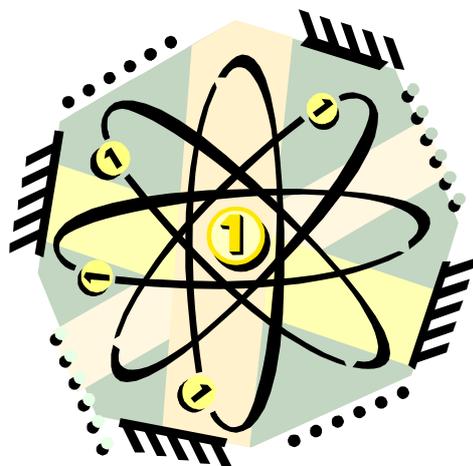


**2002 BASIC EDUCATION CURRICULUM**

# ***HANDBOOK*** *in Science and Health*



**(Elementary Level)**

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# SCIENCE AND HEALTH

## DESCRIPTION

Science and Health aims to help the Filipino child gain a functional understanding of science concepts and principles linked with real life situations, acquire science skills as well as scientific attitudes and values needed in solving everyday problems. These pertain to health and sanitation, nutrition, food production, and the environment and its conservation.

There is no Science and Health for Grades I and II but simple science and health concepts which include the child's interaction to his immediate environment are contents of English. These concepts reinforce the sensory-perceptual activities introduced in the 8-week ECD Curriculum. Likewise, process skills may be developed in Makabayan subject like Sibika at Kultura. Teaching Science and Health will formally start in Grade III using English as medium of instruction. In Grades IV-VI, more complex study of Science concepts will be taken up in preparation for High School work.

## TIME ALLOTMENT

Learning Areas	Daily Time Allotment					
	I	II	III	IV	V	VI
Science and Health ( <i>integrated in English for Grades I &amp; II</i> )	-	-	40	60	60	60

- Science and Health for Grades I and II is integrated in English. This is used as vehicle in developing the skills in English.
- Grade III is given a 40-minute daily time allotment. In Grades IV, V and VI, there is an increase of 20 minutes in the daily time allotment, to give more time and emphasis on the study of Science concepts and processes.

## EXPECTATIONS

**GOAL: *Demonstrate understanding of how science, technology and health relate to the comprehension of the environment and application of skills, attitudes and values in solving varied life situations***



At the end of **Grade VI**, the learner is expected to develop functional understanding and application of science and health concepts, basic and integrated science process skills/thinking skills, and acquire values, attitudes and practices related to body systems (circulatory and nervous), ecosystem, materials and their uses and effects, energy transformation and conservation, movement of the earth's crust, climate and seasons and beyond the solar system.



At the end of **Grade V**, the learner is expected to develop functional understanding application of science and health concepts, basic and integrated science process/thinking skills, and acquire values, attitudes and practices related to body systems (reproductive, respiratory and urinary), disease prevention and control, classification of plants and animals, plant and animal adaptation, changes in matter, electrical energy, simple machines, rocks, water cycle, typhoons, tides and the solar system.



At the end of **Grade IV**, the learner is expected to develop functional understanding and application of science and health concepts, basic process/thinking skills, and acquire values, attitudes, and practices related to body systems (skeletal, muscular and digestive), disease prevention and control, animal and plant reproduction, soil erosion, weather elements, reaction of different substances, friction and heat energy, earth, moon and sun.



At the end of **Grade III**, the learner is expected to develop functional understanding and application of science and health concepts, basic process/thinking skills, and acquire values, attitude and practices related to one's sense organs, personal health, food, nutrition, growth and development, characteristics of plants and animals, caring for plants and animals, states of matter, heat, light and sound energy, force and motion, earth resources and their conservation, weather and the sun as source of light and heat.

## SCOPE AND SEQUENCE

Grade III	Grade IV	Grade V	Grade VI
<b>People</b> 1. Sense Organs 2. Growth and Development	1. Skeletal System 2. Muscular System 3. Digestive System 4. Taking care of the systems 5. First Aid for Injuries of the system	1. Reproductive System 2. Respiratory System 3. Urinary System 4. Removal of Other Body Wastes 5. Taking care of the systems	1. Circulatory System 2. Nervous System 3. Taking care of the systems 4. A Healthy Person
<b>Animals</b> 1. Animals in the Locality 2. Body parts of animals 3. Caring for Animals 4. First Aid for Insect and Animal Bites	1. Animal Reproduction 2. Stages in the Life Cycle of Animals 3. Effects of some animals to people 4. Safety with Animals	1. Animals live in places where they can find food 2. Classification of Animals according to the food they eat 3. Animal Adaptation 4. Major groups of animals 5. Coral Reefs	<b>Animals, Plants and Environment (Interrelationship in the Ecosystem)</b> 1. Ecosystem 2. Feeding Interrelationships 3. Oxygen-Carbon Dioxide Cycle 4. Activities that disrupt the cycles of an ecosystem 5. Population 6. Conserving Balance of Life
<b>Plants</b> 1. Parts of plants and its uses 2. Plant Growth 3. Caring for plants 4. First aid for allergies caused by plants	1. Sexual reproduction 2. Germination 3. Seed dispersal 4. Asexual reproduction	1. Photosynthesis 2. Importance of plants 3. Protective structures & plant adaptation 4. Classification of plants	
<b>Matter</b> 1. Matter 2. States of matter 3. Chemical substances 4. Precautionary measures in using certain substances 5. Care in taking medicines	<b>Mixtures and Solutions</b> 1. Mixtures 2. Solutes and Solvents 3. Reaction of substances 4. Chemical substances that cause pollution 5. Preventing Pollution	<b>Physical/Chemical Change</b> 1. Physical change 2. Chemical change 3. Changes in the environment 4. Effects of changes in the Environment	<b>Materials</b> 1. Materials and their uses 2. Improving materials through technology 3. Effects of materials on the environment 4. Storage and disposal of materials 5. Particle nature of matter
<b>Energy</b> 1. Sources of heat and light 2. How light travels	1. Potential energy 2. Kinetic energy	1. Static electricity 2. Electric circuit	1. Forms of energy & their uses 2. Energy transformation and its Effect on the Environment

<b>Grade III</b>	<b>Grade IV</b>	<b>Grade V</b>	<b>Grade VI</b>
3. Bending of light 4. Absorption of Light Rays 5. Seeing different colors 6. Shadows 7. Sound 8. Echo 9. Force(wind, running water, push and pull, gravity)	3. Friction 4. Heat 5. Hazards of fire	3. Transformation of electrical energy 4. Electromagnet 5. Using electricity properly 6. Simple Machines 7. Conservation of Energy 8. Precautionary Measure in Using Simple Machines	3. Principles of conservation of energy 4. Force & motion 5. Speed & Velocity
<b>Earth</b> 1. Features of the earth 2. Earth as a resource for life and one's needs 3. Conserving resources 4. Soil 5. Care and concern for soil 6. Water 7. Care and concern for water 8. Weather 9. Safety measures for certain types of weather	1. Soil erosion 2. Effects of soil erosion 3. Preventing soil erosion 4. Weather elements	1. Rocks 2. Formation of rocks 3. Rock weathering 4. Water cycle 5. Tropical Cyclone 6. Precautionary measures during cyclone	1. Structure of the earth 2. Movement of the earth's crust 3. Earthquake 4. Precautionary measures during earthquake 5. Volcano 6. Precautionary measures during volcanic eruptions 7. Climate 8. Seasons
<b>Sun</b> 1. The sun 2. Changes in temperature 3. Sun's heat and activities of human beings 4. Precautionary measures to avoid getting hurt from the sun's heat	<b>Earth, Moon and Sun</b> 1. Rotation of the earth 2. Revolution of the earth 3. Apparent changes in the shape of the moon 4. Solar and lunar eclipse 5. Safety measures during solar eclipse	<b>Solar System</b> 1. The solar system 2. The sun as the center of the Solar System 3. Characteristics of the Planets 4. Other members of the Solar System 5. Tides	<b>Beyond the solar system</b> 1. Characteristics of stars 2. Gathering information about stars 3. Constellations 4. Galaxies 5. Universe

GRADE III	GRADE IV	GRADE V	GRADE VI
<p><b>I. PEOPLE</b></p> <p>1. Infer that our sense organs make us aware of things around us</p> <p>1.1 Identify the sense organs and their functions</p> <p>1.2 Observe the characteristics of things around us using the different sense organs</p>	<p><b>I. PEOPLE</b></p> <p>1. Describe the structure and function of the skeletal system</p> <p>1.1 Identify some bones that makeup the skeletal system</p> <p>1.2 Demonstrate how the skeletal system enables us to move</p> <p>1.3 Identify the bones that protect the internal organs</p> <p>2. Describe the structure and function of the muscular system</p> <p>2.1 Illustrate how muscles are connected to the bones</p> <p>2.2 Explain/Demonstrate how muscles cause body movement</p> <p>2.3 Cite simple body activities that show the coordinated function of the skeletal and muscular systems</p>	<p><b>I. PEOPLE</b></p> <p>1. Describe the structure and function of the human reproductive system</p> <p>1.1 Identify the male/female reproductive system and their major parts</p> <p>1.2 Relate the structure of the male/female reproductive system to its function in reproduction</p> <p>1.3 Explain the process of fertilization in humans</p> <p>2. Describe bodily changes of a male/ female at puberty</p> <p>2.1 Describe certain physical changes during puberty</p> <p>2.2 Relate the menstrual cycle of the female to the ability to get pregnant or reproduce</p>	<p><b>I. PEOPLE</b></p> <p>1. Describe the structure and function of the circulatory system</p> <p>1.1 Describe the circulatory system and its major parts</p> <p>1.2 Explain the function of the circulatory system</p> <p>1.3 Illustrate/Demonstrate the movement of the blood throughout the body</p> <p>2. Describe the common ailments affecting the circulatory system and their symptoms</p>

GRADE III	GRADE IV	GRADE V	GRADE VI
<p>2. Observe the parts of the sense organs from models and explain how they work</p> <p>2.1 Identify the main parts of each sense organs</p> <p>2.2 Explain the functions of each part</p>	<p>3. Practice proper care of the skeletal and muscular systems</p> <p>3.1 Identify injuries and diseases that can harm the skeletal and muscular systems</p> <p>3.2 Demonstrate first aid treatment for sprains, cramps and simple fractures</p> <p>3.3 Show concern and right attitude towards handi-capped persons</p>	<p>3. Practice hygiene in caring for the reproductive organs</p> <p>3.1 Identify health habits to keep the reproductive organs healthy</p> <p>3.2 Take precautionary/safety measures to keep the reproductive organs healthy</p>	<p>3. Practice desirable habits that help prevent/control common ailments of the circulatory system</p> <p>3.1 Identify health habits to keep the heart, blood and blood vessels healthy</p> <p>3.2 Demonstrate ways of caring for the circulatory system</p>
<p>3. Practice desirable health habits that will help prevent/control common ailments and keep the sense healthy</p> <p>3.1 Identify common ailments affecting the sense organs</p> <p>3.2 Demonstrate ways of keeping the sense organs healthy</p> <p>4. Demonstrate first aid for foreign bodies in the eye, ear &amp; nose, nosebleeding</p> <p>5. Infer that changes take place as children grow</p> <p>5.1 Measure one's height and weight</p>	<p>4. Describe the structure and function of the digestive system</p> <p>4.1 Identify the digestive system and its major parts</p> <p>4.2 Trace the path of food in the digestive system and the changes the food undergoes</p> <p>4.3 Explain why food has to be digested</p> <p>5. Practice desirable health habits to keep the digestive system healthy</p>	<p>4. Describe the structure and function of the respiratory system</p> <p>4.1 Identify the respiratory system and its major parts</p> <p>4.2 Construct a model to demonstrate the mechanism of breathing</p> <p>4.3 Trace the path of air and what happens to it in different parts of the respiratory system</p> <p>5. Infer that some common ailments of the respiratory system are caused by pollution smoking, or inhaling drugs</p>	<p>4. Describe how the nervous system works</p> <p>4.1 Identify the nervous system and its major parts</p> <p>4.2 Describe how the nervous system works</p> <p>4.3 Practice desirable habits that help prevent and control common ailments of the nervous system</p> <p>5. Describe a healthy person</p>

GRADE III	GRADE IV	GRADE V	GRADE VI
<p>5.2 Compare one's height and weight now and that of the previous year using a bar graph</p> <p>5.3 Infer that one changes in physical capabilities and social interest</p> <p>5.2.1 Identify physical/ social activities one participates in then and now</p> <p>5.2.2 Compare one's present physical and social activities with those of the previous years</p> <p>5.4 Cite evidences that show changes in one's mental abilities</p> <p>5.5 Observe/compare changes in in one's ability to speak, write read, draw, solve</p> <p>6. Infer that some factors affect one's growth and development</p> <p>6.1 Identify some factors affecting one's growth and development such as heredity, food, rest, sleep, recreation, safe and healthful environment</p>	<p>5.1 Name ways of preventing/ controlling common ailments of the digestive system</p> <p>5.2 Demonstrate ways of keeping the digestive system healthy</p>	<p>5.1 Name common ailments affecting the respiratory system</p> <p>5.2 Describe the causes, symptoms, prevention and treatment of these diseases</p> <p>6. Practice good health habits to keep the respiratory system healthy</p> <p>6.1 Describe proper ways of caring for the respiratory system</p>	<p>5.1 Discuss the physical, mental, emotional and social needs of a person</p> <p>5.2 Describe the effect of physical, mental and emotional state on one's health</p> <p>5.3 Describe the effect of relationships with family, friends and society on mental, emotional and physical well-being</p> <p>5.4 Practice ways of maintaining one's health such as</p> <ul style="list-style-type: none"> <li>- preventing common ailments</li> <li>- knowing where to seek help</li> <li>- demonstrating a positive attitude to stay healthy</li> </ul>

GRADE III	GRADE IV	GRADE V	GRADE VI
<p>6.2 Observe that one grows and develops like one or both of his parents</p> <p>6.3 Infer that eating a variety of nutritious food in the right amount is necessary for one's growth and development</p> <p>6.3.1 Classify foods according to the 3 basic food groups</p> <p>6.3.2 State that eating the right kind of food in the right amount is necessary for one's growth and development</p> <p>6.3.3 Practice desirable health and food habits</p> <p>6.4 Explain how rest, sleep and recreation affect one's growth and development</p> <p>6.5 Compare a healthful and an unhealthful surrounding</p> <p>6.5.1 Identify things in the surroundings that are good for people's health and well-being</p> <p>6.5.2 Identify things in the surroundings which are harmful to people's health and well-being</p>		<p>6.2 Demonstrate ways of caring for persons affected by common ailments of the</p>	

GRADE III	GRADE IV	GRADE V	GRADE VI
<p>7. State that a healthy person grows taller, bigger, heavier, faster</p> <p>8. Infer that certain illnesses/ diseases slow down one's growth and development</p> <p>8.1 Describe how illnesses/ diseases slow down one's growth and development</p> <p>9. Observe that a small family can meet its basic needs better than a big family</p> <p><b>II. ANIMALS</b></p> <p>1. Identify the common animals in the locality</p>	<p><b>II. ANIMALS</b></p> <p>1. Infer how animals reproduce sexually</p> <p>1.1 Identify animals hatched from eggs</p>	<p>7. Describe the structure and function of the urinary system</p> <p>7.1 Identify the urinary system and its major parts</p> <p>7.2 Describe how urine is formed and eliminated from the body</p> <p>7.3 Explain how other body wastes are removed (e.g. solid waste through the digestive system, gaseous waste through the respiratory system, some liquid waste through the skin)</p> <p>7.4 Practice desirable health habits that help prevent/control common ailments affecting the urinary system</p> <p><b>II. ANIMALS</b></p> <p>1. Infer that animals live in places where they can find food</p> <p>1.1 Explain why animals live in a particular habitat</p>	<p><b>II. ANIMALS, PLANTS &amp; ENVIRONMENT (Interrelationship in the Ecosystem)</b></p> <p>1. Operationally define an ecosystem</p> <p>1.1 Observe and identify living things and non-living things in a mini-ecosystem e.g. aquarium, fallen log, pond</p>

GRADE III	GRADE IV	GRADE V	GRADE VI
<p>2. Observe different animals in the locality</p> <p>2.1 Identify the body parts of animals and their functions</p> <p>2.2. Describe the relationship of body parts of animals as to function, movement, habitat, food getting</p> <p>3. Compare common animals</p> <p>3.1 Give one or more similarities between two animals of the same kind</p>	<p>1.2 Identify animals born as baby animals</p> <p>1.3 Infer that some animals develop from a fertilized egg</p> <p>2. Describe the different stages in the life cycle of some animals</p> <p>2.1 Describe the life cycle of some animals e.g frog, butterfly &amp; mosquito</p> <p>2.2 Describe the changes in animals as they develop and grow</p> <p>3. Infer the beneficial/harmful effects of animals to people</p> <p>3.1 Cite how animals are useful to people in the community</p>	<p>1.2 Describe how animals get/ eat their food using certain body parts</p> <p>1.3 Describe body parts used by animals for getting/eating food</p> <p>1.4 Infer the kind of food an animal eats from the appearance of its mouth parts</p> <p>2. Classify animals according to the food they eat e.g. carnivorous, herbivorous, omnivorous</p> <p>3. Infer how some animals adapt to a particular environment</p> <p>3.1 Describe how animals adapt to a particular environment for protection and survival</p>	<p>1.2 Observe and describe feeding interrelationships among the living organisms</p> <p>1.2.1 Construct food chains and food webs to illustrate feeding relationships</p> <p>1.3 Construct the food nutrient cycle and explains the importance of decomposers in making food nutrients available to plants</p> <p>2. Illustrate the interdependence of plants and animals for gasses through the oxygen-carbon dioxide cycle</p> <p>2.1 Construct a diagram of the oxygen-carbon dioxide cycle</p> <p>2.2 Interpret the diagram of the oxygen-carbon dioxide cycle</p> <p>3. Investigate interdependence between living and non-living components in bigger ecosystem e.g. forest, lake, river</p>

GRADE III	GRADE IV	GRADE V	GRADE VI
<p>3.2 Give one or more differences between two animals of the same kind</p> <p>3.3 Give one or more similarities between two animals of different kinds</p> <p>3.4 Give one or more differences between two animals of different kinds</p> <p>4. Classify animals according to the body covering, food eaten, presence or absence of certain body parts, movement, habitat, uses</p>	<p>3.2 Identify some animals that are carriers of diseases, sources of infections, allergy and injury</p> <p>3.2 Explain how animals may harm people</p> <p>4. Practice safety measures while caring for animals</p> <p>4.1 Explain why we should observe safety measures while caring for animals</p> <p>4.2 Describe some safety measures to observe while caring for animals</p>	<p>e.g. by changing their color</p> <p>4. Classify animals into major groups</p> <p>4.1 Classify animals into vertebrates and invertebrates</p> <p>4.1.1 Identify characteristics of vertebrates/ invertebrates</p> <p>4.2 Classify vertebrates into mammals, birds, reptiles, amphibians, and fishes</p>	<p>3.1 Explain the importance of the forest</p> <p>3.2 Describe the effects of deforestation</p> <p>4. Explain that some activities of people disrupt the cycles of an ecosystem</p> <p>e.g. deforestation, intensive farming, fish culture, inefficient garbage disposal</p> <p>4.1 Identify some human activities that disrupt the cycle in an ecosystem</p> <p>e.g. deforestation, intensive farming, fish culture, inefficient garbage disposal</p> <p>4.2 Infer harmful effects of certain activities on a bigger or more complex ecosystem</p> <p>e.g. pond system</p>

GRADE III	GRADE IV	GRADE V	GRADE VI
<p>5. Infer that animals need food, air, water and shelter in order to grow</p> <p>5.1 Cite evidences that animals need air, food, water and shelter in order to grow</p> <p>5.2 Infer what may happen if animals will not get food, air, shelter and water</p>		<p>4.2.1 Identify characteristics of each group of vertebrates</p> <p>4.3 Classify invertebrates into arthropods, coelenterates, annelids, crustaceans, echinoderms, insects, arachnids, mollusk</p> <p>4.3.1 Identify characteristics of each group of invertebrates</p> <p>5. Explain the importance of coral reefs</p> <p>5.1 Describe coral reefs</p> <p>5.2 Identify the importance of coral reefs</p> <p>5.3 Discuss practices that cause destruction of coral reefs</p> <p>5.4 Predict what will happen when coral reefs are destroyed</p> <p>5.5 Identify ways of saving coral reefs</p> <p>5.6 Participate in efforts to save coral reefs</p>	<p>4.3 Discuss and participate in activities to address the above problems (e.g. adopt a river or lake)</p> <p>5. Predict the effects of over population in a community</p> <p>5.1 Infer that shortage of food, water, and space may occur due to a growing population</p> <p>5.2 Infer that land, water and air may become limited and eventually polluted due to overpopulation</p> <p>5.3 Infer that overpopulation affects one's health and that of the community</p> <p>5.4 Infer that rapid population growth upsets the ecological balance</p>

GRADE III	GRADE IV	GRADE V	GRADE VI
<p>6. Practice care &amp; concern for animals</p> <p>6.1 Explain why animals need care</p> <p>6.2 Demonstrate how to care for animals</p> <p>7. Tell how to be safe with animals</p> <p>8. Practice first aid for insect and animal bites</p> <p><b>III. PLANTS</b></p> <p>1. Observe the different parts of plants</p>	<p><b>III. PLANTS</b></p> <p>1. Associate the growing of plants from seeds with sexual reproduction in plants</p> <p>1.1 Identify the important parts of a flower needed for the development of seeds</p>	<p><b>III. PLANTS</b></p> <p>1. Explain the process of food making (photosynthesis) in plants</p> <p>1.1 Perform experiment to determine what plants need to make food</p>	<p>6. Describe strategies for coping with rapid increase in population</p> <p>7. Demonstrate commitment and concern in preserving/conserving the balance of life in the ecosystem</p> <p>7.1 Enumerate ways of controlling/preventing harmful effects of human activities to the environment</p> <p>7.2 Participate in campaigns and activities for improving/managing one's environment</p> <p>7.3 Infer that a sustained ecological balance ensures the survival of future generations</p>

GRADE III	GRADE IV	GRADE V	GRADE VI
<p>1.1 Infer the functions of each part</p> <p>2. Compare plants according to observable characteristics of their parts</p> <p>2.1 Identify similarities and differences of plants/ plant parts as to:</p> <ul style="list-style-type: none"> <li>- color, size, &amp; shape</li> <li>- size/texture of stems/roots</li> <li>- color, shape, size and smell of flowers</li> <li>- texture and edges of leaves</li> <li>- flowering and non-flowering</li> </ul>	<p>1.2 Explain the role of pollination in sexual reproduction</p> <p>1.3 Describe the process of fertilization in flowers leading to the development of seeds</p> <p>1.4 Identify the parts of the of the flower that develops into fruits and seeds respectively</p> <p>2. Observe changes in a germinating seed</p> <p>2.1 Identify main parts of a seed</p> <p>2.2 Infer the function of each part of the seed by observing a germinating seed</p>	<p>1.2 Identify the variables in the experiment</p> <p>1.3 Observe what happens to plants grown in the absence of any of the factors needed for photosynthesis</p> <p>1.4 Infer that plants need air, water and sunlight in making food</p> <p>1.5 Explain the process of photosynthesis using a diagram</p> <p>2. Explain the importance of plants to human beings and other animals</p> <p>2.1 Identify plant/plant parts used for food, medicine, etc.</p>	

GRADE III	GRADE IV	GRADE V	GRADE VI
<p>3. Classify plants according to common characteristics</p> <p>e.g. color, size and shape of leaves/flowers, size, texture of stems</p> <p>4. Infer that plants &amp; plant parts have many uses</p> <p>4.1 Identify the uses of plants and their parts</p> <p>4.2 State that plant parts have many uses</p> <p>5. Demonstrate ways of propagating plants</p>	<p>3. Identify the factors needed in seed germination</p> <p>3.1 Perform an experiment on seed germination</p> <p>3.2 Identify the variables in the experiment</p> <p>3.3 Observe and collect data on what seeds need to germinate</p> <p>3.4 Interpret the results of the experiment on seed germination</p> <p>4. Infer how a seed may be dispersed or brought to other places based on its structure/properties</p> <p>4.1 Observe the structure/properties of certain fruits and seeds</p> <p>4.2 Describe how certain structures/properties help in seed dispersal</p> <p>5. Describe and demonstrate ways of growing plants by asexual reproduction</p>	<p>3. Infer that plants have specific structures and characteristics for adaptation and survival</p> <p>3.1 Describe the special characteristics of plants which help them adapt to the environment and reproduce their own kind</p> <p>3.2 Cite examples of plants that can grow in specific environments</p> <p>4. Classify plants into major groups: flowering plants, cone-bearing plants, ferns and mosses</p>	

GRADE III	GRADE IV	GRADE V	GRADE VI
<p>5.1 Observe how plants grow e.g. from seeds, stem cuttings</p> <p>5.2 Identify ways of propagating plants</p> <p>5.2.1 Name plants that grow from seeds, stem cuttings, leaves, roots</p> <p>5.3 Describe the different ways of propagating plants</p> <p>6. Demonstrate ways of caring for and conserving plants</p> <p>7. Practice precautionary measures in handling plants</p> <p>8. Apply first aid treatment in cases of allergies/skin irritation caused by plants</p>	<p>5.1 Describe how some plants reproduce asexually e.g. runner, rhizomes. bulbs</p> <p>5.2 Demonstrate ways of propagating plants asexually</p>	<p>5.1 Identify characteristics of certain plants</p> <p>5.2 Group plants according to common characteristics</p> <p>5.3 Explain other ways of grouping plants</p> <p>5.4 Describe the importance of grouping plants</p>	

GRADE III	GRADE IV	GRADE V	GRADE VI
<p><b>IV. MATTER</b></p> <p>1. State that matter is anything that occupies space and has mass/weight</p> <p>1.1 Identify matter/object around</p> <p>1.2 Demonstrate that objects have weight using a balance</p> <p>1.3 Demonstrate that matter/objects occupy space</p> <p>2. Infer that the states of matter are solid, liquid and gas</p> <p>2.1 Describe the different characteristics of solid</p> <ul style="list-style-type: none"> <li>. Shape</li> <li>. Space</li> <li>. Weight</li> <li>. Mass</li> </ul> <p>2.2 State that liquids have different characteristics</p> <p>2.2.1 Show evidences that liquids have the ability to flow</p> <p>2.2.2 Show evidences that liquids take the shape of their container</p> <p>2.2.3 Show evidences that liquids occupy space</p>	<p><b>IV. MIXTURES &amp; SOLUTIONS</b></p> <p>1. Describe mixtures and their characteristics</p> <p>1.1 Show how mixtures are formed</p> <p>1.2 Describe ways of separating mixtures</p> <p>2. Demonstrate that some materials can dissolve other substances</p> <p>2.1 Show that some solid materials can be dissolved in some liquids</p> <p>2.2 Identifies solids that can be dissolved</p>	<p><b>IV. PHYSICAL/CHEMICAL CHANGE</b></p> <p>1. Describe simple physical and chemical changes in materials</p> <p>1.1 Observe that no new material is formed in physical change</p> <p>1.1.1 Show examples of physical change</p> <p>2.2 Identifies solids that can be dissolved</p>	<p><b>III. MATERIALS</b></p> <p>1. Observe materials and their uses</p> <p>1.1 Identify common household materials e.g. pesticides, insecticides, soap, paint, solvent, synthetic, plastic</p> <p>1.2 Describe how the materials are used</p> <p>1.3 Explain the importance of reading product labels</p> <p>1.3.1 Identify warning signs/precautions in product labels</p> <p>2. Explain that technology improves materials</p> <p>2.1 Identify materials improved by technology</p> <p>2.2 Describe the improvement done by technology on the materials</p>

GRADE III	GRADE IV	GRADE V	GRADE VI
<p>2.3 Describe the different characteristics of gases</p> <p>2.3.1 State that gases take the shape of their containers, occupies space and have mass</p> <p>2.3.2 Infer that some gases are colorless</p> <p>2.3.3 State that there is air</p> <p>2.3.4 Tell that air is colorless and tasteless</p> <p>3. Infer that certain chemical substances affect living things</p> <p>3.1 State that certain substances have good effects on man, animals and plants</p> <p>3.1.1 Identify certain chemical substances and their good effects</p>	<p>2.3 Identify liquids that can dissolve solid materials</p> <p>2.4 Define solvents and solutes</p> <p>2.5 Observe that some solvents can dissolve solutes faster than others</p> <p>2.6 State that water is a universal solvent</p> <p>3. Infer that different substances react differently when mixed with other substances</p> <p>3.1 Observe that some solutes spread evenly when mixed with solvents</p>	<p>1.2. Observe that a new material is formed in a chemical change</p> <p>1.2.1 Show examples of chemical change</p> <p>1.2.2 Observe that the product of a chemical change cannot be brought back to its original form</p> <p>3. Infer that everything in the environment is changing</p>	<p>3. Infer the effects of the materials on other materials and environment</p> <p>3.1 Identify condition when the the effects of the materials are beneficial</p>

GRADE III	GRADE IV	GRADE V	GRADE VI
<p>3.2 State that certain substances have harmful effects on man, animals and plants if not used properly</p> <p>3.2.1 Identify some chemical substances that could have harmful effects if not used properly</p> <p>4. Practice precautionary measures in using certain substances</p> <p>4.1 Follow safety measure in taking medicines and other substances</p>	<p>3.2 Observe that some solutes when mixed with solvents settle at the bottom</p> <p>3.3 Observe that some solutes when mixed with solvents do not settle at the bottom but make the solvents cloudy</p> <p>3.4 Identify the factors that affect how a solute dissolves in a solvent</p> <p>4. Infer that chemical substances can pollute soil, water and air</p> <p>4.1 Describe how chemical substances can pollute land, water and air</p> <p>4.2 Describe the effects of polluted, land, water, and air on people, animals and plants</p>	<p>4. Infer the effects of changes in the environment</p> <p>4.1 Identify the good effects of certain changes in the environment</p> <p>4.2 Identify the bad effects of of certain changes in the in the environment</p>	<p>3.2 Identify the condition when the effects of materials are harmful</p> <p>4. Observe safety precautions in handling, storing and disposing certain materials</p>

GRADE III	GRADE IV	GRADE V	GRADE VI
<p><b>V. ENERGY</b></p> <p>1. Identify the sources of heat and light</p> <p>1.1 State that the sun is the primary source of heat and light</p> <p>1.2 Name other sources of heat and light e.g. fire, electricity</p>	<p>4.3 State that improper handling of household substances like: pesticides, kerosene and other chemicals can cause pollution</p> <p>4.4 Identify ways of preventing pollution of land, water and air</p> <p><b>V. ENERGY</b></p> <p>1. Infer that materials that can do work has energy</p> <p>1.1 Describe the position/ condition of materials that has potential energy</p> <p>1.2 Describe the position/ condition of materials that has kinetic energy</p> <p>1.3 Differentiate potential from kinetic energy</p> <p>1.4 Show that kinetic energy makes a material work/move</p>	<p><b>V. ENERGY</b></p> <p>1. Describe static electricity</p> <p>1.1 Identify ways of producing static electricity</p> <p>1.2 Observe the effect of static electricity</p>	<p>5. Investigate the particle nature of matter</p> <p>5.1 Cite evidences that matter is made up of particles</p> <p>5.2 Construct a model of solid, liquid and gas to show the structure of matter</p> <p><b>IV. ENERGY</b></p> <p>1. Describe the forms of energy and their uses i.e. chemical, mechanical, sound, electrical, radiant, nuclear</p>

GRADE III	GRADE IV	GRADE V	GRADE VI
<p>2. Show evidences that light travels in a straight line</p> <p>3. Cite evidences that light rays may be bent as they pass from one substance to another</p> <p>3.1 Demonstrate how refraction of light occurs</p>	<p>2. Observe how friction works</p> <p>2.1 Identify conditions when friction seems to retard/resist motion</p> <p>2.2 Compare how objects move on different surfaces/textures</p> <p>2.3 Infer that rough surfaces increase friction</p> <p>2.4 Identify ways of decreasing increasing friction</p> <p>2.5 Identify the uses of decreasing/increasing friction in everyday life</p> <p>3. Infer that heat is a method of transferring energy</p> <p>3.1 Observe that heat transfers from a hot to a cold body</p> <p>3.2 Describe the condition necessary for producing heat</p> <p>3.3 Explain spontaneous combustion</p> <p>3.4 Explain how heat is produced during energy transformation</p>	<p>2. Describe an electric circuit</p> <p>2.1 Identify the parts of an electric circuit e.g. conductor, insulator, switch, fuse, source</p> <p>2.1.1 Classify materials into conductors and insulators</p> <p>2.2 Construct a model of an electric circuit</p> <p>3. Differentiate a parallel from a series connection</p> <p>3.1 Cite the advantages and disadvantages of parallel and series circuits</p>	<p>1.1 Describe chemical energy and its uses</p> <p>1.2 Describe how mechanical energy is formed and used</p> <p>1.3 Describe how electrical energy is formed and used</p> <p>1.4 Describe radiant energy and how it is used</p> <p>1.5 Describe nuclear energy and its uses</p> <p>1.6 Describe sound energy and its uses</p>

GRADE III	GRADE IV	GRADE V	GRADE VI
<p>4. Infer that when light strikes an object it is either absorbed, reflected or may pass through or a combination of the three may take place</p> <p>4.1 Observe that opaque materials absorb light</p> <p>4.2 Tell that light passes through transparent materials</p> <p>4.3 Observe that little amount of light passes through translucent materials</p> <p>5. Infer that white light consists of different colors</p> <p>5.1 Show that white light consists of different colors</p> <p>6. Explain how shadows are formed</p>	<p>4. Observe an object before and after heating</p> <p>4.1 Record the temperature of an object before and after heating</p> <p>4.2 Describe the change in physical/chemical state of an object before and after heating</p> <p>4.3 Practice safe ways of handling hot objects and flammable materials</p> <p>5. Infer how heat travels</p> <p>5.1 Show how heat travels by conduction from hot to cool bodies</p> <p>5.2 Show that heat travels by conduction through liquid and gas</p> <p>5.3 Show that heat travels by radiation through gas</p> <p>6. Explain the hazards of fire</p> <p>6.1 Describe ways of preventing fire</p> <p>6.2 Practice safety precautions in using fuels/fire</p>	<p>4. Describe how electrical energy is produced</p> <p>5. Observe transformation of electrical energy to other forms</p> <p>5.1 Observe that electricity can produce heat and light</p> <p>5.2 Demonstrate how electricity can make things move</p> <p>6. Describe how electromagnet works</p> <p>7. Tell the use of electricity in the home and community</p> <p>8. Practice precautionary measures related to electricity</p> <p>e.g. unplugging electrical appliances during brownouts or thunderstorms</p>	<p>4. Infer that energy can be transformed</p> <p>4.1 Demonstrate how a form of energy is transformed into another form</p> <p>4.2 Cite evidences that energy can be transformed</p> <p>5. Infer that energy can be transferred from one body to another</p> <p>5.1 Observe how energy can be transferred from one body to another</p> <p>5.2 Cite evidences when energy transfer occurs</p> <p>6. Observe that heat is always produced when energy transformation occurs</p>

GRADE III	GRADE IV	GRADE V	GRADE VI
<p>7. Infer that sound is produced by things that move</p> <p>7.1 Observe that sound is produced when things vibrate</p> <p>7.2 Show how loud/soft sound is produced by a vibrating object</p> <p>8. State that sound bounces back or is reflected from a hard surface as echo</p> <p>9. Infer that force makes objects move</p>	<p>6.3 Describe conditions necessary in putting out fire</p> <p>6.4 Follow safety rules/emergency measures in case of fire</p>	<p>9. Practice electrical energy conservation measures</p> <p>10. Infer that simple machines make work easier and faster</p> <p>10.1 Identify the kinds of simple machines e.g. wedge, screw, wheel and axle, pulley</p> <p>10.2 Identify the main parts of each kind of simple machines</p> <p>10.3 Describe how each simple machine makes work easier and faster</p> <p>10.4 Identify activities where simple machines are used</p> <p>10.5 Identify simple machines which multiply force/speed</p> <p>10.6 Practice precautionary measures in using simple machines</p> <p>e.g. - Use simple machines properly - Keep simple machines in proper order</p>	<p>7. Describe examples which demonstrates Principles of Conservation of Energy</p> <p>7.1 Cite evidences that energy is neither created nor destroyed only transformed from one form to another</p> <p>8. Explain the effect of energy transformation/transfer to the environment</p> <p>8.1 Cite evidences that heat produced is transferred to the environment</p> <p>8.2 Demonstrates that heat energy can be transferred</p> <p>9. Infer that the motion of an object is determined by forces acting on it</p>

GRADE III	GRADE IV	GRADE V	GRADE VI
<p>9.1 Identify the forces that make objects move</p> <p>9.1.1 Observe that wind and running water can move objects</p> <p>9.1.2 Observe that magnets can move some objects</p> <p>9.1.3 Observe that pulling and pushing can move some objects</p> <p>9.1.4 Observe that force of gravity makes objects move towards the ground</p> <p>9.2 State that objects change position/direction when moved</p> <p>10. Practice ways of protecting oneself from excessive heat, light and loud sounds</p>			<p>9.1 State that there are forces acting on an object</p> <p>9.1.1 Observe that when forces acting on an object are not balanced, motion takes place in the direction of the greater force, when balanced there is no motion</p> <p>9.2 Observe that a body at rest tends to remain at rest and a body in motion tends to be in motion unless an outside force is applied on it</p> <p>10. Differentiate speed from velocity</p> <p>10.1 Measure the speed of an object in motion</p> <p>10.2 Identify the specific direction of a moving object</p> <p>10.3 Measure the velocity of a moving object</p>

GRADE III	GRADE IV	GRADE V	GRADE VI
<p><b>VI. EARTH</b></p> <p>1. Infer that the earth is made up of water, land and air</p> <p>1.1 Identify the earth's oceans and land using the globe or map</p> <p>2. Infer that the earth is the resource for life and one's needs</p> <p>2.1 Identify renewable resources from the earth</p> <p>2.2 Identify non-renewable resources from the earth</p> <p>2.3 Describe ways of conserving the natural resources</p> <p>3. Infer why soil is important</p> <p>3.1 Enumerate different ways people use soil</p>	<p><b>VI. EARTH</b></p> <p>1. Observe how water, wind, people and animals bring about soil erosion</p> <p>1.1 Demonstrate how water causes soil erosion</p> <p>1.2 Describe how wind causes soil erosion</p> <p>1.3 Describe how people and animals cause soil erosion</p> <p>1.4 Demonstrate how the slope of land affects the amount of soil carried away</p> <p>2. Infer how erosion affects land, people, plants and animals</p> <p>2.1 Demonstrate how erosion changes the shape of the land</p> <p>2.2 Explain how erosion affects the condition of the soil</p> <p>2.3 Cite the effect of soil erosion on plants, animals and people</p> <p>3. Infer how people and plants help prevent soil erosion</p> <p>3.1 Identify the different ways of preventing soil erosion</p>	<p><b>VI. EARTH</b></p> <p>1. Observe how rocks differ in shape, color, hardness, texture</p> <p>2. Classify rocks according to color, shape, hardness and texture</p> <p>2.1 Differentiate rocks as to shape, color, hardness, texture</p> <p>3. Infer how rocks are formed</p> <p>3.1 Identify igneous, sedimentary and metamorphic rocks</p>	<p><b>VI. EARTH</b></p> <p>1. Describe the structure of the earth's interior</p> <p>1.1 Identify the layers of the earth</p> <p>1.2 Describe each layer of the earth</p> <p>2. Infer how the movement of the earth's crust cause changes in the environment</p> <p>2.1 Identify the different crustal plates</p> <p>2.2 Describe oceanic and continental crusts</p> <p>2.3 Explain how the earth's crust move</p> <p>3. Explain how an earthquake occurs</p> <p>3.1 Describe how an earthquake occurs</p> <p>3.1.1 Differentiate intensity from the magnitude of an earthquake</p>

GRADE III	GRADE IV	GRADE V	GRADE VI
<p>3.2 Infer that there are different kinds of soil</p> <p>3.2.1 Observes the different kinds of soil</p> <p>3.2.2 Names the different kinds of soil</p> <p>3.2.3 Compares the different kinds of soil as to color and texture</p> <p>3.2.4 Performs an experiment to determine which kind of soil is best for a particular crop</p> <p>3.3 Infer how pollution affects soil productivity</p>	<p>3.2 Describe how forests prevent soil erosion</p> <p>3.3 Demonstrate how plants prevent soil erosion</p>	<p>3.2 Describe how igneous, sedimentary and metamorphic rocks are formed</p> <p>3.3 Differentiate igneous, sedimentary, and metamorphic rocks from one another</p> <p>3.4 Infer conditions/situations that lead to the formation of the different kinds of rocks</p>	<p>3.1.2 Describe how earthquake affects the environment e.g. tsunami, change in land features</p> <p>3.1.3 Practice precautionary measures, before, during and after an earthquake</p> <p>3.2 Explain how a volcanic eruption occurs</p> <p>3.2.1 Describe how a volcano is formed</p> <p>3.2.2 Differentiate between active and inactive volcano</p> <p>3.2.3 Describe how a volcanic eruptions occur</p> <p>3.2.4 Name the beneficial/harmful effects of volcanic eruptions</p> <p>3.2.5 Practice precautionary measures before and after volcanic eruptions</p>

GRADE III	GRADE IV	GRADE V	GRADE VI
<p>3.3.1 Identify practices that cause pollution</p> <p>3.4 Practice ways of protecting the soil</p> <p>4. Conclude that water is an important part of the earth</p> <p>4.1 Enumerate ways people use water</p> <p>4.2 Infer that water comes from different sources</p> <p>4.2.1 Identify the sources of water</p> <p>4.2.2 Describe the water that comes from different sources</p> <p>4.2.3 Explain why groundwater is usually free from disease microorganisms compared to other sources</p>	<p>4. Infer that weather elements affect daily weather condition</p> <p>4.1 Cite evidences that weather changes as shown by the changes in air temperature</p> <p>4.1.1 Observe the changes in air temperature</p> <p>4.1.2 Measure and record changes in air temperature using a thermometer for one week</p> <p>4.1.3 Interpret the weather condition from air temperature reading</p> <p>4.2 Infer that air movement affects weather</p> <p>4.2.1 Observe changes in wind speed and direction</p> <p>4.2.2 Measure and record wind speed and direction for a week using improvised instruments for one week</p>	<p>4. Infer how some forces contribute to the weathering of rocks</p> <p>4.1 Identify the forces that break rocks e.g. plants, water, weather, man</p> <p>4.2 Explain how rocks are broken down</p>	<p>4. Describe the factors that affect climate of a place</p> <p>4.1 Define climate</p> <p>4.2 Identify the factors that affect the climate of a place: altitude, latitude bodies of water, wind system, amount of rainfall</p>

GRADE III	GRADE IV	GRADE V	GRADE VI
<p>4.3 Infer how pollution affects water</p> <p>4.3.1 Identify practices that cause water pollution</p> <p>4.3.2 Cite evidences that water is polluted</p> <p>5. Practice ways of showing care and concern for water</p>	<p>4.2.3 Interpret records of wind speed and direction</p> <p>4.2.4 Describe the condition of the atmosphere in different wind speed and direction</p> <p>4.3 Observe how weather conditions affect cloud formation</p> <p>4.3.1 Describe the different types of clouds</p> <p>4.3.2 Describe how clouds are formed using a model</p> <p>5. Infer that cloud formation, temperature, wind speed, and direction may vary at different locations at the same time</p>	<p>5. Infer how soil is formed through weathering</p> <p>5.1 Describe how soil is formed through weathering</p>	<p>4.3 Explain how each factor affects the climate of a place</p> <p>4.4 Explain how the earth's rotation affects the wind system</p> <p>4.4.1 Describe the different wind systems</p> <p>4.5 Observe through a model how the earth revolves around the sun</p> <p>5. Explain why there are two seasons in the Philippines</p> <p>5.1 Describe the two seasons of the Philippines</p> <p>5.2 Describe the causes of seasons in the Philippines</p>

GRADE III	GRADE IV	GRADE V	GRADE VI
<p>6. Infer that the weather changes during the day and from day to day</p> <p>6.1 Describe the weather for the day e.g. sunny, cloudy, partly cloudy, rainy</p> <p>6.2 Record the weather for the day using symbols and makes a weather chart for one week</p> <p>6.3 Interpret a simple weather chart</p> <p>7. Infer that weather affects family and community activities</p> <p>7.1 Identify activities done during certain weather conditions</p> <p>8. Practice safety measures during certain types of weather e.g. typhoon</p>	<p>6. Apply knowledge of the weather in making decisions for the day</p>	<p>6. Explain how water cycle occurs</p> <p>6.1 Identify the processes involved in the water cycle e.g. evaporation, condensation, precipitation</p> <p>6.2 Describe changes that happen to water during each process</p> <p>6.3 Relate temperature to the process in water cycle</p> <p>7. Infer how the heat of the sun affects weather</p> <p>7.1 Observe the effect of heat on land/water</p> <p>7.2 Compare the ability of land and water to absorb and release heat</p> <p>7.3 Describe the effect of unequal heating of land and water i.e. low/high pressure</p>	<p>6. Explain why there are 4 seasons in other countries</p> <p>6.1 Describe the four seasons in other countries</p> <p>6.2 Show through a model the cause of the four seasons in other countries</p> <p>8. Explain why there are four types of climate in the Philippines</p> <p>8.1 Explain the major wind systems that affect the climate types in the Philippines</p> <p>8.2 Describe the four types of climate in the Philippines</p> <p>8.3 Describe the climate type of a particular province using a climate map/rainfall graph</p>

GRADE III	GRADE IV	GRADE V	GRADE VI
		<p>8. Explain how a tropical cyclone occurs</p> <p>8.1 Describe what a cyclone is</p> <p>8.2 Identify the different kinds of cyclone</p> <p>8.3 Describe each kind of cyclone</p> <p>8.4 Describe the condition in the environment before, during and after a cyclone</p> <p>8.5 Explain the meaning of typhoon signals</p> <p>8.6 Practice precautionary measures before, during and after a typhoon</p> <p>9. Apply knowledge of the weather to daily life activities</p> <p>9.1 Relate weather condition to planning family and community activities</p> <p>9.2 Relate observations of weather conditions to air and water transportation services</p> <p>9.3 Identifies ways to conserve the environment to lessen the harmful effects of cyclones/ floods</p>	

GRADE III	GRADE IV	GRADE V	GRADE VI
<p><b>VII. SUN</b></p> <p>1. Infer that the sun is the center of the solar system</p> <p>1.1 Tell that there are planets and other objects that move around the sun</p> <p>1.2 Tell that the earth where we live is part of the solar system</p> <p>2. Infer that the change in temperature from time to time on the earth's surface is caused by the sun's heat</p> <p>2.1 Observe the changes of temperature from time to time</p> <p>2.2 Record and interpret the changes in temperature during the day</p>	<p><b>VII. EARTH, MOON AND SUN</b></p> <p>1. Infer that the earth rotates on its axis as it revolves around the sun</p> <p>1.1 Show through a model how the earth rotates on its axis</p> <p>1.2 State that the earth takes one day/24 hours to make a complete rotation on its axis</p> <p>1.3 Show through a model how the earth's rotation on its axis causes day and night</p> <p>1.4 Show through a model that the earth rotates in a counter clockwise direction as seen from the top of the North Pole</p> <p>2. Infer that the earth revolves around the sun</p> <p>2.1 Describe the movement of the earth around the sun</p> <p>2.2 Show through a model how the earth revolves around the sun following its own orbit</p>	<p><b>VII. THE SOLAR SYSTEM</b></p> <p>1. Conclude that the solar system is an orderly arrangement of heavenly bodies</p> <p>1.1 Identify the members of the solar system</p> <p>1.2 Describe each member of the solar system</p> <p>1.3 Illustrate through a diagram how the members of the solar system revolve around the sun in the same direction as they follow their own orbits</p> <p>1.4 Describe the orbit of each planet as ellipse</p> <p>1.5 Explain why planets stay in orbit as they revolve around the sun</p> <p>2. Describe the sun as the center of the solar system</p> <p>2.1 Tell that the sun is also a star</p> <p>2.2 Identify the parts of the sun</p>	<p><b>VII. BEYOND THE SOLAR SYSTEM</b></p> <p>1. Identify instruments and procedures used by astronomers to gather information about stars</p> <p>1.1 Construct improvised instruments for watching/observing stars</p> <p>2. Describe the different characteristics of stars</p> <p>2.1 Observe the color, size and brightness of stars</p> <p>2.2 Identify the kind of stars according to their size</p>

GRADE III	GRADE IV	GRADE V	GRADE VI
<p>3. Conclude that the sun's heat and light reach the earth</p> <p>3.1 Infer how the sun's heat and light affect the activities of human beings</p> <p>3.1.1 Identify activities of human beings during sunny days</p>	<p>2.3 State that the earth takes one year/12 months/365 1/4 days to make a complete revolution around the sun(366 on every fourth year/leap year)</p> <p>3. Infer that the moon revolves around the the earth</p> <p>3.1 Show through a model that as the moon travels around the earth it it also makes one complete rotation so that the same side of the moon is facing the earth all the time</p> <p>3.2 Infer that the moon travels around the earth once about every 29 1/2 days</p>	<p>2.3 Describe each part of the sun</p> <p>2.4 Tell that sunspots are formed in the photosphere</p> <p>2.5 Identify the effects of sunspots on earth</p> <p>2.6 Identify ways by which solar energy is used by plants, animals and humans</p> <p>2.7 Explain why the sun is the main source of energy on earth</p> <p>3. Describe the distinctive characteristics of planets in the solar system</p> <p>3.1 Illustrate the relative distances of the planets from the sun</p> <p>3.2 Relate the surface temperature of each planet to their relative distance from the sun</p>	<p>2.3 Tell that the stars we see in the sky are actually their apparent brightness</p> <p>2.4 Describe the relationship between the color and temperature of a star</p> <p>2.5 Describe the relationship between the brightness and the distance of star from the earth</p> <p>2.6 Explain why star distances are measured in light years</p> <p>2.7 Explain why stars seem to twinkle</p> <p>2.8 Conclude that stars are distant suns</p> <p>3. State that a constellation is a group of stars that form a pattern in the sky</p> <p>3.1 Observe constellations in the sky</p> <p>3.2 Identify common constellations in the sky</p>

GRADE III	GRADE IV	GRADE V	GRADE VI
<p>4. Conclude that heat and light from the sun have harmful effects on living things</p> <p>4.1 Infer that heat from the sun can burn the skin</p> <p>4.1.1 Describe the skin after long exposure to sunlight at certain times of the day</p> <p>4.1.2 Cite evidences that over exposure to sunlight hurts the skin</p> <p>4.2 Infer that heat and light from the sun can hurt the eyes</p> <p>4.2.1 Cite evidences that it is not good to look directly at the sun</p>	<p>4. Explain the apparent changes in the shape of the moon as it revolves around the sun</p> <p>4.1 Observe the apparent changes in the shape of the moon</p> <p>4.2 Describe the changes of the moon as seen from night to night</p>	<p>3.3 Relate the relative period of revolution of each planet to their relative distances from the sun</p> <p>3.4 Identify the unique characteristics of each planet that differentiates one from the other planets e.g. satellites, atmosphere, rings, orbits (ellipse), relative period of rotation and revolution</p> <p>4. Describe the other members of the solar system</p> <p>4.1 Identify the other members of the solar system</p> <p>4.2 Describe each of the other members of the solar system</p>	<p>3.3 Construct a star map that illustrates common constellations</p> <p>3.4 Describe how constellations are useful to people</p> <p>4. Describe the galaxies</p> <p>4.1 Name the common galaxies</p> <p>4.2 State that our solar system is part part of the Milky Way galaxy</p>

GRADE III	GRADE IV	GRADE V	GRADE VI
<p>4.3 Infer that too much heat from the sun can kill plants and animals</p> <p>4.3.1 Cite evidences that too much heat from the sun can kill plants and animals</p> <p>5. Practice precautionary/safety measures to avoid getting hurt from the sun's heat and light e.g. Do not look directly at the sun</p>	<p>4.3 Show through a model how the relative position of the observer on earth and the moon and sun cause the apparent changes in the shape of the moon</p> <p>5. Infer how the natural occurrence of eclipse is caused by the revolution of the moon around the earth</p> <p>5.1 Explain how solar and lunar eclipse occur</p> <p>5.2 Show through a model why lunar eclipse occur during a full moon</p> <p>5.3 Show through a model why solar eclipse occur during a new moon</p> <p>5.4 Explain why solar eclipse should not be viewed directly</p> <p>5.5 Practice safety measures to avoid damage of the eyes during a solar eclipse</p>	<p>5. Infer that the revolution of the moon around the earth causes the natural occurrence of tides</p> <p>5.1 Describe the occurrence of tides</p> <p>5.2 Explain how high and low tides occur</p> <p>5.3 Explain why there are high and low tides about every twelve hours</p> <p>5.4 Relate through a model the the position of the moon and the earth to places where high and low tides occur</p>	<p>5. Describe the universe</p> <p>5.1 Identify modern space facilities, tools and equipment used to study the universe</p> <p>5.2 Explain the theories about the universe</p> <p>5.3 Enumerate some space probes and their missions</p> <p>5.4 Name some achievements/problems met in space exploration</p>

Lesson Plan  
**Integration of Science, Mathematics and Arts**  
Grade III

**I. Objectives:**

- Record the daily weather conditions for one week
- Construct and interpret a simple weather chart, a pictograph

<b>Values: Accuracy in recording Proper health habits (wearing clothes appropriate to the weather)</b>
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**I. Subject Matter: Weather**

A. Science Concepts/Ideas

There are different weather conditions.  
Weather changes from day to day.

B. Processes:

Observing, describing and recording

**II. Procedure**

C. Preparatory Activity

- Name some of the things they see in the sky.

B. Developmental Activities

- Ask the children to go out and observe the weather. Describe and choose the symbol they can give to the kind of weather they had observed. Let them draw on their notebook.
- Go back inside the room and think of other weather conditions. Describe and give symbol for it. Let them draw on their notebook.
- Form 4 groups. Give each group a weather condition and let them decide the symbol they would give it. Let them draw it on a bond paper.

C. Concept Formation

- Each group will show and give their description of the weather condition given them.
- Post all their drawings.
- Game: Go back to their original group. A member will pick a picture of a weather condition, and describe it without showing to the class. The class will guess what kind of weather it is. The group with highest score wins.
- Ask what date it is? Write on the board. Then ask someone to draw beside it the weather for the day.
- Ask the date yesterday. Write before the first date. Then ask what kind of weather did they have yesterday. Ask someone to draw. Do the same for seven days. Study the weather condition for one week. Are they the same for the whole week? Does the weather condition change? What could we do to prepare for the weather. What clothes would we wear for each weather condition?
- Read the first column. Ask what are these? Elicit the word dates.
- Read the weather conditions? Ask what are these? Elicit the word weather conditions and write it on top. Draw lines to come up with a table like the one below

---

Dates	Kind of Weather

- Tell that this a sample of a pictograph. Ask why do you think it is called a pictograph?
- Ask for the title of the pictograph.
- Ask the children if the records are correct. Emphasize the value of accuracy in recording.

D. Application

- Form 2 groups. Write these on the board.

Sunday- cloudy  
Monday-rainy  
Wednesday-stormy  
Thursday-stormy  
Friday-windy  
Saturday-sunny

- Each group will do a pictograph for these data using the symbols they had decided on. Choose one day and draw what clothes should be worn on that day.

**IV. Evaluation**

A. Look at the pictures. Describe and tell what kind of weather condition it is. Construct a weather chart and record the weather described.



Monday



Tuesday



Wednesday



Thursday



Friday

Lesson Plan  
**Integration of Science and Arts**  
Grade III

**I. Objectives:**

- Identify the main parts of the eye
- Describe the function of each part
- Demonstrate ways of keeping the eyes healthy

<b>Values:</b>	<b>Maintaining physical fitness through health habits. Eating the right kind of food and in the right amount.</b>
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**II. Subject Matter:**

Sense Organs

A. Science Concepts/Ideas

- The main parts of the eyes are the cornea, iris and the pupil.

The function of each part of the eye is:

Cornea - the transparent covering of the eye.

Iris - the colored part of the eye around the pupil which automatically adjusts to limit or increase the amount of light that enters the eye

Pupil - small black circle in the center of the eye

Lens - inside the pupil which is like a camera forming image of objects

Retina - lining at the back of the eyeball where the images are formed

- We must take care of our eyes by doing certain health habits.

B. Science Processes:

Observing and describing

C. Materials

Round glass bowl

A sheet of black and white cardboard or paper

Water

Scissors

Small table lamp(cover removed)

References:

Science Is – Susan V. Bosak

Science and Health – Carmelita A. Coronel

Encyclopedia Britannica

### III. Procedure:

#### A. Preparatory Activity:

1. Magic Box: a pupil picks out a piece of paper from a magic box and reads it. The other pupils will guess what sense is associated with that description. (Ex. hard- touch, loud-hearing)
2. Motivation

Pair with a classmate. Ask your partner if you could look at his or her eyes. Look at your classmate's eyes with a magnifying glass. Draw the parts that you see.

#### B. Presentation:

- a) Show an illustration of the parts of the eye and identify. Identify the parts of their drawing.
- b) Making an eye model.
  - Make a small hole in the middle of a black sheet of cardboard or paper. The hole is like the pupil.
  - Fill the glass bowl with water.
  - Hold the black sheet against one side of the bowl of water.
  - Hold the sheet of white cardboard on the other side of the water, opposite the black sheet. The white sheet is like the retina.
  - Place a table lamp in front of the hole in the black cardboard.
  - Turn the lights off to make the room dark.
  - Turn on the table lamp. Move the white sheet and/or the lamp until you can see an image of the lamp on the white sheet. How is this set-up like your eye? What does the bowl represent?

#### C. Concept Formation

- a) Teacher explains through an illustration how the different parts of the eyes work.
- b) Pair with another classmate. Stand about 8 m away from your partner. Use both eyes to catch a ball your partner throws at you. Make ten tries. Record how many catches you make. Then, close one eye and try to catch the ball with only one open eye. How many catches did you make the second time? Can you tell why both eyes are important?
- c) Class discussion on the result of their interviews.
  - Interview of people who have eye defects or diseases even people who wear eyeglasses. Ask what caused their ailments. Ask what advice they can give on how to take care of the eyes.
  - Interview of a doctor or a nurse ask which kind of food is good for the eyes.

#### D. Application:

##### Matching game

Divide the class into four groups. Two groups will be holding parts of the eyes, while the other two groups, the functions of each part. Let them match the parts of an eye with their functions. The first group with the correct pairs win the game.

#### E. Enrichment

- Discuss guidelines on preparing posters. By groups, make posters on how to take care of their eyes.

**a. Evaluation**

B. Match the part of the eye with its function.

- |  |                |
|--|----------------|
| _____ 1. Regulates the light that enters the eye | A. iris        |
| _____ 2. Protects the eyes from injuries         | B. eyelids     |
| _____ 3. Sends messages to the brain             | C. optic nerve |
| _____ 4. The transparent covering of the eye     | D. retina      |
|  | E. cornea      |

C. Answer the following questions briefly.

1. How would you protect your eyes from the sun?
2. Your brother has sore eyes, what would you do?
3. You were walking when the wind blew and something went in your eyes, what would you do?

**BACKGROUND INFORMATION**

*The eye has three main parts these are the cornea, iris and the pupil. The cornea is the transparent covering of the eye. The iris is the colored part of the eye around the pupil which automatically adjusts to limit or increase the amount of light that enters the eye. The pupil is the small black circle in the center of the eye. The lens is inside the pupil which is like a camera that forms image of objects. The retina is the lining at the back of the eyeball where the images are formed.*

*The eye is our sense organ for seeing. Without it we can not see the beautiful things around us. So we need to take care of our eyes. Here are some health habits to follow:*

1. *Read and work in well-lighted places.*
2. *The light should not be too dim nor too bright.*
3. *Read with the light coming over your shoulder so that what you are reading is not in shadows.*
4. *Wear goggles when working in dirty and dusty places.*
5. *Eat balanced diet specially yellow fruits and vegetables. They are rich in Vitamin A which maintains our sense of sight.*
6. *Don't look directly at the sun. It may harm your eyes.*
7. *Don't rub your eyes when they get irritated.*
8. *Don't stay too close to the television or computer monitor.*
9. *Don't play too long with your play station or computer.*
10. *Don't read in moving vehicles.*

*Interviews were conducted before this lesson. Pupils should have interviewed people who have eye defects and medical staff.*

Lesson Plan  
**Integration Science and Health and Values Education**  
Grade IV

**I. Objective:**

- State that water is a universal solvent

<b>Values: Performing an activity with care and accuracy Working harmoniously and cooperatively in a group Cleanliness and orderliness</b>
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**II. Subject Matter**

Water, the universal solvent

A. Science Concept/Idea:

Water is a universal solvent because it can dissolve many substances.  
It is always available, even in big amounts

B. Science Processes:

Observing, comparing

C. Materials:

Set-up

5 clear big-mouthed bottles of the same size  
water, alcohol, kerosene, cooking oil, vinegar  
salt, sugar, flour, powdered juice, ground coffee

**III. Procedure:**

A. Review

What is a solute? a solvent?  
Give examples of each.

B. Presentation (Free inquiry)

Our problems for today's activity are -

What solvent can dissolve most of the substances?  
In which solvent does the solutes dissolve the fastest?

Here are the materials that you will use. Identify the solutes/solvents. (Allow time and opportunity for pupils to explore materials, to question, etc.)

Divide into small groups of 5 members each. Discuss as you work.

Be sure to record your observations.

(Note: This is the discovery approach so details or specific instruction should not be given)

C. Group Work (Free Exploration)

You can now work in your own group. A member can get the materials for your group. Remember our standards for work. Keep in mind the problem as you work with the group.

(Note: Teacher goes around to find out how pupils are getting along. Teacher can guide pupils as need arises.

D. Comparison and abstraction (Free Discovery)

Each group will share their findings to the class using this table:

Solvent	Amount of Substance Dissolved (Write all, little, none)					
	Salt	Sugar	Flour	Ground Coffee	Powdered Juice	Powdered detergent
Water						
Alcohol						
Cooking oil						
Vinegar						
Kerosene						

Look at the table and study the findings of each group.

- Do all the solutes dissolve in all the solvents?
- Do the solute dissolve at the same time?
- Which solvent dissolve most of the solutes?
- Which solvent dissolves the solutes fastest?
- Which of the solvents is the easiest to get?

E. Generalization

Based on the activity, describe water as a solvent.

F. Application

How is water used as a solvent in your home?

#### IV. Evaluation

- A. 1. What will happen when a spoon of powdered juice is placed in water?
- It will dissolve.
  - It will change in color.
  - It will remain the same.
2. Salt and sugar will dissolve fastest in \_\_\_\_\_.
- Oil
  - Water
  - Kerosene
3. Do all the solutes dissolve in all the solvents at the same time?
- Yes
  - No
  - Sometimes
4. Which of the following dissolves more solutes?
- Oil
  - Water
  - Alcohol
- B. Discuss within the group how each one worked? (cooperatively, harmoniously, keeping things clean and orderly)

#### i. Assignment

Cite 3 examples showing water as a good cleaning solvent.  
Which substances does it dissolve?

Lesson Plan  
**Integration of Science and Health, Arts and Values Education**  
Grade V

**I. Objective:**

- Identifies the bad effects of certain changes in the environment

<b>Values: Care for the environment Cleanliness Working harmoniously and cooperatively</b>
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**II. Subject Matter**

Changes in the environment

A. Science Concept/Idea:

Some changes of matter have a bad effect in the environment

B. Processes:

Observing, comparing, inferring

C. Materials

Glass, petroleum jelly, masking tape, marking pen, magnifying lens, white sock, any vehicle

Reference:

Science Is – Susan Bosak  
Science and Health – Carmelita C. Coronel  
(BEC 4.2)

**III. Procedure:**

A. Preparatory activity

Give samples of physical and chemical changes.

B. Developmental Activities:

1. Motivation:

Ask what kind of change is involved when a car uses fuel to be able to move? What do they feel when they accidentally inhale the smoke that comes from car?

2. Presentation:

Form 3 groups. Each group will perform specific activity.

Group 1

- Choose several test sites. One test site should be an area where you think the air is clean. Another site should be an area that might be polluted.

- Put an air-particle collector at each site. To make the collector, smear a thin layer of petroleum jelly on the outside of the drinking glass.
- Write the name of the test site on a small piece of masking tape and stick inside the glass.
- Place the glass upside down at the test site.
- Check your collectors after two days using a magnifying lens.
- Describe what you see on the glass.
- Which test site do you think is most polluted?

#### Group 2

- Put a white sock over the tail pipe of a car.
- An adult should turn on the car and allow it to run for a minute or so. Then turn the car off.
- The adult should remove the sock from the hot tail pipe.
- Examine the sock with a magnifying lens.
- Describe what you see on the sock. Imagine millions of cars giving off the same into the air. Why is this a problem?

#### Group 3

- Does anyone of you live near a river?
- If yes, describe the river and its banks.
- If no, your teacher will give you a picture to study. Describe the river and the things you see in it. Do you think the water is safe for use by humans?

#### 3. Concept Formation

- Each group will present their findings.
- Make conclusions regarding their activity. Teacher may ask questions that may lead to the conclusion that some changes in the environment have bad effects.
- Give other changes in the environment that may have bad effects.

#### 4. Application

- Now that they have learned some bad effects of changes in the environment, they will form two groups.
- Group 1 will discuss how they can protect themselves from these bad effects.
- Group 2 will discuss how they can protect the environment from these bad effects.
- After discussion they will make posters to show the result of their discussion. (Teacher to give guidelines on preparation of posters.)

### **IV. Evaluation:**

Ask pupils to pair with a classmate. Ask them to go around the school and find changes that could have a bad effect on them or the environment. Identify these and think of ways on how they can protect themselves and the environment. Make a write-up.

## Background Information

### **SOME BAD EFFECTS OF CHANGES OF MATTER**

*Motor vehicles use gasoline or diesel oil in order to run and ferry us to places we go to. Chemical change then takes place but when gasoline or diesel oil burn, they produce harmful chemicals. Sulfur dioxide, nitrogen oxide and carbon monoxide are the harmful chemicals that are released into the air. These chemicals can cause illness. So when we inhale air that contain these chemicals we are susceptible to illnesses.*

*Lead which is added to gasoline to make engines of cars run better has been found to be poisonous. Still car owners use lead since unleaded gasoline is expensive.*

*Carbon dioxide is also released into the air when we burn fuels. Because of the lesser number of plants because of deforestation, these carbon dioxide stays in the air instead of being absorbed by plants. Too much carbon dioxide in the air prevents heat from escaping into the outer space, so the earth becomes warmer. This is known as the Greenhouse effect. If the earth continues to get warmer the ice in the polar regions may melt so the levels of the seas and oceans may rise. Some land areas may get flooded and plants and animals may die.*

*Chlorofluorocarbons are chemicals used in aerosol spray (like the ones used in hair sprays), refrigerators and airconditioners. CFCs cause the ozone molecules to break up. Because of this, the ozone layer becomes so thin that ultraviolet rays pass the ozone layer and reaches the earth's surface. Some harmful ultraviolet radiation can cause skin cancer.*

*Fuels of cars and some factories produce waste products that go into the atmosphere. Some of these are sulfur dioxide and nitrogen oxide. When these combine with moisture in the air, they become acids. Rain clouds absorb acid and they will later fall as acid rain. The acid rain can be absorb by plants and the plants will die. The soil can become acidic and plants will not grow.*

*What do you see in rivers? Garbage and other wastes are being thrown into it. Do you think it is still safe for cooking, drinking and even taking a bath in? Some rivers are also polluted. Chemical wastes from factories are drained into the rivers. Sewage are also drained into rivers and seas.*

### **PROTECTING OURSELVES FROM THE HARMFUL EFFECTS OF CHANGES IN MATTER**

*In places where there are too many vehicles, air pollution is very common. Wearing masks over the nose and mouth help filter the air before it enters the body. Using handkerchiefs to cover the mouth and nose also helps a lot. Lessen the usage of fuel so that lesser poisonous gases are released to the air. Keep your environment clean. Refrain from using hair sprays.*

*To protect ourselves from unsafe water, boiling it can help. Find out whether the water in your area is potable and free from germs. Do not throw garbage into any body of water to avoid water pollution.*



### Activity 1

- Place the gravel and sand in the jar.
- Place some of the aquatic plants in the jar.
- Put the snail into the jar.
- Fill it with  $\frac{3}{4}$  full of water.
- Put the lid securely on the jar.
- Put the aquarium near a window but not in direct sunlight.
- Put the fish into the jar.
- Observe.
- Read the following:

All life is connected in delicate balances called “ecosystems”. Ecosystem is a community of interacting living and non-living things. Living things do one of three different jobs to maintain the ecosystem—they are either producers, consumers or decomposers. Producers are green plants. They use the sun’s energy to manufacture their own food from non-living elements. They provide food and oxygen for other living things. That’s why they are called producers. Consumers are living things that eat other living things. Decomposers break down dead plants and animals into abiotic elements. Abiotic elements return to the soil, water and air for use again.

- Answer the following questions.
  1. In the aquarium which is the producer?
  2. Which is the consumer?
  3. Which is the decomposer?
  4. Is this a sample of an ecosystem? Why?
  5. What do you think would happen if there were no aquatic plants in the jar?

### Activity 2

- Prepare a list of plants or plant parts, herbivores, carnivores, that herbivores, and carnivores that eat carnivores.
  - Write the names of the plants, herbivores and carnivores in pieces of paper. One name per piece of paper. If you wish, draw pictures.
  - Arrange the pieces of paper showing who’s eating whom? Start with a plant and end with a carnivore at the top. This is a food chain. Do as many food chain as you like.
  - Cut pieces of yarn. Lay a piece of yarn between each part of the food chain. Glue the yarn to the pieces of paper.
  - Hang up the food chain mobiles. What would happen if one of the animals in the chain disappear?
3. Concept formation
- The class will come up with their own definition of an ecosystem.
  - Give other samples of ecosystem.
  - Take one example and identify which is the producer, consumer and decomposer.
  - Draw one food chain found in that ecosystem.
4. Application

- The earth is the main ecosystem. Identify the main components. Draw one food chain that includes man. What would happen if the plants are removed? If some animals are removed? How would you make sure that the earth ecosystem survives?

#### IV. Evaluation

Choose one mini-ecosystem. Draw all the components found there and identify which are the producers, consumers and decomposers. Would that ecosystem survive if there were no producers in it? How would they take care of the producers?

#### **BACKGROUND INFORMATION**

*All life is connected in delicate balances called "ecosystems". The interaction between living(biotic) and non-living(abiotic) components creates an ecosystem. Living things do one of three functions to maintain an ecosystem. They are either producer, consumer or decomposer.*

*Producers are the green plants. They use the sun's energy and the abiotic elements to manufacture their own food. Plants provide food and oxygen to other living things. Consumers are other living things that eat living things.*

*Living things that eat plants are called the primary consumers. Living things that eat the primary consumers are called the secondary consumers.*

Decomposers are break down dead plants and animals into abiotic elements.

Decomposers include bacteria, fungi, earthworms and snails. With the decomposers the abiotic elements return to the soil, water and air for use again.

*A food chain consists of a series of animals that eat plants and other animals. A plant is eaten by an animal, which is in turn eaten by yet another animal and so on.*