

REPUBLIC OF RWANDA

MINISTRY OF PRIMARY
AND SECONDARY EDUCATION

DIRECTION OF STUDIES AND
PEDAGOGICAL RESEARCH
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KIGALI

**PRIMARY SCHOOL SCIENCES AND ELEMENTARY
TECHNOLOGY PROGRAMME**

Division of Programmes for
Studies of Primary Education

Kigali, September 1996

I. INTRODUCTION

In few past years, many things have changed in primary education because the objectives of educational reforms were not achieved.

It was evident, for example, that certain lessons in 3rd phase of primary education did never meet their goals. That is why P₇ and P₈ were closed down.

It was not only the 3rd phase which faced problems but also the whole teaching system in primary school was based on theoretical general knowledge and neglected practical part. In that way, a pupil grew up without useful psychomotoric to enable him/her to face the challenges of life.

All those concerned in education at all levels and the curriculum planners met and carefully examined the problems of the system and suggested some ideas of putting the neglected part in the current teaching programme. A new discipline of science and elementary technology “ S.E.T.” consisting of knowledge, skills and attitudes was introduced, hence enabling the pupil to advance from theoretical to practical knowledge.

This discipline will be taught at all levels of primary education and its complexity will increase according to the cognitive capacity, psychomotoric and affective development of the pupil.

II. GENERAL ORIENTATIONS

The new discipline of science and elementary technology aims at promoting pupils capacity to respond to various simple problems in his everyday life.

In order to develop the necessary psychomotor and affective capacities to the learner, the subjects will focus on his everyday needs, experiences and prevailing situations. The teacher’s role is to coordinate the activities. He should then allow time to the pupils to play, observe, manipulate and discover.

This course is conceived from the orientation of integrative teaching. It is interdisciplinary teaches different subjects extracted from natural sciences, physics, environmental education and home economics.

This new programme will help the pupils joining secondary education follow the science subjects easily and be future skilled human resources for the country.

III. GENERAL LAYOUT

UPPER PRIMARY

TOPICS	PRIMARY 4	PRIMARY 5	PRIMARY 6
01. TOOLS AND SIMPLE MACHINE	Hand tools and their maintenance <ul style="list-style-type: none"> - Agricultural tools - Carpentry tools - Masonry 	<ul style="list-style-type: none"> - Tools used in <ul style="list-style-type: none"> - Mechanics - Blacksmith 	<ul style="list-style-type: none"> - Simple machine and their Maintenance
02. WATER	<ul style="list-style-type: none"> - Water cycle - Source of water - Effects of rain water - Dangers of stagnant water 	<ul style="list-style-type: none"> - Water supply - Water pollution 	<ul style="list-style-type: none"> - Dangers (effects) of water pollution - Purification of water
03. HUMAN BODY, HYGIENE AND FIRST AID	<ul style="list-style-type: none"> - Sensory organs <ul style="list-style-type: none"> Skin Tongue - Muscles and skeleton - Internal organ <ul style="list-style-type: none"> - Respiratory system - Digestive system 	<ul style="list-style-type: none"> - Sensory organs <ul style="list-style-type: none"> - Ear and nose - Muscles and skeleton - Internal organ <ul style="list-style-type: none"> . circulatory system . urinary system 	<ul style="list-style-type: none"> - Sensory organs <ul style="list-style-type: none"> - eye - skeleton & muscles - Reproduction of male & female - Digestion - Different methods of cooking

	- Nutrition	- Nutrition	
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TOPICS	PRIMARY 4	PRIMARY 5	PRIMARY 6
04. AIR AND WIND	- Importance of air, wind and dangers of wind	- Air and sound	Composition of air.
05. LIGHT AND HEAT	- Source of light and heat	- Propagation of light - Reflection of light - Refraction of light	_____
06. Fuels	- Fuels (Solid, liquid - gases)		
07. TREES AND ENVIRONMENT	- Uses of trees - Causes and effects of deforestation. - Conservation of trees	_____	_____
08. ELECTRICITY	_____	- A simple electric circuit and its components. - Distribution of electricity - Uses and dangers	_____
09. HEAT	_____		Energy : Definition examples of forms of energy.
10. MAGNETISM	_____	_____	Types of magnets

			<ul style="list-style-type: none"> - Properties , magnets - Magnetic field - Magnetic compass.
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TOPICS	PRIMARY 4	PRIMARY 5	PRIMARY 6
11. METALS	Metals - Physical properties of metals and their uses	Classification of matter (Solid, liquids, gases)	Changes of state of matter
12. ANIMALS	<ul style="list-style-type: none"> - Classification of animals - Animal management 	Mode of animal life - Respiration - Feeding habits - Animal management	Mode of animal life - Reproduction - Locomotion - Animal management
13. SOIL	- Composition of soil and characteristics of soil suitable for cultivation	<ul style="list-style-type: none"> -Ways and stage of soil preparation - Utility 	- Ferterization of soil with artificial fertilizers
14. PLANTS	<ul style="list-style-type: none"> - Different types of plants. - Conditions and stages of germination 	<ul style="list-style-type: none"> - Types of crops - Sexual reproduction 	Functions of the part of the plant. - Sexual reproduction.
15. CONSUMER EDUCATION	The relationship between buyer and a seller	<ul style="list-style-type: none"> - Advertisement - Simple budgeting personal of family income. 	<ul style="list-style-type: none"> - Managing cooperatives - Book keeping - Savings.
16. MAKING OF PLAY OBJECTS AND MATERIALS	- Making of play objects, utility object and materials.	- Making of play objects, teaching aid and materials.	Fabrication of playing objects and materials and Basic Stiches - Stitching : - mending

	(a) crochet - Bathing cloth		- heming :
	(b) Stitching - Hand - Kerchieb		- Knitting : - Pair of bootes - Bonettes

IV. GENERAL OBJECTIVES

1. To awaken in the child the spirit to research for better understanding and mastering natural, socio-economical and technical phenomena.
2. To guide and encourage the pupil to develop healthy life styles.
3. To inspire the pupil to consciously consider the avenues and opportunities in practical life, society and changing world.
4. Encourage pupils to develop interest in handicrafts

V. SPECIFIC OBJECTIVES

The pupil will be able to :

- 1) Solve technical problems by assembling, constructions, experimentations and research methods.
- 2) Observe, compare, analyse natural phenomena and identify their functions.
- 3) Discover the interactions and physical rules which intervene into the natural and technical phenomena.
- 4) Practise technical operations using tools and instruments in common use.

- 5) Illustrate technical production by sketch diagrams
- 6) Practise and compare the measurement by using numbers.
- 7) Explain the economic problems and social sanitation related to his activities and environment.
- 8) Practise general rules of hygiene.
- 9) Protect the environment by respecting natural equilibrium.
- 10) Improve on crop and animal husbandry.
- 11) Explain how his/her body systems and sensory organs work and be aware of their hygiene
- 12) Explain the characteristics and importance of plants and animals
- 13) Describe and demonstrate the uses and working of simple machines.
- 14) Describe types of food groups and their functions in our lives
- 15) Explain and demonstrate some characteristics and uses of common forms of energy : (electric, magnetic and calorific).

VI. DISTRIBUTION OF CONTENTS

According to the contents of each topic, the material is distributed to one or several weeks during the course of the term, which estimatedly is comprising eleven weeks.

The topic of making playing objects and teaching materials is considered as the practical work of the lesson in the topic. For this reason, it is important in every term.

Since the pupils in primary six would be preparing themselves for their national primary leaving examinations all the topics must be tackled during the first two terms. Leaving the third term for general revision work.

PRIMARY 4

CONTENTS

WEEKS	FIRST TERM	SECOND TERM	THIRD TERM
1. Week	Hand tools and their maintenance	Heat and light	Soil
2. Week	Hand tools and their maintenance	Fuel (Solids, Liquids, Gas)	Soil
3. Week	Water	Fuel (Solids, Liquids, Gas)	Soil
4. Week	Water	Trees and environment	Plants
5. Week	Human body hygiene and First Aid	Trees and environment	Plants
6. Week	Human body hygiene and First Aid	State of matter	Plants
7. Week	Human body hygiene and First Aid	Animals	Consumer education
8. Week	Air and wind	Animals	Consumer education

9. Week	Fabrication of play objects and teaching aids	Fabrication of play objects and teaching aids	Fabrication of play objects and teaching aids
10. Week	Fabrication of play objects and teaching aids	Fabrication of play objects and teaching aids	Fabrication of play objects and teaching aids
11. Week	Fabrication of play objects and teaching aids	Fabrication of play objects and teaching aids	Fabrication of play objects and teaching aids

PRIMARY 5**CONTENTS**

WEEKS	FIRST TERM	SECOND TERM	THIRD TERM
1. Week	Tools and mechanics	Air and wind	Animals
2. Week	Tools and mechanics	Heat and light	Animals
3. Week	Water	Heat and light	Soil
4. Week	Water	Heat and light	Soil
5. Week	Human body, Hygiene and First Aid	Electricity	Plants
6. Week	Human body, Hygiene and First Aid	Electricity	Plants
7. Week	Human body, Hygiene and First Aid	Electricity	Consumer education
8. Week	Human body, hygiene and First Aid	State of matter	Consumer education

9. Week	Fabrication of play objects and teaching aids	State of matter	Fabrication of play objects and teaching aids.
10. Week	Fabrication of play objects and teaching aids	Fabrication of play objects and teaching aids	Fabrication of play objects and teaching aids
11. Week	Fabrication of play objects and teaching aids	Fabrication of play objects and teaching aids	Fabrication of play objects and teaching aids

PRIMARY 6**CONTENTS**

WEEKS	FIRST TERM	SECOND TERM	THIRD TERM
1. Week	Simple machine and their maintenance	State of matter	Simple machine and their maintenance
2. Week	Simple machine and their maintenance	State of matter	Water + human body, hygiene and First Aids
3. Week	Water	Animals	Air and wind + heat and light
4. Week	Human body, hygiene and first aid.	Animals	Forms of energy and magnetism
5. Week	Human body, hygiene and first aid	Soil	State of matter
6. Week	Air and wind	Plants	Animals
7. Week	Heat and light	Consumer education	Soil + plants

8. Week	Forms of energy	Consumer education	Consumer education
9. Week	Magnetism	Consumer education	Consumer education
10. Week	Fabrication of play object and teaching aids	Fabrication of play and teaching aids	Fabrication of play and teaching aids
11. Week	Fabrication of play objects and teaching aids	Fabrication of play and teaching aids	Fabrication of play and teaching aids

PRIMARY 4 : SCIENCE AND ELEMENTARY TECHNOLOGY

OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
<p>At the end of primary four the learner will be able to :</p> <ul style="list-style-type: none"> - State and identify some hand tools used in agriculture, Carpentry and Masonry - State the use of each tool - Explain their uses, care and maintenance 	<p><u>TOPIC I : HAND TOOLS AND THEIR MAINTENANCE</u></p> <p>1.1. <u>Agricultural tools</u> : hoe, panga, spade, watering can, spraying pump, wheel burrow, milking can etc - their uses and maintenance</p> <p>1.2. <u>Carpentry tools</u> : - workbench, saw, hammer plane, T- square etc. - their uses and maintenance</p> <p>1.3. <u>Masonry</u> : - trowel, plumb line, water level etc. - their uses and maintenance</p>	<ul style="list-style-type: none"> - Visiting work shops - The teacher or pupils will bring some of these tools. - Illustrate by diagrams - The teacher and pupils will choose some of the tools available locally - The teacher should practically show the pupils how to clean and maintain these tools. - Demonstrations and practical work may be done

<ul style="list-style-type: none"> - Describe the water cycle - State the sources of water - Explain the effects of rain water on environment. - Explain the dangers associated with stagnant water. 	<p><u>TOPIC 2 : WATER</u></p> <p>2.1. <u>Water and environment</u></p> <ul style="list-style-type: none"> - water cycle - source of water - Effect of rain water on environment. - Dangers of stagnant water eg breeding place for mosquitoes which carry malaria parasites. 	<ul style="list-style-type: none"> - Discussions - Guided observations
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OBJECTIVES	CONTENTS	METHOLOGICAL NOTES
<ul style="list-style-type: none"> - Describe the structure of the skin and tongue - Explain the functions of the skin and tongue - Practise the cleanliness of the skin and tongue - Name the skin diseases - Give first aid for skin accidents 	<p><u>TOPIC 3 : HUMAN BODY, HYGIENE AND FIRST AID.</u></p> <p>3.1. <u>Sensory organs :</u></p> <ul style="list-style-type: none"> * The skin and tongue : <ul style="list-style-type: none"> - description of structure - properties - functions - hygiene * Skin diseases * skin accidents - Burns <ul style="list-style-type: none"> - cuts etc. <p>3.2. <u>Muscles and skeleton :</u></p>	<ul style="list-style-type: none"> - Observations - Experiments - Discussions

<ul style="list-style-type: none"> - Name and show the position of bones of the trunk - Identify some muscles of the trunk. - Describe the respiratory system - Explain briefly the respiration mechanism - Practise the hygiene of respiration organs - Explain the causes of suffocation and their first aid. 	<ul style="list-style-type: none"> - Bones of the trunk - Some muscles of the trunk 3.3. <u>Internal organs</u> : * Respiratory system : <ul style="list-style-type: none"> - description of structure - Mechanism of respiration <ul style="list-style-type: none"> - Inspiration - Expiration 	<ul style="list-style-type: none"> - Discussions - Observations - Discussions - Diagram illustrations - Demonstrations
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OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
	<ul style="list-style-type: none"> - Hygiene of respiratory organs - Suffocation - definition <ul style="list-style-type: none"> - Causes - First aid - Diseases of the respiratory system <ul style="list-style-type: none"> - Coughs - Tuberculosis - Pleurisy - Bronchitis - Asthma - Effects of smoking <ul style="list-style-type: none"> - Prevention - Remedies 	<ul style="list-style-type: none"> - Observations - Discussions - Sketch diagrams

<ul style="list-style-type: none"> - Describe the structure of a tooth - State the number and kinds of teeth - Practise the hygiene of the teeth - Describe and explain the role of the parts of alimentary canal - Practise the hygiene of the alimentary canal - State different intestinal parasites. 	<ul style="list-style-type: none"> * Digestive system <ul style="list-style-type: none"> - The tooth - Structure - Number - Types - Hygiene of teeth - Description, function and hygiene of <ul style="list-style-type: none"> - Pharynx - Oesophagus - Stomach - Liver - Pancreas - Small and large intestine <ul style="list-style-type: none"> - Anus - Intestinal parasites <ul style="list-style-type: none"> - worms - Microbes 	<ul style="list-style-type: none"> - Observation - Discussions - Sketch diagrams.
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OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
<p>Classify foods into three groups and give examples of each group.</p> <p>- Explain the function of each nutrient in</p>	<p>3.4. <u>Nutrition</u> :</p> <ul style="list-style-type: none"> - Importance of nutrition - Groups of foods <ul style="list-style-type: none"> Body building foods - proteins eg milk, meat, eggs, fish, beans, soya beans etc. - Energy giving foods <ul style="list-style-type: none"> - Carbohydrates, Fat and oils Maize, Millet etc, Butter ghee etc. 	<p>Learners will bring different foods and with the help of teacher they group into 3 classes</p>

<p>the body</p> <p>- Define balanced diet Prepare a balanced meal.</p>	<ul style="list-style-type: none"> - Protective foods - Vitamins and mineral salts eg. fruits and vegetables. - Balanced diet - consisting of the three categories of foods - Qualities of a balanced diet - Constituents of a balanced diet Examples of balanced meals Menu : Irish potatoes (Indagara) Fish and vegetables 	<ul style="list-style-type: none"> - Teacher demonstration - Preparation of a balanced meal in groups by pupils
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OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
<ul style="list-style-type: none"> - Explain the different processes in laundry work - Launder garments using correct procedures 	<p>3.5. <u>Laundry work</u></p> <ul style="list-style-type: none"> - Laundry processes : <ul style="list-style-type: none"> - Sorting out - Soaking - Washing - Rinsing 	<ul style="list-style-type: none"> - Teacher demonstration - Pupils practise laundering processes

<ul style="list-style-type: none"> - State the natural and artificial sources of heat and light - Compare the intensities of different sources of <ul style="list-style-type: none"> a) Light b) Heat 	<ul style="list-style-type: none"> - Wringing - Drying <p><u>TOPIC 4 : LIGHT AND HEAT</u></p> <p>4.1. <u>Sources of light and heat</u></p> <ul style="list-style-type: none"> a) Natural source <ul style="list-style-type: none"> - sun b) Artificial sources <ul style="list-style-type: none"> - Lamps - Kerosene - Electric - Gas - Candle - Fire - Torch 	<ul style="list-style-type: none"> - Class discussions - Experiments - Observations - Comparisons
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OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
<ul style="list-style-type: none"> - Differentiate between transparent, translucent and opaque objects 	<p>4.2. <u>Transmission of light and heat through different media</u></p> <ul style="list-style-type: none"> - Transparent - Translucent - Opaque 	<ul style="list-style-type: none"> - Experiments - Observations - Comparisons.

<ul style="list-style-type: none"> - Classify different types of substances that burn (Fuels) and physical state. - State the importance of trees 	<p><u>TOPIC 5 : FUELS</u></p> <p>5.1. Solid fuels - Fine wood, Pit, charcoal, etc.</p> <p>5.2. Liquid fuels : Petrol, Kerosine Diesel, Alcohol,</p> <p>5.3. Gas fuels : Methane, Butane</p> <p><u>TOPIC 6 : TREES AND ENVIRONMENT</u></p> <p>6.1. <u>Uses of trees</u> :</p> <ul style="list-style-type: none"> a) Production of firewood and charcoal b) Cause for rainfall c) Purification of air d) Construction materials 	<ul style="list-style-type: none"> - Observation - Experiments - Comprisons - Discussion - Observations
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OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
<ul style="list-style-type: none"> - Explain the causes and effects of deforestation 	<p>6.2. <u>Causes and effects of deforestation</u> :</p> <p>6.3. <u>Conservation of trees</u> :</p> <ul style="list-style-type: none"> - Reforestation : 	<ul style="list-style-type: none"> - Discussions - Discussions

<p>- Explain and apply methods of conservation of trees in everyday life.</p> <p>- List different types of electrical equipment</p>	<p>- Economical use of wood and charcoal</p> <p>- Use of improved traditional wood and charcoal burners eg 3 stores, cana macye, muvero etc.</p> <p>- Use of other sources of heat eg. Electricity, gas, kerosene, etc.</p> <p><u>TOPIC 7 : DOMESTIC ELECTRICAL APPLIANCES AND OTHER EQUIPMENT</u></p> <p>7.1. <u>Domestic electrical appliances :</u></p> <p>- Torch, hot plates, water heater, electric cooker, electric iron etc.</p> <p>7.2. <u>Other equipment :</u></p> <p>- Typing machine, sewing machine, cycle styling machine telephone, Tele Fax Machine, calculator, computer, etc.</p>	<p>- Observations</p> <p>- Discussions</p>
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OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
<p>- Identify some common metals available</p>	<p><u>TOPIC 8 : METALS</u></p> <p>8.1. <u>Examples, Iron, Aluminium, copper etc.</u></p>	<p>- Observation of objects made of metal</p> <p>- Experiments to show physical properties.</p>

<p>in their area.</p> <ul style="list-style-type: none"> - State some physical properties of metals - Give examples of some objects made of metal. - State the importance of air and wind and dangers of wind. 	<p>8.2. <u>Physical properties of metals - shiny, sonorous, good conductors of heat and electricity.</u></p> <p>8.3. <u>Their uses</u></p> <ul style="list-style-type: none"> - Iron - hoe, hammer, knife etc. - Aluminium - saucepans - Zinc - Galvanisation of iron - Copper - Electric wims <p><u>TOPIC 9 : IMPORTANCE OF AIR AND WIND AND DANGERS OF WIND</u></p> <p>9.1. <u>Importance of air and wind :</u></p> <ul style="list-style-type: none"> - Respiration - Supports combustion - Aeration - Drying of clothes <p>9.2. <u>Dangers of wind</u></p> <ul style="list-style-type: none"> - Destruction of environment eg houses, plants - Soil erosion. 	<ul style="list-style-type: none"> - Experiments - Observations - Discussions
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OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
	<u>TOPIC 10 : ANIMALS</u>	

<ul style="list-style-type: none"> - State the major classes of animals - Group animals in their respective classes - Explain the conditions of a suitable farm - State the characteristics of a suitable animal to rear - List the components of an appropriate diet for a farm animal - Practise rules for farm sanitation - Name the common diseases. 	<p>10.1. <u>Classification of animals</u></p> <p>a) The vertebrates</p> <ul style="list-style-type: none"> - Mammals - Birds - Reptiles - Amphibians - Fish <p>b) The invertebrates</p> <ul style="list-style-type: none"> . Arthropods . Molluscs . Worms etc. <p>10.2. <u>Animal management</u></p> <p>Examples - any choice</p> <ul style="list-style-type: none"> . Conditions of good farm . Choice of animals to rear . Feeding . Sanitation . Common diseases 	<ul style="list-style-type: none"> - Discussions - Observations - Investigations - Visiting farms - Observations
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OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
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<ul style="list-style-type: none"> - Explain the characteristics of suitable soil for cultivation - State the causes of soil-erosion and its control measure - Maintain installations for soil- erosion control - Describe different types of plants - Describe the necessary conditions and stages of germination 	<p><u>TOPIC 11 : THE SOIL</u></p> <p>11.1. <u>Composition of soil and characteristics of soil suitable for cultivation</u></p> <p>11.2. <u>Control of soil - erosion</u></p> <ul style="list-style-type: none"> . Causes of soil erosion . Control measures . Maintenance of infrastructure for soil-erosion. <p><u>TOPIC 12 : PLANTS</u></p> <p>12.1. <u>Different types of plants</u></p> <ul style="list-style-type: none"> - Trees - Herbs etc <p>12.2. <u>Conditions and stages of germination</u></p>	<ul style="list-style-type: none"> - Discussion - Observation - Discussions - Observation - Experiments - Observations - Discussions
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OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
<p>Explain the importance of good relationship between a seller and buyer</p> <ul style="list-style-type: none"> - Make a simple budget - Chose and buy quality goods for personal or household use without being extravagant. <p>- Make different objects from different materials.</p>	<p><u>TOPIC 13 : CONSUMER EDUCATION</u></p> <ul style="list-style-type: none"> . The relationship between a buyer and a seller <ul style="list-style-type: none"> - characteristic of a good : <ul style="list-style-type: none"> a) seller b) buyer . Calculation of correct change . Wise choice and buying of goods (quality of goods) <p><u>TOPIC 14 : MAKING OF PLAY OBJECTS UTILITY OBJECTS AND MATERIALS AND TEACHING AIDS</u></p> <p>14.1. <u>Making play objects</u> :</p> <ul style="list-style-type: none"> - In clay - toy houses, etc - In wood or sticks - toy houses, hats, toy cars, dolls, etc. <p>14.2. <u>Making utility objects and materials</u></p> <ul style="list-style-type: none"> - In wood - spoon, spear - In fibres - hand bag, basket ropes . 	<p>Explaining by dramatisation of roles</p> <p>- Teacher demonstration</p> <p>- Practical work</p> <p>- Teacher guidance and assessment of work step by step.</p>

OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
<p>- Make different objects from different materials</p>	<p>14.3. <u>Making teaching aids</u></p> <ul style="list-style-type: none"> - In paper and plastic : Kites, toy planes, balls wind vane - In wood - ruler, protractor, set-square - In cardboard - thermometer <p>14.4. <u>Making objects in yarn thread</u></p> <ul style="list-style-type: none"> a) Crochets - Basic stitches <ul style="list-style-type: none"> - Bathing cloth b) Stitching - Basic stitches <ul style="list-style-type: none"> - Handkerchief. 	

PRIMARY 5 : SCIENCE AND ELEMENTARY TECHNOLOGY

OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
<ul style="list-style-type: none"> - Identify some tools used in mechanics and black smith - Explain how to use and maintain them - State the ways of water supply - Use clean water - Distinguish different water pollutants 	<p><u>TOPIC I : TOOLS USED IN MECHANICS AND BLACK SMITH</u></p> <p>1.1. <u>examples of some tools</u></p> <ul style="list-style-type: none"> - Clamp, Hammer, Anvil, Bellows (Umuvuba) Borerer etc. <p>1.2. <u>Use and maintenance</u></p> <p><u>TOPIC 2 : WATER</u></p> <p>2.1. <u>Water supply</u></p> <ul style="list-style-type: none"> - Means of water supply - Water hygiene - Drainage and disposal of waste water <p>2.2. <u>Water pollution</u></p> <ul style="list-style-type: none"> - Faeces, - Industrial wastes - Domestic wastes - Used water - Dead bodies of animals 	<ul style="list-style-type: none"> - Visiting workshops - Teacher or pupils will bring some tools for observations - Teacher and pupils practise how to manipulate some of the tools. - Discussions - Investigations - Demonstrations - Observations - Discussions - Observations - Visits to industrial sites.

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OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
<ul style="list-style-type: none"> - Describe the structure of the nose and ear - Explain the functions of the nose and ear - Practise hygiene of the nose and ear - Identify diseases which affect the nose and ear. - Show and name the bones of the limbs - Avoid and prevent accidents of bones of the limbs and give first aid. - Show and name muscles of the limbs - State characteristics of muscles - Practise hygiene of muscles. - Describe the structure of circulatory organs - Explain the circulation of blood - Explain the functions of circulatory organs - Practise the hygiene of circulatory organs - Differentiate kinds of haemorrhages - Give first aid in case of bleeding - Explain transmission of aids virus through blood 	<p style="text-align: center;">TOPIC 3 : <u>HUMAN BODY, HYGIENE AND FIRST AID</u></p> <p>3.1. <u>Sensory organs</u></p> <ul style="list-style-type: none"> . The nose and the ear <ul style="list-style-type: none"> - Description of structure - Functions - Hygiene - Diseases of the nose and the ear <p>3.2. <u>Skeleton and muscles</u></p> <ul style="list-style-type: none"> . Bones of the limbs . Accidents of bones . Some muscles of the limbs . Characteristics of muscles . Good posture . Hygiene of muscles and bones <p>3.3. <u>Circulation system</u></p> <ul style="list-style-type: none"> . Description <ul style="list-style-type: none"> - The heart - The blood vessels - Blood circulation . Functions . Hygiene . Haemorrhage <ul style="list-style-type: none"> - Internal - External . Aids transmission through blood 	<ul style="list-style-type: none"> - Discussion - Observations - Discussions - Observations - Demonstrations - Observations - Discussions - Demonstrations - Sketch diagrams - Experience - Observation

OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
<ul style="list-style-type: none"> - Describe the structure of the organs of urinary system - Explain their functions - Practise the hygiene of the organs of urinary system. - Differentiate between alcoholic and non alcoholic beverages - Explain the role of beverages - Give the effects of alcoholism and ways of preventing. - To prepare a balanced meal 	<p>3.4. <u>Urinary system</u></p> <ul style="list-style-type: none"> . Description - Kidney <ul style="list-style-type: none"> - Urethra - Bladder . Functions of urinary system . Hygiene of the urinary organs <p><u>Beverages and their role</u></p> <ul style="list-style-type: none"> - Alcoholic and non-alcoholic beverages - Roles of beverages - Effect of alcoholism - Prevention <p>3.5. <u>Nutrition</u></p> <p>3.5.1. <u>Nutritional deficiency diseases</u></p> <ul style="list-style-type: none"> . Definition, causes and symptoms . Prevention and treatment <ul style="list-style-type: none"> of : - Kwashiorkor <ul style="list-style-type: none"> - Marasmus - Rickets - Goitre - Night blindness (oestamalacia) - Anaemia etc. 	<ul style="list-style-type: none"> - Demonstration - Discussions - Sketch diagrams - Discussions - Observations - Explanation based on observation - Visit nutrition centres

OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
<p>Establish</p> <ul style="list-style-type: none"> - relate mass and volume to density - Discover why some objects float while others sink. 	<p>b) Liquids - water, milk; kerosene, petrol Physical properties</p> <ul style="list-style-type: none"> - Definite volume - no definite shape (takes shape of container) - Incompressible - They flow <p>c) Gases - Air, water vapour, methane. Properties</p> <ul style="list-style-type: none"> - Elasticity - Compressibility - no definite shape - no definite volume <p>4.2. <u>Mass, volume and density</u></p> <p>a) Simple explanation on</p> <ul style="list-style-type: none"> - Mass - Volume <p>b) Relation of mass and volume to density</p> $\frac{M}{V} = D$	<p>- Carry out experiments to find mass and volume of some objects (regular in shape) and determine their density.</p>

OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
<p>- Demonstrate</p> <ul style="list-style-type: none"> a) Linear propagation of light b) Reflection of light c) Refraction of light 	<ul style="list-style-type: none"> c) Floating and sinking objects as related to their density. <p>Floating objects - dry wood, charcoal, and oil etc.</p> <p>Sinking objects - coins, stones etc.</p> <ul style="list-style-type: none"> d) Relative density <p><u>TOPIC 5 : LIGTH AND HEAT</u></p> <p>5.1. <u>Light</u></p> <ul style="list-style-type: none"> a) Propagation of light in straight line b) Reflection of light using plain mirrors c) Refraction of light in water using a stick 	<ul style="list-style-type: none"> - Experiments to observe sinking and floating objects. - Discussion <ul style="list-style-type: none"> - Carry out experments using torch, mirrors and water with a stick. - Discussions.

OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
<ul style="list-style-type: none"> - Explain and demonstrate transmission of heat - Identify good and poor conductors of heat. - Identify and name the components of a simple electric circuit. - Construct a simple electric circuit using dry cells. - Explain how an electric torch works - To manipulate some common electric tools. 	<p>5.2. <u>Heat</u></p> <ul style="list-style-type: none"> . Transmission of heat in : <ul style="list-style-type: none"> — Solids — Conduction — Liquids — Convection — Air — Radiation . Good and poor conductors of heat <p><u>TOPIC 6 : ELECTRICITY</u></p> <p>A simple electric circuit and its components : Cells, wires, Bulbs, switch.</p> <ul style="list-style-type: none"> - Torch as a practical example - Common tools in electricity : pliers screw driver, Knife test etc. <p>Materials : of electricity wires, cells, bulbs, socket, plugs, switch fuse, electric meter</p>	<ul style="list-style-type: none"> - Carry out experiments using metallic, wooden, plastic objects, water with a source of heat ie hot water and fire. - Demonstrations - Experiments - Observations - Discussions - Opening (dismantle) and assembling an electric torch

SPECIFIC OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
<ul style="list-style-type: none"> - State some of the materials used in the supply of electricity - State the uses and dangers of electricity - Explain different ways in which sound is produced. 	<ul style="list-style-type: none"> . <u>Distribution of Electricity</u> - Main source, transformer, cables, poles Uses and dangers of Electricity Uses : Cooking, Ironing, Lighting Refridgiration, Industries Dangers : Electrocutation, short circuiting - Electric fine - Damaging electrical equipment <u>TOPIC 7 : AIR AND SOUND</u> . Production of sound : Vibrations - Cords of musical Instruments eg guitar, - Vocal cord - Elastic membrane - Blowing eg flute - Instruments using wind eg. accordion etc. 	<ul style="list-style-type: none"> - Observations - Discussions - Teacher to discuss precautions to avoid the dangers Experiments on - Blowing - Beating - Tuning fork

SPECIFIC OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
<ul style="list-style-type: none"> - Explain the propagation of sound and production of echo. - Explain the different ways of respiration and give examples - Explain feeding methods of animals - Give examples of animals using different modes of Nutrition. 	<ul style="list-style-type: none"> . Propagation of sound by vibrations through : <ul style="list-style-type: none"> - Air, solids and water - Obstacles to sound propagation - Production of echo (reflection of sound) <u>TOPIC 8 : ANIMALS</u> 8.1. <u>Mode of Animal life</u> . Different ways of respiration . Feeding habits : <ul style="list-style-type: none"> Herbivores Carnivores Omnivores Rodents Grain eaters Insectivores 8.2. <u>Animal management</u> - Conditions of the farm - Choice of animals to rear 	<ul style="list-style-type: none"> - Experiments using tuning fork - Discussions - Group discussions - Observations - Investigation - Class-tour

SPECIFIC OBJECTIVE	CONTENTS	METHODOLOGICAL NOTES
<p>- Demonstrate an understanding of the role of advertisement</p> <p>- Identifying various sources of family income</p>	<p>10.2. <u>Asexual reproduction</u></p> <ul style="list-style-type: none"> - Cuttings - Vegetatives propagation - Layering - Grafting. <p>TOPIC 11 : <u>CONSUMER EDUCATION</u></p> <p>11.1. <u>Advertising</u></p> <ul style="list-style-type: none"> - Definition - Methods of advertising goods for sell - Effects of advertise on the consumer - Advantages and disadvantages of advertising on mass media <p>11.2. <u>Consumer spending sources of family income</u></p> <ul style="list-style-type: none"> - Salary - Agriculture - Commerce 	<p>- Explanations using examples</p>

SPECIFIC OBJECTIVE	CONTENTS	METHODOLOGICAL NOTES
	<p>12.4. <u>Crotcheting</u> : making a simple <u>crotchet piece</u>.</p> <p>12.5. <u>Sewing</u> : - Repairs - Replacing a button - Mending a tear</p>	<ul style="list-style-type: none"> - Observing model pieces by teacher - Demonstration by teacher - Practical work guided by teacher step by step.

PRIMARY 6 : SCIENCE AND ELEMENTARY TECHNOLOGY

SPECIFIC OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES		
<ul style="list-style-type: none"> - Define a simple machine - Give some examples of simple machines - Explain the working of some simple machines and how they are maintained - Make some simple machines 	<p style="text-align: center;"><u>TOPIC 1 : SIMPLE MACHINES AND THEIR MAINTENANCE</u></p> <p>1.1. <u>Definition of a simple machine</u></p> <p>1.2. <u>Example of simple machines</u></p> <ul style="list-style-type: none"> - Inclined plane, pulleys, bolt drives, levers (wheel burrow, hoe, pair of scissors) <p>1.3. <u>Working and maintenance</u></p> <p>1.4. <u>Making some simple machines</u></p> <ul style="list-style-type: none"> - Balance, pair of scissors, pulleys etc. 	<ul style="list-style-type: none"> - Discussions - Experiments - Observations - Demonstration by teacher - Pupils make them 		
	<p style="text-align: center;"><u>TOPIC 2 : WATER</u></p> <p>2.1. <u>Dangers of polluted water</u></p> <ul style="list-style-type: none"> . Disease associated with diarrhea <ul style="list-style-type: none"> - Cholera - Thyphoid - Amoebic dysentery - Bacillus dysentery 		<ul style="list-style-type: none"> - Discussions 	
	<ul style="list-style-type: none"> - Recognise the dangers of polluted water 			

SPECIFIC OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
<ul style="list-style-type: none"> - Explain the fertilization phenomenon - Explain various contraceptive methods - Avoid habits related to contracting STD and AIDS - Practise the rules of hygiene of the reproductive organs - Explain the different stages of digestion process. - Describe the functions of digestive organs - State different methods of cooking 	<ul style="list-style-type: none"> - Fertilization - Fertilized egg - Implantation - Gestation - Birth CONTRACEPTIVE METHOD - STDS and HIV / AIDS - Hygiene of reproductive organs 3.4. <u>Digestive system</u> - Different stages of digestion - Functions of digestive organs <ul style="list-style-type: none"> - Mouth - Pharynx and oesophagus - Stomach, intestines, Anus - Liver - Pancreas 3.5. <u>Some cooking methods</u> Cooking boiling in water, grilling, shallow Frying, roasting, deep frying, steaming stewing. 	<ul style="list-style-type: none"> - Group discussions - Films - Observation of charts and photos - Discussions - Visit to the butcheries and slaughter houses.

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SPECIFIC OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
<p>- Explain the water cycle.</p>	<p>4.3. <u>Changing from liquid to gas and vice versa</u> water → water vapour ←</p> <p>evaporation and condensation Also alcohols and perfumes.</p> <p>4.4. Changing from solid to gas and vice versa sublimation naphthalene, Iodine</p> <p>4.5. <u>Water cycle</u> Draw a sketch diagram of water cycle</p>	<p>- Discussions</p>

SPECIFIC OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
<p>Identify the different zones of a shadow</p> <p>- Explain the phenomena of eclipses</p> <p>- Define energy and state some forms of energy</p> <p>- Define solar energy</p> <p>- Explain the role of the components responsible for the production of solar energy</p>	<p><u>TOPIC 5 : LIGHT AND SHADOWS</u></p> <p>- Formation of Umbra and Penumbra Application - Formation of Lunar and solar eclipses</p> <p><u>TOPIC 6 : FORMS OF ENERGY</u></p> <p>6.1. <u>Definition of energy</u> - Ability to do work</p> <p>6.2. Examples of the forms of energy - Heat - Light - Electricity</p> <p>6.3. <u>Solar energy</u></p> <ul style="list-style-type: none"> . Definition - energy produced by sun rays . Absorption and transformation of solar panel . Conservation of solar energy <ul style="list-style-type: none"> - Role of Battery . Uses : Lighting and working some simple electrical appliances. 	<p>- Experiments - Observations - Discussions</p> <p>- Discussions</p> <p>- Discussion - Illustration by diagrams - Visit site of installation</p>

	<ul style="list-style-type: none"> - Oxygen - Nitrogen - Carbon dioxide - Water vapour - Inert gases 	
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SPECIFIC OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
<ul style="list-style-type: none"> - Give the uses of oxygen and carbon dioxide. 	<p>8.2. <u>Uses of oxygen and carbon dioxide</u></p> <ul style="list-style-type: none"> - Respiration - Photosynthesis - Burning 	<ul style="list-style-type: none"> - Discussions
<p>Identify some air pollutants</p> <ul style="list-style-type: none"> - State the dangers of polluted air. - Explain how to protect against polluted air. 	<p>8.3. <u>Pollution of air</u></p> <ul style="list-style-type: none"> . Air pollutants : <ul style="list-style-type: none"> - smoke from exhaust pipes and charcoal burners (mention carbon monoxide) . Dangers of polluted air <ul style="list-style-type: none"> - contain poisonous substances . Protecting people from polluted air. <ul style="list-style-type: none"> - Industrial sites to be put far from 	<ul style="list-style-type: none"> - Discussions giving examples

	residential areas - Proper disposal of waste materials	
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SPECIFIC OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
<ul style="list-style-type: none"> - Explain the different ways of animal reproduction. - Distinguish the sexual characteristics of animals - Distinguish the different types of locomotion. - Explain the conditions of a good farm. - State the criteria used to choose a good breed. - Enumerate the components of an 	<p><u>TOPIC 9 : ANIMALS</u></p> <p><u>Mode of animal life</u></p> <p>a) Reproduction : - Oviparous, viviparous Ovoviviparous Male and female sexual characteristics</p> <p>b) Locomotion : - Crawling, walking, flying jumping and swimming</p> <p><u>Animal management</u> (choice of examples)</p> <ul style="list-style-type: none"> - Farm - Choice of animals to rear - Feeding - Common diseases 	<ul style="list-style-type: none"> - Discussion - Observation - Investigation - Imitation - Discussion - Investigation - Observation - Class - tour.

<p>appropriate diet</p> <ul style="list-style-type: none"> - State the common animal diseases. - Practise the rules of animal hygiene. 	<p>- Hygiene</p>	
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SPECIFIC OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
<ul style="list-style-type: none"> - State different types of chemical fertilizers - Explain the importance of chemical fertilizers - Distinguish the forms of chemical fertilizer. - Explain the steps for applying chemical fertilizer. 	<p><u>TOPIC 10 : SOIL :</u></p> <ul style="list-style-type: none"> - <u>Application of artificial and natural fertilizers to soil</u> - Different types of chemical fertilizer <ul style="list-style-type: none"> - Importance - Forms - Steps for applying chemical fertilizers to soil <ul style="list-style-type: none"> - Sowing - Growing - Weeding - Flowering 	<ul style="list-style-type: none"> - Discussion - Observation - Investigation - Demonstration - Experiment

<p>- Manage a school cooperative</p>	<p>- Fruit - Seed</p> <p><u>TOPIC 12 : CONSUMER EDUCATION</u></p> <p>- Basic knowledge on cooperatives - Management of cooperatives - Book keep in connection with school cooperatives ie income and expenses</p> <p>Savings : - Definition - Importance</p>	<p>- Class visits / tour - Filling ledger books</p>
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SPECIFIC OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
<p>- Make different objects from different materials</p>	<p><u>TOPIC 13 : MAKING PLAY OBJECTS, UTILITY OBJECTS AND TEACHING AIDS</u></p> <p>13.1. <u>Making play objects :</u></p> <p>In wood - houses, toy bicycle In clay - animals, dolls In fabric - dolls (stuffed)</p>	

	<p>13.2. <u>Making utility objects</u> :</p> <p>In wire : Hangars, wine baskets toy bicycles and cars In wood : Baskets, hangars, wooden spoon, wooden trays</p> <p>In clay : Improved three stones Fibres : Baskets, mats, fibre trays (Inkoko, Ikibo)</p> <p>Making Teaching aids</p> <ul style="list-style-type: none"> - Regular geometrical figures - Compass, set square 	<ul style="list-style-type: none"> - Demonstrations - Observations - Making different objects
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SPECIFIC OBJECTIVES	CONTENTS	METHODOLOGICAL NOTES
<ul style="list-style-type: none"> - Choosing and making a pair of bootees, a bonnet and working a hem. 	<p>13.4. . <u>Knitting</u> : Bootees , Bonnet</p> <ul style="list-style-type: none"> - Making a cord . Repairs - working a hem <ul style="list-style-type: none"> - Choice of thread - Measuring the required length . Folding, tacking, edge finishing and neatening. 	<ul style="list-style-type: none"> - Demonstration by the teacher - Observation - practical work by pupils

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VIII. NOTES ON METHODOLOGY.

In order for the teacher to follow this programme better he must read books and stick to proper methods which will help him to acquire and implement them properly.

1. During a course of teaching there is always a pupil with his day to day experiences in his life.
2. The following methods must develop the activities of the pupil. Those activities are especially :

Discovery — play, observe, class - tour, assemble, carry out experiments.

Manipulation — Handicraft, construct, diagram, modelling, cooking, sewing

Comprehension — Explain, distinguish, compare.

Synthesis — taking notes, making summary .

Generalisation — Apply useful rules, formulas, following logical steps.

VIII. EVALUATION

The teacher will have to use the following three methods :

- Diagnostic evaluation
- Formative evaluation
- Sommative evaluation.

This evaluation deals with the knowledge to restore the acquired notions, the knowledge, practical skills and attitudes.

IX. PARTICULAR REMARKS

The commission recommends that this programme be applied as soon as possible.

- Providing of scholarstic materials
- Refresher courses and to train teachers (specialists in S.E.T. subject) to be able to implement this programme.

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