showed his invention to an industrialist called Boulton and the two entered into a partnership to make such machines. Boulton invested the money necessary and paid Watt a salary. Watt made the steam engine. They made an agreement between them to share the profit: two thirds to Boulton and one third two Watt. These two persons made a large number of steam engines, sold them, and made huge profits. Once it is established that machines could run on steam, then such machines were made for all kinds of work – spinning, weaving, making iron tools, driving vehicles and ships, etc.

- How did the need for self-driven machines emerge in England?
- Do you think the arrangement between the scientist- inventor and the capitalist fair?Give reasons.

## Factory System of Production

During 1750-1850, a new system called the 'factory system' emerged. In the place of simple tools and manual power, new machines and steam power came to be increasingly used. Production was now carried on in a place called 'factory', unlike what we read earlier, where production took place in houses. Hundreds of workers were brought together to work in these large factories. Machines became important in place of minor tools and handlooms. They produced goods on a very large scale.

All facilities for production were owned and managed by individuals called capitalists. They invested money on workers, raw materials, machines, etc. and owned them. Unlike in guild system, workers worked for wages and did not own the things they produced.

The early factories were dreadful places to work.

## The Experience of a 19th Century Child Worker

In the 19th century, the industrial workers of Europe had to face several hardships. Let us read about the experiences of a child employed in an English coal mine.

"I have been working in these mines since I was four. Workers hew coal with pickaxes and fill the large wagons with it. Our job is to push these loaded wagons to the point from where horses or mules can haul them. This is a very difficult job. Hauling the loaded wagons through water and slush, and over very steep slopes, leaves us very tired. We have to work in this way for more than 12 hours a day. By the time we return home, we are so tired that we don't even feel like eating. Yesterday, I fell asleep on my way

to home. My mother searched for me and carried me home."

*Fig 8.3 Children pushing cart inside coal mine*

There were several movements to stop employing children in this manner in factories and mines. In response to these movements child labour was banned and now it is a thing of the past in most European countries.

## Inside Early Factories

Major changes swept industries with the coming of machines. Machines could be worked by even unskilled persons. Thus, skilled artisans were no longer required. In their place, a large number of women and children were employed and made to work for meagre wages.

Machines cost a lot of money, and ordinary artisans could not afford them. Only wealthy merchants could set up mechanised factories.

This is what the workers had to say about their plight:

"Every day, we come for work at 6 am. and work till 8.30 pm. The lunch break is only for an hour. By the end of the day, we are too tired to work. But the factory owner uses whips to goad us to keep working.

These days, new machines are being introduced constantly. Since they can do the work of several workers in the same time, fewer workers are required. Every time a new machine is introduced many of us are thrown into the street."

Most of these workers had no other option as they had been expelled from their lands and if they were small craftsmen, their shops had closed down. Gradually, workers of factories and mines formed their own organisations to fight against the conditions of work. In the beginning, they demanded 10 or 8 hours working day, higher wages, disallowing children under 14 years of age from being employed in mines or factories etc. Over time, the struggles and their conditions were improved.

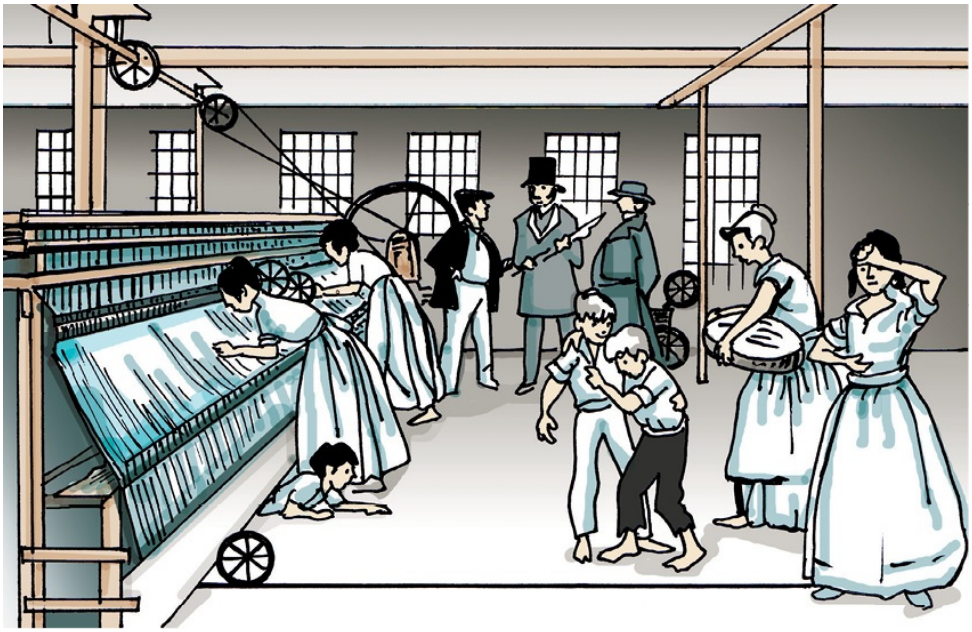


*Fig 8.4 Redrawing of an illustration of inside of a factory.*

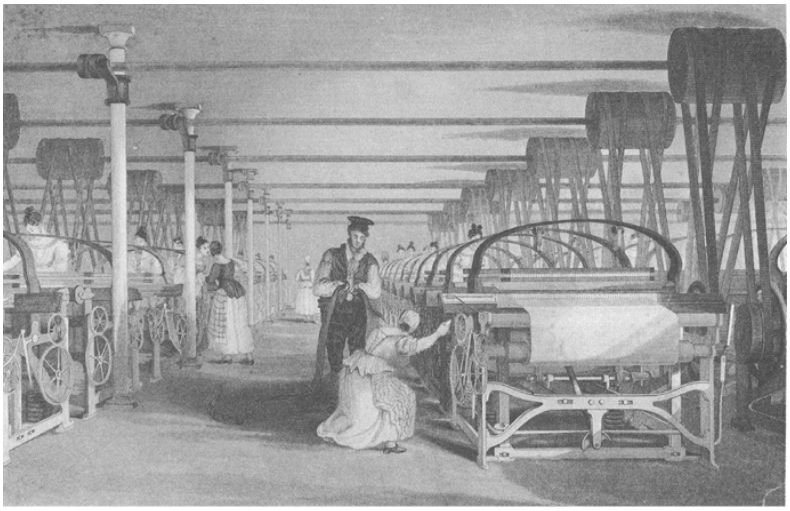


*Fig 8.5*

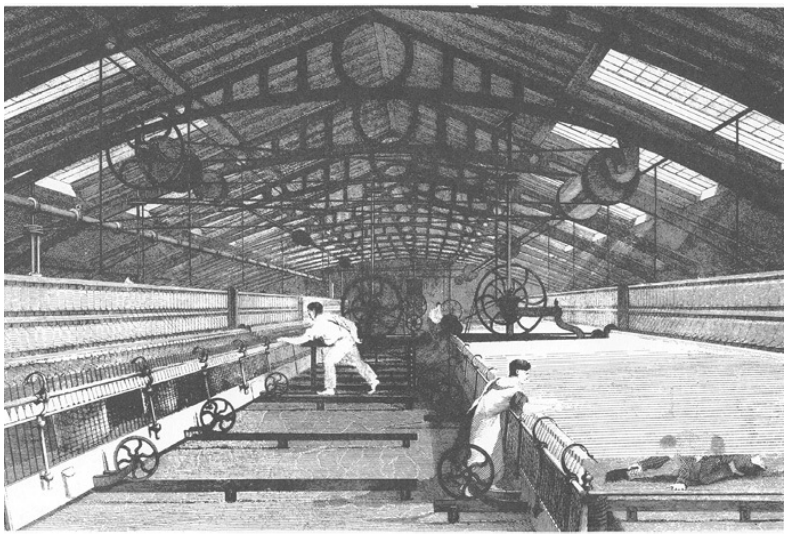


*Fig 8.7*

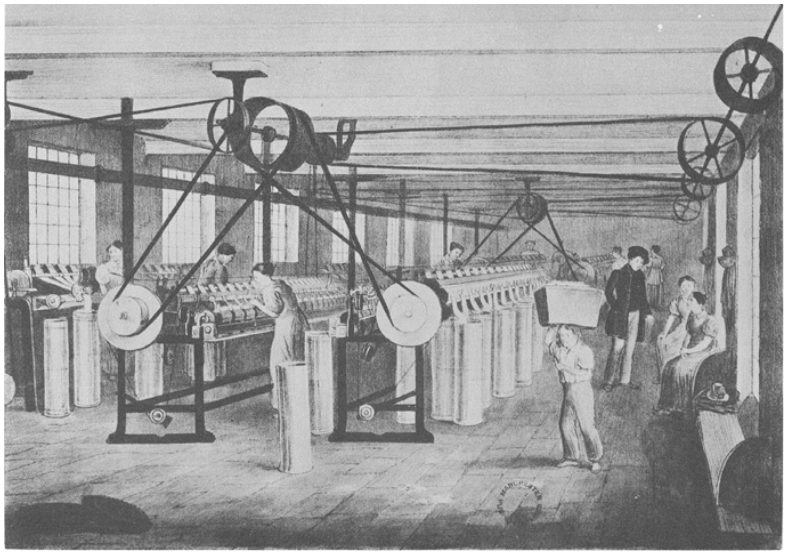


*Fig 8.6*

- Look at these illustrations. They were made during the time of Industrial revolution.
- What can you see in these pictures?

Describe them.

- Who were employed to work on machines?
- Do you know of any factory nearby? Compare its conditions of work with that of English factories 150 years ago.
- Compare the conditions of workers of a leather tannery and the English workers 150 years ago. Find out the similarities and differences.

The factories too have changed by now. Almost all work has become automated, with machines directed by computers. They require very few people and little manual work to run them.

## Sources of Energy and Industrial Development

You have seen that energy is needed to run machines in a factory. Energy is available from coal, electricity, petroleum, and so on. Initially, industries depended upon the energy from coal and steam. Subsequently, they started using several other sources of energy like thermal and hydroelectricity,, petroleum, natural gas, nuclear energy and solar energy.

## Transport Revolution

The invention of steam engine boosted shipping industry. It also reduced the cost of transportation by one third of cost of road transport. Yet people looked for better ways of transportation. The next big thing in the context of transport was adaptation of steam engine to locomotives. George Stephenson's locomotive pulled heavy loads along a 64 kilometre track from Liverpool to Manchester at a speed of 46 kilometers per hour.

In 1840s, John Loudon McAdam devised a method of laying road using broken stones. This created a hard surface, which was an important advancement in road construction. Within another decade bitumen-based binding, which we see in our areas as tar(mac) roads were built. This was further followed by the use of motor cars.

In the early 20th Century, aircraft was developed by Wright Brothers and today, air transport is a major means of transport.

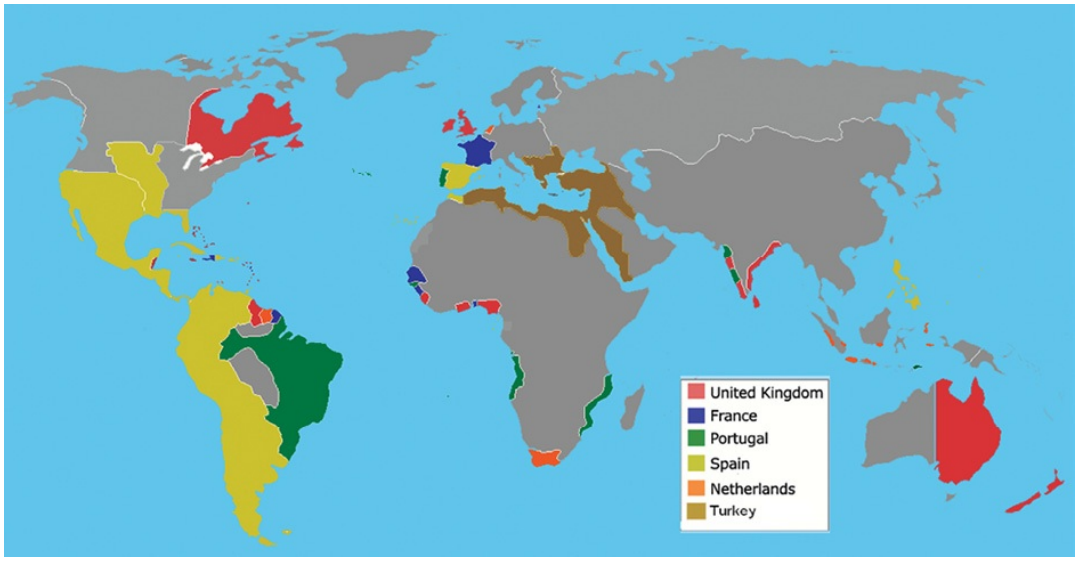
## Trade in Industrial Products

Industrial production increased so much that it was not possible to sell all the products in their own countries. The factory owners began to sell them in other countries too. Machine made goods were cheap and durable. Hence, the demand for them increased all over the world. This gave a boost to the industries in England and other countries. However, the interesting thing about them, is they did not have the raw materials required for the production of these goods. For example, the cotton needed for producing cloth was grown in India and America. English traders purchased these raw materials from India and other countries and sold them to factory owners. Subsequently, the traders purchased the finished products and sold them in countries like India, America, etc.

In order to serve the interests of their trade and industry the Europeans sought to subjugate these countries. Other countries like France, Germany, Spain, Portugal, Belgium, Holland and others conquered colonies for themselves in Asia, Africa, Australia and America ('Colonies' are those countries whose resources are used for the benefit of another country). These European countries exploited the colonies in other continents and grew wealthy in the process.

## Urbanisation and slums

Industrial revolution led to gradual shift of people from villages to towns. Industries and other urban activities gave people livelihood. As people moved to towns which were newly emerging, they settled down in makeshift houses and shelters which were cramped and had little sanitation or other facilities. Accidents, diseases and epidemics were common. Most workers' residential areas lacked proper ventilation, health and sanitation facilities. Slums became common scenario in towns and cities especially near the factories and mines. At the same time, distinct quarters came up for the rich and the powerful which were well provided in terms of open spaces, sanitation, water supply, roads and other facilities. Slowly people fought for civic rights and the conditions of the workers quarters also improved.




**Map 1: A world map showing colonies of European countries in 1800**

**Key words :**

1. Revolution
2. Production
3. Factory
4. Organisation
5. Nuclear Energy
6. Urbanisation
7. Child worker
8. Slums

# Improve your learning

1. Correct the false sentences: $AS_1$

**Under the putting out system**

a. *Spinners took cotton to the weavers.*

b. *Unlike in guild system traders controlled what product was to be made.*

c. *All work was done by the same group of people.*

**Under the Guild system**

a. *All small farmers were allowed to learn weaving.*

b. *Weavers determined prices and quality of the products.*

2. Putting out system is better than factory based production of textiles. Do you agree? Give reasons for your answer. $AS_1$

3. If Kruthika argues, “Railways in India were built only for the benefit of the people by the colonial rulers”, how can you counter this statement? $AS_4$
4. How will increase in the wages of the workers affect industrial production? $AS_1$
5. Why did factory owners pay low wages and force workers to work for longer hours? $AS_1$
6. Why do you think the working conditions in factories should be improved? $AS_4$
7. Why is it necessary for government to enact laws to improve the working conditions? $AS_1$
8. Why are children not allowed to work in factories? $AS_6$
9. Transport system helps the industry – justify this statement in the context of Industrialisation. $AS_6$
10. Locate the following places in the world map. $AS_5$

a) England b) Portugal

c) France d) Spain

11. Read the para ‘Urbanisation and slums’ of page 82 and comment on it. $AS_2$

## Project:

1. You may recall lessons on agriculture and trade in Class VI. Compare the nature of farmers and traders in Andhra Pradesh with traders in Britain or Europe. You can use a few criteria and tabulate.
2. Do you know any child working in a factory or shop? If you find, how do you respond?

# Chapter:9
# Production in a Factory – A Paper Mill

Handicraft production is done at home by small families with the help of some simple tools. In contrast, factories produce goods on a large scale, with the help of machines and a large number of workers. Let us find out how production is organised in large factories.

- Have you ever visited any factory? Describe it.
- Draw a picture of the factory you visited and using your imagination describe in 300 words on what could happen inside a factory.

We use so much of paper. Do you know how the paper of books, records, registers, progress reports and newspapers is made? There are two paper mills in Andhra Pradesh - Rajahmundry (East Godavari district) and Kurnool.

- Mark the four districts with paper mills in a map of Andhra Pradesh. Why do you think they are located there?


*Fig 9.1Andhra Paper Mill Rajahmundry*

### Raw Materials

Materials required to produce a commodity are called raw materials. Factories require large, continuous supply of raw materials.You will find dozens of lorries supplying raw materials to them every day.

Paper mills generally use wood from bamboo, eucalyptus and subabul trees. Subabul wood is most widely used now. Besides wood, a number of chemicals like common

salt and caustic soda are also used in different stages of paper-making. Scrap paper is also recycled in paper mills.

***Fig 9.2 Lorries waiting with bamboo loads***

Factories use heavy machinery which are run by electricity. Paper mill needs electricity for operating its machines. For example, the paper mill shown in the picture requires nearly 25 Mega Watt every year. More than half of the electricity requirement is met through the factory's own power generators. Besides electricity, the mill requires a large quantity of clean water throughout the year.

| S.No. | Product | Name of the industry | Raw Material |
|---|---|---|---|
| 1 | Shoe/*Chappel* | Footwear industry | Leather / rubber / canvas |
| 2 | | | |
| 3 | | | |
| 4 | | | |

## Paper mills and Disappearance of Bamboo

Although raw materials for paper are available in the forests, they are not easily procured. Paper mills are generally established near forests where bamboo and other soft wood trees are available.

Paper mills engage contractors to supply bamboo and other raw materials. A few decades ago, contractors employed tribal people (like those living in Kunawaram hills you read about in Class VI) to cut bamboo from forests. Due to excessive cutting in the past, there are no bamboos available in forests near the paper mills now.

Hence, paper mills are looking for alternative raw materials like subabul, which are grown in villages. This led the government to encourage people to grow subabul trees on farmland. Now-a-days, paper mills bring wood from distant places.

- What are the most important raw materials for the paper industry?
- Would you consider electricity as a raw material? Give reasons.
- Discuss with your teacher about a few mills or factories you know and fill in the table.
- Do you think that if we use more paper, we need to cut more forests or reduce the area under cultivation? Discuss..

***Fig 9.3 lorry lifter***

When we visited the paper mill, we found 4-5 lorries with loads of subabul wood waiting outside the mill gate. Only after 9.30 am, they would be allowed to enter the mill. There were separate gates – one for the workers and the other large gate for the vehicles. We had prior permission from the paper mill authorities to visit the paper mill. We entered our names in the register at the security room near the gate and went into the mill. Later lorries also entered the mill.

## Process of Paper-making

Inside the factory compound we saw a lifter crane lifting subabul wood from a lorry and placing it on an iron platform. A conveyor belt took the wood to the cutting machine. Paper is actually made in five stages. This paper mill had separate sections for each stage, which uses different machines and raw materials. The stages are as follows:

*Fig 9.4 Labourer at chipping machine*


*Fig 9.5 Labourers at setting machine*

*(i) Chipping:* In this stage, large wood pieces are cut into small chips with the help of large machines. They can cut a lorry load of wood into chips in about 30 minutes. There are about 15 to 20 workers in this section. The chips are separated according to the size. The big chips are again cut into small chips. Work goes in this way throughout the day. Can you imagine how many trees have to be cut to run a paper mill for just one day i.e. 24 hours?

*(ii) Making of wood pulp:* The small wood chips are sent to fibre line section. In this section, the wood chips are boiled with some chemicals in large vessels. Through this process, the wood chips are turned into a pulp of thin fibres (like cotton fibres). The liquid pulp is then whitened using chemicals. Then it becomes creamy. We found the liquid pulp in milky white colour without any dust.

*Fig 9.6 Pulping machine (Fiber line)*

(iii) *Spreading the pulp:* The liquid pulp is spread on thin screens over a cylinder. This is an important stage as the width, length and thickness of the paper is set at this stage. The pulp dries up as the water drains out and evaporates due to heat. Once this is done, the pulp is forwarded through the conveyer belt.

(iv) *Pressing, drying and rolling:* The drying pulp is pressed by rollers to smoothen it. When the pulp dries up completely, we get a sheet of paper, which is then rolled up.

(v) *Cutting:* The paper is cut in the cutting machines according to the size required. Paper is made into rolls and sheets as well. It is then packed and sent to godowns.

Production takes place continuously in all sections simultaneously.

## Work in Batches

The paper in the form of rolls and sheets is preserved in godowns. Each roll is labeled with Batch / Lot no., weight etc. What is a batch? When a lorry load of wood is brought into the factory, the entire wood is given a batch number. This batch is then sent to different sections one after the other. Raw material of one batch would be processed together at each stage. For example, when batch No. 201 is being cut into small pieces, at the same time the previous batch (No. 200) would be in the section for making pulp and batch No. 199 would be in the spreading section and so on. As soon as No. 201 is cut into pieces it would be sent to the next section and No. 202 would come up for cutting into pieces.

Papers produced in one batch would have the same inputs and processing, so their quality will be the same. The batch system allows a factory to produce continuously throughout the day. It also allows the managers to trace any mistake in the product by checking what went wrong with the particular batch.

## Working Hours and Shifts

This paper mill runs all 24 hours in a day. The workers work in three shifts of eight hours each. They are ‘A’, ‘B’ and ‘C’ shifts. In each shift about 800-900 workers are at work.

A Shift: 6 AM to 2 PM
B Shift: 2 PM to 10 PM
C Shift: 10 PM to 6 AM (Night Shift)

Night shift workers get a special allowance. Workers change their shift cyclically. Workers of each shift have to move from A shift to B and then to C every week. There is also a general shift for the administrative staff which is from 9.30 am to 5 pm. Administrative staff look after the management, accounts, trade and sales of the product, workers’ welfare activities etc.

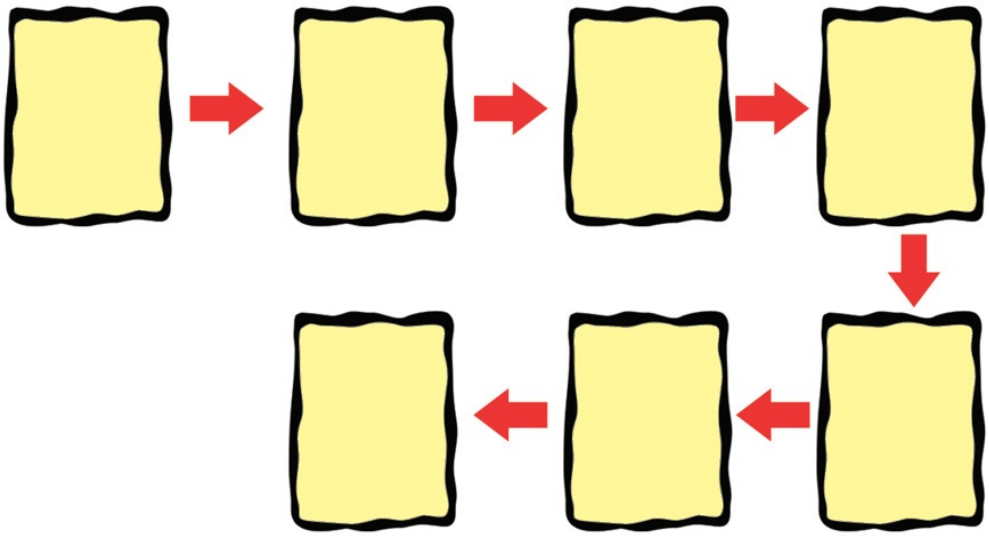
## Selling the Paper

This paper mill has marketing depots in different cities. It also sells papers in other countries such as Sri Lanka, Bangladesh, Nepal, Malaysia, Singapore, Nigeria and South Africa. The paper is sold through these depots.

Developed railways and roadways make it is easy to transport wood and paper to and from the mill.

- Why is it necessary to put the Label / Batch no. on the paper rolls?
- Why do you think the paper mill works round the clock? Compare this with agricultural field work.
- Fill in the blanks in the flow chart given below:

Wood is brought into the mill. Wood is cut into small chips Liquid wood pulp is cleaned and colours added



Pressing, rolling, and finishing

- Why is there a security guard at the gate? Enact how the watchman behaves. Who does he allow/ not allow?

## Working in Paper Mill

A factory employs a large number of workers of different kinds - some work on machines, some help them, some take care of electrical fittings, some help in transporting the materials, etc. Some of them are highly qualified like engineers while others may have education from ITI and polytechnic colleges. Still others may be illiterate doing manual work like cleaning. A factory also employs people on different terms and conditions.

Some are regular 'permanent' workers of the factory, while some others may be employed as casual workers when the need arises; still others are employed as contract workers. Let us look at this in detail.

Anand is a permanent worker in the paper mill. You can see him in his uniform - blue shirt and khaki pant in the pressing section.

He has been working in this mill for more than 10 years and he is getting Rs. 15,000 per month. As a regular employee, he gets a number of benefits like Provident Fund (paid when he retires from service), medical insurance, etc. Also, if for any reason his employment is terminated, or if he cannot work due to any accident, he will be paid compensation by the factory. He will also get a raise every year. If he or his family member becomes sick, he takes them to nearby Employees State Insurance (ESI) dispensary and gets medicines free of cost. He pays a small amount and the paper mill pays some amount for availing this facility. Anand gets regular holidays – one day every week, festivals, and some additional leaves. He is also given allowances to buy uniform and also to get it washed. In due course, Anand gets bonus too, an additional amount paid to workers when the paper mill earns profits. There are about 1800 such permanent workers in the mill.

***Fig 9.7 Paper cutting machine***

Umar is not a permanent worker but he comes daily and works in the factory. He is a contract labourer. He is usually asked to help in unloading the trucks or in packing and loading the paper. Last year, a labour contractor came to his village in Maharashtra and promised him a job in this mill. Workers like Umar are paid a lower salary than permanent workers (about Rs.8000 a month). They do not get allowances or medical help or bonus or paid holidays. However, they get work throughout the year and may become permanent workers after two or three years.

The women who work in this factory usually clean the floors and paste lables on the paper packets. Pushpa is working as a casual worker in this factory. Workers who are employed off and on are called 'Casual Workers.' Pushpa comes every morning to the factory to see if there is work. Usually they employ her for four or five days in a week to clean the floors of the factory. In the section where wood is chipped, there is a lot of wood dust and chips all over the floor. All this has to be cleaned and the machines are to be dusted properly. She is paid about Rs.100-150 on a daily basis. Though she has been working for more than three years, she earns only Rs. 2500 a month. She is not eligible for any of the facilities that are available to permanent workers like Anand.

Usually factory owners try to reduce their costs by employing casual workers even for regular work. Sometimes they bring new machines which require fewer workers. In such situations, the workers and their unions resort to agitations and then bargain with the managers to improve their lot.

*Fig 9.8 Inside the factory*

Besides the workers, the mill employs a number of accountants, clerks and managers who are paid better salaries. The senior managers who are usually from the families of the owners of the mill get very high salaries along with a number of allowances like free housing and free education for children.

- Fill the table comparing Anand, Umar and Pushpa:

| S.No. | Name | Work | Experience | Income | Other Benefits |
|---|---|---|---|---|---|
| 1 | Anand | | | | |
| 2 | Umar | | | | |
| 3 | Pushpa | | | | |

- Why do you think a factory employs people on different terms - regular, temporary and casual labourers?
- What are the problems of the temporary/casual workers ?
- Why do you think people from faraway places come to work in the paper mill in Andhra Pradesh?

## Who Owns the Paper Mill?

This mill does not have any one owner. Some people got together to form a company which owns this mill. These people invested large amounts of money and also borrowed money from the banks to set up this factory. They appoint the managers, other administrative staff and regular employees. The workers, managers and administrative staff are paid salaries but not the owners. The owners share amongst themselves whatever is left after paying wages and other costs of running this paper mill. That is, they get all the profits from the factory. They also bear the loss, if any.

Can you summarise the main features of factory production using the following points?

1. Machines:
2. Raw Materials:
3. Energy and Water:
4. Production:
5. Workers*:*
6. Managers:
7. Market:
8. Owners:

Some factories are owned not by individual owners or group of owners but by the government. These are run by the government for the welfare of all people

Most factories need raw materials in such large quantities that natural resources like forests, rivers and mines are rapidly exhausted. They also give out smoke; pollute the rivers and surrounding land with their chemical effluents. Thus, there is a need to develop methods to control the damage they cause to the environment.

Factories provide employment to a large number of people. However, the workers who work in these factories often find the work very tedious and many of them become sick due to exposure to dust and chemicals. They also get paid very little. They are also often forced to live in slums with poor facilities.

One of the major challenges before us is to find out how to balance our need for various kinds of goods and the ill effects of the factory system and how to make the life of workers comfortable and dignified.

**Pollution**

When we were going to the other side of the paper mill, we felt some unpleasant smell in the area. This was due to the use of chemicals. After coming out of the paper mill, we talked to a few residents living nearby. They said this stench was usual and it was common to find dust released from the industry settle on the leaves of plants, on the farm, trees in the nearby area and on garden plants. The mill also draws a lot of fresh water from the river but lets out waste water containing poisonous chemicals, which eventually joins the river.

Only last year, the paper mill got an effluent treatment plant to which all the waste water is sent. This machine removes contaminants (substances causing harm to living organisms through air, water, soil and food) and produce environmentally safe water (treated effluent) and solid waste suitable for disposal or reuse (which is normally used as a fertilizer). Besides this, the paper mills use treated effluent to water their gardens. Some farmers use this for irrigation too.

There are a large number of factories in our state and country, which produce diverse articles of use. They produce them in large quantities in a short time.

*Fig 9.9 Rolls of papers*

**Key words :**

1. Platform
2. Conveyor belt
3. Fibre line
4. Label
5. Allowance
6. Bonus
7. Pollution
8. Working hours
9. Raw material

## Improve your learning

1. Imagine that you wish to start a leather or textile factory. What are the aspects you will have to consider for setting up a mill? $AS_1$
2. Explain the process of paper-making in your own words. $AS_1$
3. Do you think this paper mill will stop working one day? If it does, what will be the impact on the labourers' lives? $AS_4$
4. Fill in the following table $AS_1$

| Shift | Timings |
|---|---|
| A | |
| B | |
| C | |

5. Imagine a world without paper. What alternatives will you use instead of paper? $AS_4$
6. What are your suggestions to stop pollution caused by industries? $AS_4$
7. Organise a debate in the classroom on the pros and cons of the paper mill. $AS_1$
8. List the benefits and income received by a regular employee of the paper mill. Contrast them with that of a temporary employee and a casual worker. $AS_1$
9. Compare the production of baskets by craftspersons and production of paper with reference to the following points: (i) Workplace (ii) Tools/machines (iii) raw materials (iv)Workers (v) Market (vi) Owners. $AS_1$
10. There is a paper mill at Rajahmundry in East Godavari District. Why do you think it is not established in the district headquarters? Discuss. $AS_1$
11. Locate the following countries in the world map. $AS_5$

a) Sri Lanka b) Singapore c) Nigeria
d) South Africa e) Nepal f) Malaysia g) Bangladesh

12. Read the third para of page 91. Do you think that the factories are taking care of their workers health? Why? $AS_2$

**Project:**

You might have noticed some factories in your area causing pollution. Or imagine that a factory in your locality is causing pollution. Write a letter to the editor of a local newspaper and discuss the contents in the classroom

**********

# Chapter:10
# Importance of Transport System

In our daily life, we use various vehicles to go from one place to another. How people use transport facilities, roads, waterways, railways and airports and why people make choices to use transport services are discussed in this chapter. Besides these, why and how people depend on transport for their source of earning and how markets use transport are also discussed. You will learn more about other means of transport such as railways,waterways and airports in higher classes

You already know a lot about transport systems.

- Fill the table below with given words. Some words could be placed in more than one place, and give reasons for choosing to put the word in a column.

***Pilgrims, Car, Fish, Cattle, Grain, Bullock-cart, Petroleum, Workers, Ship, Helicopter, Tanker, Lorry, Cycle, Tourists, Iron-ore, Goods Train, Mangoes .***

| **Mode of Transport** | **Vehicles used** | Some products/groups of people – that could be using |
|---|---|---|
| Roads | | |
| Railways | | |
| Waterways | | |
| Airways | | |

**Transport System in Andhra Pradesh**

If we look for a big picture about the transport system in the state, we would note the following :

**Roads**: In India, most roads are built and maintained by government. Roads are of different types. Some roads are called National Highways built across different states in the country. For instance, a road network called National Highway No.7 (or 44) runs through Uttar Pradesh, Madhya Pradesh, Maharashtra, Telangana, Andhra Pradesh, Karnataka and Tamil Nadu. While Andhra Pradesh state government maintains roads connecting small towns and districts, Panchayats are responsible for village roads many of which are made of gravel. Corporations and Municipalities are responsible for urban roads. Roads laid along international boundaries are called border roads. Roadways play an important role in integrating people in remote areas with main cities.

**Railways:** One fifth of travellers in India use trains. Railways are mainly used to transport goods like coal, iron ore, fertilizers, cement, food grains etc. In Andhra Pradesh, there are nearly 650 Railway stations and Railway routes of about 5000 km. Railways transport goods to and from sea ports. Seaports are crucial as most of our foreign trade is done through them.

**Airways:** There are six domestic airports in Andhra Pradesh - Visakhapatnam, Tirupathi (Renigunta), Rajamundry, Vijayawada (Gannavaram), Puttaparthi and Kadapa. The International Airport is for travel from Andhra Pradesh to foreign countries. Domestic airports connect places within India.

**Waterways:** Almost all goods traded by Indian traders are transported to other countries through ports. Port cities or towns are thus major trading centres. Andhra Pradesh has 15 ports out of which Visakhapatnam is the largest one. Rivers such as the Godavari, the Krishna and the Penna and their canals are used as waterways.

- Locate the airports, and port cities of Andhra Pradesh on a map.

## Use of Roads for production and sale of goods

Most people in Andhra Pradesh depend on roads for travel. Transport facilities available to villages in Andhra Pradesh vary. In 2001, nearly three fourth of the villages had transport facilities.

In earlier chapters, there were descriptions about farmers, fisher folk, and industries, which depend upon transport for various reasons. Farmers want to take their produce to Rythu Bazar. Fisher folk want to make the catch reach the buyer before it gets spoiled. Paper industry uses lorries to bring their raw material. Industries that produce goods depend on transport systems to reach consumers. Let us take the example of cotton. Cotton produced by farmers moves from fields to factories. Since there are different processes through which cloth is produced, it has to move from one place to another until the finished product is made. Markets are thus dependent on transport facilities.

- Read the following and solve the problem given below:

Farmers residing in Punniapalli sell their paddy mostly in the nearby town Nayudupet which is about 7 km away from the village. Bullock cart operators can transport about 10 paddy bags at a time and charge Rs. 50 per bag. Tractor owners charge Rs. 20 per bag. Each tractor can carry about 30-40 bags. Lorries charge Rs.10 per bag and can carry about 150 -170 bags in a trip. In the case of long distances, trucks charge more. For example, to transport paddy from a wholesale trader in Nayudupet to Martur in Prakasam district, which is about 100- 120 kms away truck operators charge Rs. 50 per bag. They charge Rs. 800- 1000 per tonne to transport goods for 500 kilometres.

There are three farmers in a village. They cultivated paddy and produced 25 bags, 50 bags and 75 bags respectively. They wish to sell their paddy in the Vyavasaya MarketYard in a nearby town, which is 25 kilometres away. What mode of transport would you suggest and why?

***Fig 10.1 Railway workers***

## Employment in Transport Activities

In every bus two people work – adriver and a conductor. For maintenance of transport, hundreds and thousands of people are required. For example, the Andhra Pradesh State Road Transport Corporation employs 1,20,000 persons to run its 20,000 buses all over Andhra Pradesh carrying more than 1.25 crore people every day. These employees maintain accounts,

repair buses, or work in bus depots. Some employees issue bus passes and tickets in bus stands or work as checking inspectors.

Nearly one crore vehicles are running on Andhra Pradesh roads and about three fourth of them are two wheelers. The functioning of transport system also requires many support activities – petrol/diesel pump stations, repairing shops, shops selling transport vehicles and spare parts.

***Fig 10.2 Transporting Animals***

- Find out the fares for travelling in the following types of buses and time taken to travel between any two locations you are familiar with.

| Type of bus | Fare | Time taken |
|---|---|---|
| **Pallevelugu / Gramani** | | |
| **Express** | | |

---

- Do you think differences in these fares are justified? Give reasons.
- Along with the difference in the fares, there are also differences in facilities and journey time. However, in your opinion how would most people prefer to travel? If you were responsible for increasing the facilities in them, which type of bus would you give preference to?

## Transport Services and Choices

People could use a particular mode of transport depending on the facilities available and affordability. Sometimes options to use different types of transport are possible. For example, it is possible to travel by bus, train or flight to Pakistan. For centuries, ships were an important mode of travel to far away countries to take people as well as goods. But today there are fewer people travelling by ships, whereas goods are mostly transported by them.

It is possible that some of you come to school by buses. People who are employed in factories, offices, households, shops etc. also depend on transport. Every city may not have public transport like buses, so people depend on their own vehicles or hired vehicles like auto-rickshaws or taxies.

If the cost of travel is high, people may not be able to move from one place to another. For example, if the wages in one place are higher than in another place, people earning low incomes may wish to move to get higher incomes. But if the transport cost is high, they may not show interest in moving to that place.

The cost of travel, especially for the people who earn low incomes, is too much, as they have to put away a larger share of their wages for it. Cycling and walking may not be possible to travel long distances. In big cities, it also becomes important to have enough place for people to walk or ride a cycle. Even when there are pavements, you may find them occupied by shopkeepers. Sometimes the height of the road and pavement could be so different that persons who use wheelchairs cannot use them and take the risk of riding them along the motorised vehicles.

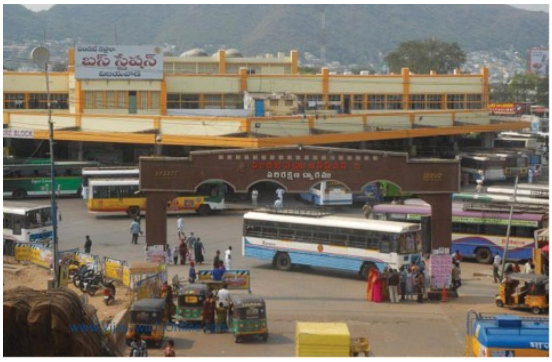


*Fig 10.3 Urban Transport in Vijayawada*

*Fig 10.4 Old and new modes of transport*

- Krishna and Ibrahim study in a school in the same class. They live at different places but the distance from their house to school is three kilometers. Ibrahim comes to school in city bus whereas Krishna travels by school bus. What could be reasons for families of these students to travel by different bus services?

## Congestion and Pollution

Most cities in our country are now experiencing congestion, and traffic blocks. If there is no good public transport system, people buy private vehicles, which can further increase the traffic blocks in urban areas because the roads may not be broad enough to accommodate all these vehicles. Let us try to understand this with an example. The number of people living in six big cities in India increased by two times during 1981 to 2001 whereas the number of motor vehicles went up by eight times during the same period.

Motorcycles and cars are used in a big way. This has led to use of more petrol and diesel, which increase air pollution. To reduce pollution we should consume less of these petroleum products. Public transport can help in this aspect as they carry more people with minimum cost.

## Travelling safety

Road travel now-a-days has become more risky. The road accidents, deaths, and injuries affect low income families as many of those killed or injured tend to be cyclists, pedestrians or pavement dwellers. Accidents can occur not on roads alone. The risk is in other means of transport too. In places where roads and railways cross(level crossing), there are often gates to stop the vehicles while the trains are passing. These are called railway gates. However, if there are no such gates at level crossings, it is important for people and vehicles to stop and look in both directions before crossing the railway line.

## Road Safety Week

First week of every year, the Road Transport departments all over the country celebrate Road Safety Week. On this occasion, they give guidelines to the people to follow traffic rules. The government-run companies such as the Andhra Pradesh State Road Transport Corporation conduct awareness campaigns among drivers and give them training to drive safely. They also go to schools, organise essay writing, debate and other competitions for students and encourage them to travel safely following traffic rules. Every person using transport system – roads, railways or airways and those working in them are required to follow specific safety rules. This will reduce the deaths, injuries and other casualties occuring due to transport.


*Fig 10.5 A train that climbs the mountain in Ooty*

- Contact the nearest traffic police or driving school in your locality or a person who has a driving licence. Discuss how drivers are trained. Identify the details of things displayed in the driving school premises.
- Discuss basic rules and regulations in using roads and how to travel safely on roads. In your classroom display rules regarding traffic.

*Fig 10.6 Visakhapatnam port*

*Fig 10.7 Gannavaram Airport*

**Key words :**

1. Safety travelling 2. Roadways 3. Airways
4. Waterways 5. Railways 6. National Highway
7. State Highway 8. Village / Rural roads 9. Urban roads
10. Border roads 11. APSRTC 12. Congestion

## Improve your learning

1. How is the transport system essential for producing agricultural goods? Illustrate with an example. $AS_1$
2. How is the use of buses different from trains? $AS_1$
3. Why is it important to provide transport facilities to villages? $AS_1$
4. Why do you think waterways are important for a country? $AS_1$
5. How does the transport system become a means for livelihood? $AS_6$
6. What will happen if there is a rise in transport cost for goods made in factories? Illustrate with an example. $AS_1$
7. Write a few slogans ‘Prevention of accidents’. $AS_6$
8. Congestion and traffic blocks are occurring due to the use of vehicles in a big way. What measures do you suggest to prevent this? $AS_4$

**Discussion :**

Organise a demonstration/discussion with the police inspector/constable to the students on the topic “Road accidents-preventive measures.”

**Project:**

Interact with a driver working in transport and obtain information on the dangers and other aspects of his job.