

BASIC TECHNOLOGY JS1 FIRST TERM LESSON NOTE WEEK 1-11 2022-2023

WEEK 1 TOPIC: THE CONCEPT OF TECHNOLOGY

Wk 1 THE CONCEPT OF TECHNOLOGY

1. Definition of Technology

Describe technology

DEFINITION OF TECHNOLOGY:

Introduction

The ability to create ideas, construct simple devices or machines that can help overcome work or task without much stress is relative to technology.

Definition.

Technology can be defined as the method or process of using scientific knowledge to solve difficult physical problems in a simplified and fast manner through the use of machines. These machines make the work easier, faster, and safer and save time.

Wk 2 PRODUCT OF TECHNOLOGY

1. Explain high level Technology and low level technology

2. Mention products of high level technology

Mention products of low level technology

Products of technology

Product of technology at home

The following are some of the products of technology that can be found in homes.

1. Television
2. Radio
3. Wall clock
4. Kerosene stove
5. Electric bulb
6. Electric iron
7. Cell phone
8. Tin cutter etc.

Product of technology found in schools

1. Computer
2. Calculator
3. Magnetic marker board
4. First aid box
5. Ceiling fan
6. Drum set etc

Product of technology found in the industry

1. Air conditioner
2. Telephone
3. Heat extractor
4. Fork lifts truck
5. Generator
6. Oven etc

High level technology product

Some of the products of technology include train, aero plane, motor cars, computers, medical equipment, high-rise building, laptops, mobile phones, the internet, etc.

Therefore, someone who has the necessary skill in technology is often referred to as a technologist.

Wk 3 LIFE APPLICATION OF TECHNOLOGY

1. Explain why both male and females should study technology

Describe life application of technology in daily activities

(Life application of technology)

Ways Technology Impacts Our Lives:

1. Improved Communication
2. Decreased Privacy
3. Accessible Shopping
4. Better Information Access
5. Virtual Social Lives
6. Flexible Working
7. Smarter Health Tracking

Technological development could be traced in the following areas:

- (i) Food production
- (ii) Clothing
- (iii) Shelter
- (iv) Communication
- (v) Transportation
- (vi) Health
- (vii) Education
- (viii) Security and
- (ix) Manufacturing.

Wk 4 HISTORICAL DEVELOPMENT OF TECHNOLOGY

1. Explain technological advancement over time

Compare products of technology in the society

(Historical development of technology)

The **history of technology** is the history of the invention of tools and techniques. The term technology comes from the Greek word **techne**, meaning art and craft, and the word **logos**, meaning word and speech. It was first used to describe applied arts, but it is now used to describe advancements and changes which affect the environment around us.

New knowledge has enabled people to create new things, and many scientific endeavors are made possible by technologies which assist humans in traveling to places they could not previously reach, and by scientific instruments by which we study nature in more detail than our natural senses allow.

Types of Technology

1. **Developed Technology:** This is the type of technology that makes use of modern methods and application of science to solve problems. Examples include using airplane, cars, trains, etc for transportation.
2. **Under-Developed Technology:** This type of technology is the application of indigenous or traditional technology to provide for one's needs. Example includes using a horse-drawn cart, or trekking as a means of transportation.
3. **Developing Technology:** This is the type of technology that makes use of basic developed technology and some indigenous technology to solve problems. A country like Nigeria makes application of developing technology.

Difference between Developed and Under-Developed Technology

S/N	Activities	Under-Developed Technology	Developed Technology
1.	Communication	Face-to-face communication, letter writing and the use of gong.	The use of e-mails, faxes, telephone,
2.	Health Care	The use of herbal drinks not measured, hand feeling for testing patients, etc.	The use of digital and clinical thermometers and stethoscopes, use of accurately prescribed drugs, etc.
3.	Security	The use of staff, bow and arrows, cutlass, knife or daggers, etc.	The use of guns, bullets, explosions, armored cars and CCTVs.
4.	Education	The use of slate and chalkboards, the use of slide and metric rules, etc.	The use of magnetic marker boards, calculators, computers, projectors, etc.
5.	Transportation	Trekking, the use of horse-drawn carts, donkeys, etc.	The use of bicycle, motorbikes, motor vehicles, trains, aircraft and ship.
6.	Food Preservation	Using sun to dry grains, the use of water and oil to overflow the food materials or salting.	The use of oven, kiln, refrigerator, deep freezer to preserve food.
7.	Shelter	The use of thatch, palm frond, bamboo, wood, molded wall, etc.	The use of block-cement, gravels, steels, asbestos, iron roofing sheets, etc.
8.	Food Production(Farming)	The use of cutlass, hoe and knives.	The use of tractor, combine harvester, etc.

Technology-Related Professions

1. **Electrical and Electronics Profession:** This is the assembling, installation, testing, troubleshooting and repair of electrical wiring, fixtures, control devices and other related equipment in buildings and other structures.
2. **Mechanical Technician Profession:** This area covers refrigeration repairs, air conditioning, elevator installation, servicing and repair of other equipment.
3. **Building Profession:** This area is quite wide. It includes the following;
 - i. **Plumber:** They install, repair and repair pipes, fixtures and other plumbing equipment used for water distribution.
 - ii. **Bricklayer:** They lay blocks, bricks, concrete, stone, etc, to construct or repair walls, chimneys and ovens.
 - iii. **Painter and Decorators:** These do apply paints, wallpapers and other finishes to interior and exterior surfaces of buildings.
 - iv. **Roofer:** They install, repair or replace flat roofs or tiles on sloped roofs.
 - v. **Blueprint Interpreters:** They read and interpret blueprints or building plans.
 - vi. **Tile setters:** Tillers cover interior and exterior walls, floors and ceilings with ceramics, marble and terrazzo.
 - vii. **Glazier:** These are professionals who cut, fit and install glasses in residential, industrial or public buildings.

Wk 5 TECHNOLOGY OF SOCIETY

1. Benefits of technology

Importance of technology in the society

Benefits of Technology (Advantages)

The application of technology has improved our lives immensely in all spheres of life, especially in our modern society. The following areas will make us appreciate such benefits:

- 1. Improved Standard of Living:** Technology has improved our standard of living in the provision of farm implements, cars, home appliances, mobile phones and other gadgets too numerous to mention.
- 2. Economic Growth and Development:** The application of technology has improved the quality of most roads in Nigeria, provision of electricity, bridges and machines for industries.
- 3. Improved Health Care Delivery:** Technology has reduced death rate and increased life span since most diseases can now be diagnosed with modern equipment.
- 4. Industrialization:** Technology has led to the building of big industries where most goods are produced in large quantities.

5. Improved Method of Production: With technology, farmers can produce food on commercial, large scale level using mechanized method.

Disadvantages of Technology

1. Pollution: With industrial toxic wastes and burning of petrochemicals, our water, air and land become polluted.

2. Unemployment: Technology has made it possible for machines to replace man in most industries, which has resulted in job loss and unemployment for most persons.

3. Quick Running Down of Natural Resources: With technology, deforestation takes place fast and our eco-system is weakened. We are always afraid that if the trend is not curbed, we may run the risk of turning the earth into a desert of some sort in the future.

Technology and Society

This note focuses on our indigenous industries and how we can use technology to improve on them.

1. Cloth-weaving, Tie and Dye: In most African countries, this is the method of using local materials like cotton, to make cloths. The process of giving these clothes unique and colorful pattern and designs is called tie and dye. However, technology can be developed to replace this type of manual labour in most textile industries.

2. Sculpture work, mat and basket weaving: This is an indigenous technology where products from palm trees, swamp grooves and grass is used to make simple crafts like mats, baskets, chairs, table, etc. The Binis and Igbos are gifted in this industry. If technology is applied in this industry, more beautiful items will be produced in a faster, easier and at larger quantity.

Who Should Study Technology?

The truth is that everybody (boys, girls, men and women) can study technology.

there are women engineers and any other profession you may think about. It all depends on interest, exposure and sound education

Reasons For Studying Technology.

1. Empowerment: The knowledge of technology can empower one to use tools, machines and the computer effectively.

2. Self Reliance: Knowledge derived from technological subjects can equip us to be able to maintain and repair appliances on our own. Only in very serious cases would we need to contact more experienced technicians.

3. Safety: Technology teaches us how to be safety conscious in all areas of life, thereby reducing the risk of accident.

4. Comfort and Pleasure: The knowledge acquired from technology can make it possible for us to operate some equipment, machines and appliances that make work easy, faster and safer, thereby giving us comfort and pleasure while working.

5. Dream Realization: Through technology, most students are able to realize their rewarding careers and other fields of interests. Technology gives them a wider base to build on as respect career path.

Wk 6 WOODS

1. Identify the different types of wood
2. Describe the properties of hard wood
3. Describe the properties of soft wood

Mention the uses of wood

DEFINATION OF WOOD

Wood is a natural material obtained from trees use for building houses or for making things e.g furniture. Some trees can be identified by their bark, color or leaves.

Properties of wood

1. **Colour:** wood appears in dark-brown or light colour
2. **Heat conductivity:** Wood is a poor conductor of heat.
3. **Electricity conductivity:** Wood is a poor conductor of electricity when dry but good conductors when wet
4. **Usage:** Wood is commonly used to make furniture and roof building
5. **Polish effect:** Wood appears shining when polished.

Classes of Wood

There are two classes of wood:

1. **Hardwood**
2. **Softwood.**

Hardwoods are referred to as deciduous (have broad leaves) trees.

1.Hard Wood

Hard wood is considered the ultimate versatile material, which can be used for furniture, musical instruments, and boatbuilding. Hardwoods generally offer a superior level of strength and durability.

Example of hardwood

The most common types of hardwoods include

- a. Oak
- b. Teak
- c. Sapele
- d. Iroko
- e. Meranti
- f. Ash
- g. elm
- h. beech
- i. birch
- j. maple
- k. walnut
- l. mahogany

Softwoods

Soft wood are coniferous trees (have needles like leaves) which usually remains evergreen.

Examples of softwood

- a. Pine. b. Redwood. c. Larch. d. Fir. e .Cedar.

Difference Between Hardwood and Softwood

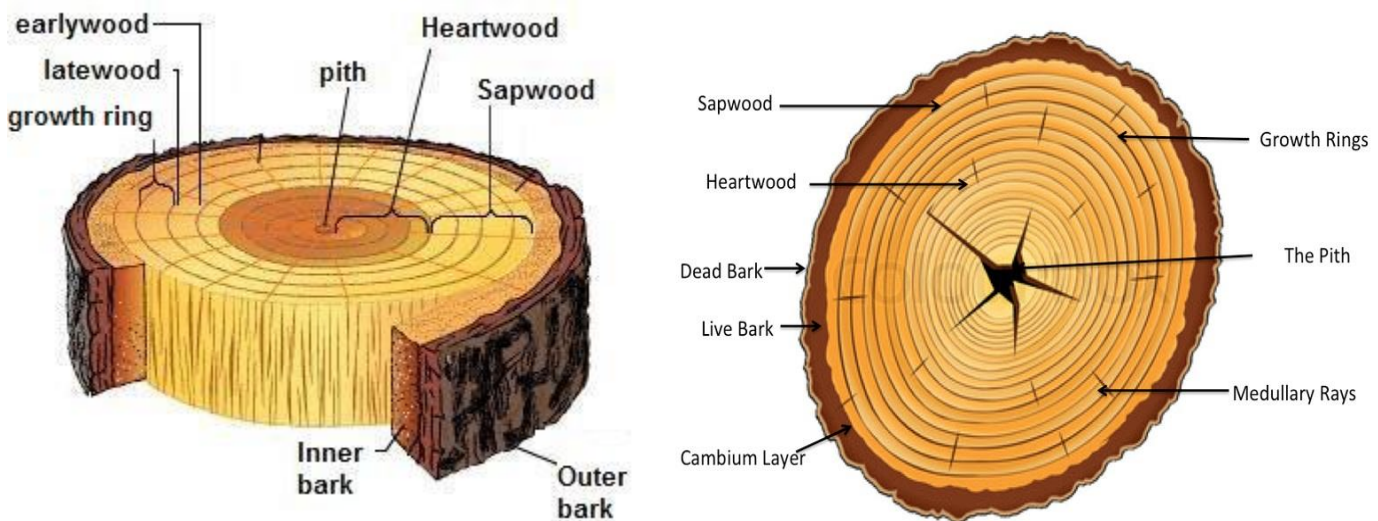
Hard wood	Soft wood
1. Hardwood are called deciduous woods	They are called coniferous wood
2. Hardwood have broad leaves.	Softwood have needle- like or , thin and long leaves.
Hardwood are heavy in weight	Soft wood are light in weight.
Hard wood have dark-color in nature	They are light in color .
4. Hardwood is the best wood for all furniture work and for building construction.	Softwood is not suitable for furniture work or for building construction, since it cannot stand the test of time.
5. They shed their leaves annually.	They are ever green.
6. Their seeds are enclosed.	Their seeds are exposed.

Parts of a Tree

- (i). **Root:** The root holds the tree firmly to the earth and it is responsible for supplying water and all necessary nutrients to other parts of the tree.
- (ii). **Stem or Trunk:** This forms the main frame of the tree. It transfers water and mineral salt from the roots to the branches.
- (iii). **Branches:** The branches support the leaves and carries mineral salt to the leaves.
- (iv). **The leaves:** The leaves derive energy from sunlight which is converted through the process called photosynthesis for the tree to produce food.
- (v). **Bark:** This is the skin of a tree that protects it from harsh weather

Structure of Wood

The term structure of wood simply means the internal features of a tree and their functions.



Functions of wood Structures

1. **Bark:** This is the skin of a tree that protects it from harsh weather.
2. **Cambium layer:** This is the part that produces new cells for the tree to grow.
3. **Sap wood:** The sap wood is the area where water and mineral salts are transported from the roots to the leaves.
4. **The medullary rays:** are necessary for the radial transmission of the water, minerals and other natural substances.
5. **Heartwood:** This is the most matured part of the tree, where dead cells are found. It is the part after the sapwood, used for furniture work.
6. **Pith:** This is the center of the tree where decay starts sometimes. It is the core of the tree.

Wk 7 METAL

1. Describe metals
2. Identification of metals
3. Properties of metals

Corrosion and metal forms

DEFINATION OF METAL

Metals are solid materials obtained from a natural product known as iron ore found under the earth.

Metals are classified into two groups namely,

1. Ferrous metal and
2. Non-ferrous metals.

1. Ferrous Metals: These are metals that contain iron. As such, they can be attracted to any magnetic properties. Examples include steel, razor blade and nails.

2. Non Ferrous Metals: These are metals that do not contain iron. They cannot be attracted to any magnetic substance. Examples include aluminum, copper and cast iron.

Different between Ferrous metal and Non-ferrous metals.

s/n	Ferrous Metals	Non Ferrous Metals
1	They contain iron	they contain no iron
2	They are magnetic	They are not magnetic
3	Examples are cast iron, wrought iron, and steel	Examples are aluminum, zink and copper and cast iron

Alloys of Metals

Alloys : are new metals formed when two or more metals are mixed together

There are two types of alloys, namely ferrous and non-ferrous alloys.

(i). Ferrous alloys: Ferrous alloys are the mixtures of two or more ferrous metals. Example include **carbon + steel + tungsten = high speed steel.**

(ii). Non-ferrous alloys: This is the mixture of two or more non-ferrous metal to form another product. Example is (**copper + tin + aluminum = Bronze**) and (**copper + zinc = Brass**).

Importance of Alloys

1. Strength, 2, hardness, 3. Corrosion-resistance. 4. Wear- resistance.

wk 8 MATERIALS CERAMICS

1. Identify the properties of ceramics
2. State the uses of ceramics

Mention products of ceramics

DEFINATION OF CERAMICS

Clay exists naturally in many parts of the world. When it is wet, it can easily be molded into various objects like storage pots, cooking pots and dishes.

We use mud to build houses and also to make bricks for building houses. All the above solid objects made from clay, mud or cement is called **ceramics**.

Therefore, **ceramics**: are materials made from clay, sand, mud and cement. They include items like glass, pottery, concrete, etc.

Classification of Ceramics

Ceramics are classified into three groups, namely

i **Refractory ceramics**: These are ceramics that are made from fired clay like bricks. This type of ceramics can be used for constructing furnace linings and ovens.

(ii). **White-ware ceramics**: This class of ceramics is referred to as sanitary ceramics used for making floor tiles, wall tile, and electrical insulators.

(iii). **Structural clay ceramics**: These are building- type ceramics. They include concrete and cement.

Classification of Ceramic Materials

Ceramic materials are classified based on the types of materials used in making them. They are;

(i) **The clay materials**: These include: objects like age pot, dishes, and cups.

(ii) **The mud materials**: These are used to construct support for king pots, make bricks for building houses.

(iii) **The cement materials**: These are mixture of cement, sand and water for molding blocks use for building houses.

Properties of Ceramics

(i). High resistance to heat: can withstand very high temperature

(ii). easily decorated: Ceramics used for household and kitchen purposes are usually decorated for beauty. They include flower vases, trays, china wares and dishes.

(iii). Brittleness: Ceramics can break easily

(iv) Non metallic: Ceramics are insulators I,e poor conductors of electricity

(v). High resistance to corrosion: Since ceramics are non-corrosive they can be used to store chemicals and water. Examples include water closets (WCs), sewage pipes, etc.

(vi). High compressive strength: This means that ceramics can carry heavy loads. As such are used for building construction purposes.

Wk 9 GLASS

1. Describe a glass
2. Identify the properties of a glass
3. State the uses of glass
4. Identify products of glass

Glass is a solid and usually transparent material that is formed by melting and mixing natural raw materials such as sand, soda ash and limestone at a very high temperature. Color are added while in the molten state.

Properties of Glass

(i) They are brittle: They can easily break into pieces.

(ii) They are transparent: You can see through them.

(iii) Resistant to corrosion: It does not corrode.

(iv) Conductivity: it is a poor conductor of electricity but a good conductor of heat

Uses of Glass

(i) Glass is used in making window materials.

(ii) Glass is used in making mirrors, eye sunglasses, household materials such as wall clock, etc.

Wk 10 PLASTICS

1. Description of plastics
2. Properties of plastics
3. Application of properties of plastics

Demonstrate the effect of heat on plastics

Plastics

Plastics are organic materials derived from petroleum products. They are moldable materials.

Properties of Plastics

1. Plastics are generally lighter in weight.
2. They do not rust.
3. It is easily processed into different shapes if it is thermoplastic.
4. They are cheap to produce.
5. They are poor conductors of heat and electricity
6. They can be re-melted and re-molded

Types of Plastics

There are basically two types of plastics, namely

1. **Thermosets** and
2. **Thermoplastic.**

(i). Thermosetting materials.: These are plastics that do not easily melt or soften under heat. Their change is irreversible, therefore they cannot return to their former shape. E.g. Button.

(ii). Thermoplastics: These are the forms of plastics that can be re-moulded after heating. E.g. plastic bucket.

RUBBER

1. Definition of a rubber
2. Properties of rubber

Products and uses of rubber

Rubber

Rubber can be defined as an elastic material derived from rubber trees.

Rubber can be stretched or compressed, but can return to their original shape and size.

Types of Rubber

(i). Natural rubber: (ii). Synthetic rubber.

i. Natural rubber: This type of rubber is made from a milky liquid called *rubber latex*. This liquid is obtained from rubber trees. Natural rubber is flexible, but has a poor resistance to abrasion.

(ii). Synthetic rubber: Synthetic rubber is manufactured from organic compounds, which are petroleum by products. It has a poor flexibility, but a very high resistance to abrasive

Properties of Rubber

Properties of Rubber:

1. Rubbers are good electrical insulators.
2. They are lighter than water and hence can float when immersed in water.
3. Impermeable to water i.e. it is waterproof.
4. They do not rust or corrode.
5. They are good shock-absorbers.
6. They are generally flexible.
7. Rubbers are highly elastic.

Weeks	Assignment
1	Assignment list five (5) technology related career
2	Assignment: list other product of technology you know apart from the ones previously listed
3	Assignment: explain why we should study technology?
4	Assignment: List and briefly explain the design process in technology
5	Assignment: Give examples of Role model in technology in Nigeria with their inventions
6	Assignment: write short note on the following forms of wood: a. Veneer b. Plywood c. Laminated board d. Chip board
7	Assignment a. Define corrosion of metals b. list five uses of metals
8	Assignment list 7 product of ceramics.
9	Assignment: state the difference between ceramic and glass

10	Assignment: a. differentiate between thermosets and thermoplastics b. list 4 examples each of thermosets and thermoplastic products
11	Assignment : Differentiate between plastic and rubber, b. what is the different between plastic and rubber? C. define the following terms * elasticity,* permeability * Ductility * Vulcanization