

6

Science & Technology

Science promotes logical thinking
Technology uses man's thinking

→ Language Focus

Language Functions

01. **Describing a process**
 - Scientists observe things and collect facts. They verify what they have observed through experiments.
02. **Expressing opinions**
 - Science itself is neither good nor bad.
03. **Comparing and Contrasting.**
 - A hundred years ago, the physicians had only a few instruments to diagnose diseases. Now the physicians have sophisticated medical instruments to diagnose a disease.
04. **Reporting events**
 - In 1895 the X-ray machine was invented.
 - Kidney transplantation was first attempted in 1902.
 - Heart transplantation was first performed in South Africa in 1967.

Grammar

01. **Relative clauses**
 - The inventors who want to produce the new types of vehicles.
 - Super-sonic jet planes which have so much of power....
02. a. **'have', as a full verb**
 - Science has enormous influence on our lives.
 - The first people had little control over machines.
- b. **'have', as an auxiliary verb**
 - Science and technology have helped people.
 - Power machines have increased pollution.
 - Science and technological achievements have benefitted us in many ways.

Please do not write anything in this book. Use your writing book for writing.

6

Science & Technology

Science promotes logical thinking
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Activity 6.1

Reading / Writing

Science and technology has helped people to gain control over nature. The first people had little control over nature. They had to depend on nature for their living. They had only simple tools. They did not know how to raise animals or plants. They had no permanent homes.

Animal skins were their only protection against the cold. The sun was their only source of light. With the passage of time, people discovered how to make fire and learnt to raise animals and crops. With the development of farming, they began to build settlements. Then they discovered new methods to make their work easier, and to increase their comforts. Through the ages technology has helped people to build a more comfortable way of life.

Industrial technology began with the invention of the steam engine. The work in factories became faster. The production increased. The working hours were reduced. The radio and the television changed their entertainment habits.

Technology helps people to live in greater comfort and security than in the past. Agriculture, medicine and transport technologies have brought many benefits to man.

Today machines do most of the work. Powered machines have increased production and given people more leisure. The needs of the people began to increase. The result is the creation of a world of modern science and technology.



Activity 6.2 > Pair work

Writing

Write five sentences describing how people lived before technological inventions.
eg. They did not have electric lights.

Write five sentences describing how technology has helped people.
eg. People were able to develop their agriculture.

Activity 6.3 > Pair work

Reading / Writing

Medicine



The practice of medicine is based on diagnosis and treatment. A hundred years ago, the physician felt the pulse and came to various conclusions about illnesses.

He had only a few instruments to diagnose a disease. Within the last hundred years, medical technology developed. Now the physician has sophisticated medical instruments to diagnose diseases.

X - ray machine that was invented in 1895, came into regular use. It was invented by Wilhelm Rontgen. With the help of this machine the doctors were able to see the inside of the body and diagnose diseases. In 1973 the CAT scan machine was invented. With this invention medical science was revolutionized. The patient is kept inside the machine and the body is scanned by X - rays.

Medical technology continues to develop very rapidly. Today the changes of the body can be observed and measured. These findings are the key to diagnosing diseases and deciding treatment.



Christian Barnard

The E. C. G machine was invented during the last century. It is used to find out how the heart works. The damage caused by a heart attack can be measured on this machine.

Modern technology is able to support failing organs. Ventilators are used to maintain oxygen levels to assist breathing.

Sir Alexander Fleming, whose discovery of Penicillin led to the discovery of many other antibiotics. The antibiotics help in treating a large range of bacterial infections.

Modern technology has helped immensely to develop surgery. Now lasers are used in surgery. Kidney stones and gall bladder stones are removed through laser surgery. Laser treatments are used for treating eye diseases too.

Medical science and technology has developed so much that surgeons transplant organs from one body to another. Kidney transplantation was first attempted in 1902. Today it is a well established operation. Heart transplantation was first performed in South Africa, in 1967. It was done by the surgeon, Christian Barnard.

Immunization programmes are carried out to give protection to children. This has greatly decreased previously common diseases.

Activity 6.4 > Comprehension

Writing

01. a. How did the physicians diagnose diseases about a hundred years ago? Write four ways in your writing book.

b. Name the machines that help to diagnose diseases inside the body, today.

c. Name some machines which are helpful in diagnosis, but not mentioned in the reading passage.

03. Give the names of some machines useful in the treatment of diseases, that are not mentioned in the reading passage.

04. Which do you think is better.

1. Open surgery or
2. Laser surgery



b. Speak to your grand parents and find out, how their diseases were diagnosed by physicians when they were young.

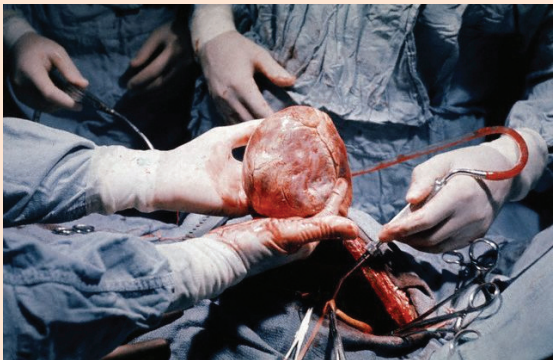
02. a. Were the physicians able to diagnose the diseases inside the body?

05. a. What are the organ transplantations mentioned in the passage?
b. What are the other organ transplantations done in Sri Lanka?
06. Who did the first heart transplantation? Where was it done?
07. a. Why are children immunized?
b. Have you been immunized?
c. Find out from your parents, the vaccines administered to you.

Activity 6.5 > Pair work

■ Writing

Speak to a doctor or someone in the medical profession and find out more about the first heart surgery. For instance, how long the patient lived, why he died, etc. Write a paragraph about this surgery.



Activity 6.6 > Pair work

■ Writing

Years ago patients carried bottles because medicines were given in liquid form. Today, with the development in medical science, medicines are given in different forms. Write some of the forms in your writing books. You may ask a pharmacist.

- e.g. 01. ointments
02. powders

Activity 6.7 > Pair work

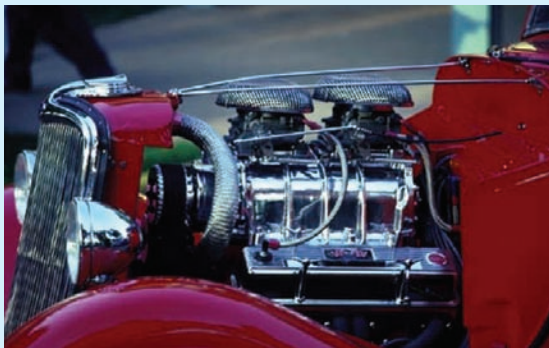
■ Writing

01. Visit a nearby hospital and make a list of machines and equipment that are there to diagnose diseases.
02. After preparing the list, read it to the class. Make a master list of the names of machines on the board. Copy them down in your writing book.
03. Discuss with your partner the uses of each one of these machines, and write down their uses in two or three sentences.
04. Exchange books and read.

Activity 6.8 > Pair work

Reading / Writing

Transportation



Transportation is the way of moving people and goods from one place to another.

Transportation takes people to places they need to go and bring goods that people need.

As a result of modern science and technology, there has been a massive development in transportation. In the past transportation was very very slow. People travelled mainly on foot and transported goods on their heads or dragged them along the ground. Later they learnt to use pack animals like horses, donkeys, camels and oxen. Next they used waggons drawn by animals and sailing vessels.

In 1890s, the German engineer Rudolf Diesel invented the diesel engine. These inventions brought about a revolution in the ways of transport.

There are three kinds of transportation; land water and air. For land transportation we use wheeled vehicles, specially cars, buses, trucks and trains. All these vehicles are engine powered.



Water transport is a very old means of transport. People transported logs on water. A large number of logs which were tied together floated on water to reach their destinations. Ships and boats used sails to move with wind power. But today almost all the ships are engine powered. There are cargo ships and passenger ships.

In 1903, Orville and Wilbur Wright designed a small aeroplane to run with a petrol engine. It was the first aeroplane that lifted a person into the air.

Today, jet air planes carry millions of travellers across continents and oceans. Air transportation depends solely on engine power. Super - sonic jet planes which have so much of power travel faster than sound. Aeroplanes provide the fastest mode of travel. Engineless vehicles such as gliders and balloons are used mainly for recreation.

Billions of dollars are spent on research to improve the transportation systems. The inventors who want to produce new types of vehicles with better security, comfort and safety are kept busy.

Activity 6.9 > Pair work

■ Reading / Writing

Give sub-headings to each paragraph.
Write in your writing book.

Activity 6.10 > Comprehension

■ Reading / Writing

- a. 01. Give the names of the animals used in Sri Lanka as pack animals.
02. What are the animals used to draw vehicles in Sri Lanka?
03. What are the kinds of fuel used in Sri Lanka to run engines?
04. Name the inventions that brought about a revolution in transportation.
05. What is a supersonic jet?
b. 06. Describe the three (03) kinds of transport and give three (03) examples for each.
Write in your writing books.

Activity 6.11 > Pair work

■ Writing

A prepositional phrase begins with a preposition and a noun or a noun group follows it.

- Eg. 1. In the past transportation was very very slow.
2. Aeroplanes provide the fastest mode of travel.
3. The practice of medicine is based on diagnosis and treatment.

Now pick eight (08) sentences with prepositional phrases, from the passages in this Unit.
Write them in your writing book.

Activity 6.12 > Pair work

■ Listening / Speaking / Writing

a. Find out from your teachers or elders-

01. The distance from your home town to the Katunayake International Airport.
02. How long does a bus/train/car/coach take to reach Katunayake?
b. Write three sentences stating the mode of transport, distance, time taken, and the average speed in your writing book.

Activity 6.13 > Pair work

■ Listening / Speaking / Writing

Describe how villagers transport their produce to village fairs / nearby towns to sell.

You may start this way;

Write in your writing book.

I live in a village named Waduwegama.
Most of the villagers are farmers.
They cultivate...

Activity 6.14 > Pair work

Reading

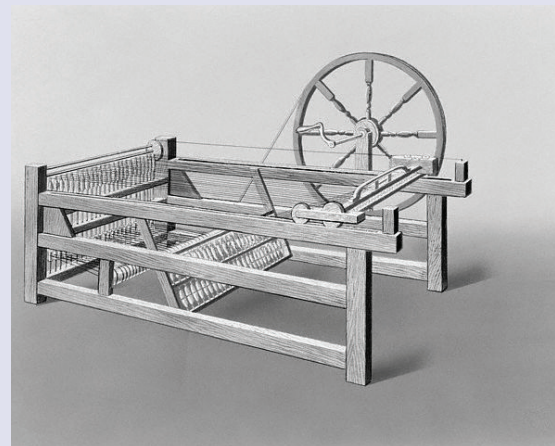
The Textile Industry

The development of the spinning machine

(1) The Textile Industry

Spinning was a cottage industry in many lands. Kuveni was spinning when Prince Wijaya landed in Sri Lanka. Weaving was a domestic industry in England too, till the invention of the flying shuttle and the spinning jenny. These inventions simplified the use of the machine. It could now be worked by power. It brought a tremendous change on human life, in terms of speed and volume.

The modern textile technology has influenced the ready-made garment industry in Sri Lanka. Factories have been set up in cities and rural areas, providing employment for both men and women. Mostly young rural women have taken up employment in these factories. Ready-made garments are exported to America, United Kingdom, France and other European countries. Fashion shows in modern trends are held in leading cities all over the world to promote the garments produced in Sri Lanka. The industry has become a leading foreign exchange earner for Sri Lanka.



Activity 6.15 > Comprehension

■ Writing

Write answers to these questions in your writing book.

01. What brought about a major change in the weaving industry?
02. Mention two changes that were brought about.
03. What is the industry connected to the weaving industry that developed in Sri Lanka?
04. Mention some of the benefits of the garment industry in Sri Lanka.
05. What do we do with the finished products ?
06. State your opinion about the garment industry in Sri Lanka.

Activity 6.16 > Grammar

■ Writing

With a relative clause you can give more information about persons or things in a sentence.
The relative pronouns used are :

that / which / who / whom / whose

eg.

1. The X-ray machine that was invented in 1895 came into regular use.
2. Super-sonic jet planes which have so much of power travel faster than sound.
3. The inventors who want to produce new types of vehicles with better security, comfort and safety are kept busy.
4. Orville and Wilber Wright whom we consider as the first people to go into the air invented the first aeroplane.
5. Sir Alexander Fleming, whose discovery of penicillin led to the discovery of many other antibiotics.

Study the five (05) examples which are taken from the texts.

Now write five (05) sentences with relative clauses.

Form relative clauses using the five (05) relative pronouns given in the box.

Write in your writing book.