COMMONWEALTH OF THE BAHAMAS
MINISTRY OF EDUCATION
AND TECHNICAL AND VOCATIONAL TRAINING

PRIMARY SCIENCE CURRICULUM GUIDELINES

GRADES 1-3

2022-2027

TABLE OF CONTENTS

Preface----------

Acknowledgements----------

Visions, Missions and Belief Statements----------

Profile of the Ideal Graduate----------

Rationale----------

Definition of Terms----------

Overarching Goals and Sub-Goals----------

Standards and Benchmarks----------

How to Use the Primary Science Curriculum----------

Scope and Sequence----------

Pacing Guide----------

Scope of Work----------

Appendix A----------

Appendix B----------

Appendix C----------

Bibliography----------

PREFACE

We live in a world that is scientifically and technologically oriented – a world of phenomenal scientific advancement and innovations. As The Bahamas keeps pace with this advancement, our children must be exposed to effective, comprehensive Science Education early in life. We must take advantage of their innate curiosity and zeal for learning about theenvironment before it diminishes.

Science is important because it links to technology and industry, which are areas of priority for a country's development. Science provides ways of making sense of the world systemically. Opportunities must be provided for our children to experience science at an early age. It is important for them to understand scientific ways of thinking and to haveadequate knowledge of science if they are to keep pace with the technological advances and innovations of the 21st Century.

The production of the revised Primary Science Curriculum Guidelines consisted of local educators who accepted the challenge of producing this document – a third document for the Department of Education: Science Unit (August 2001, June 2010, and December 2021). The Production Team has ensured that the purposes of developing sciences are met. A few ofthese aims are to communicate, to relate science to everyday life, and to explore, apply and investigate scientific and technological knowledge and ideas.

In accomplishing these aims, instructional facilitators will guide students through the use of various communication modes, developing their awareness of the importance of science inlife. Students will be encouraged to make decisions based on their knowledge of science and issues such as personal health and well-being, safety and the preservation of the environment. These students will be able to appreciate that experimentation is not judged by success or failure, but by the knowledge, which is gained from the process.

The revised Primary Science Curriculum Guidelines grades 1-6 boasts several new features. The previous Primary Curriculum consisted of three stands; we introduced a fourth strand – "Environmental Science." More focus was given to the integration of technological skills in developing the basic concepts, skills and activities in the Life, Earth, Physical and Environmental Sciences. Also noteworthy in the document are the deliberate efforts to highlight skills and attitudes that we wish for our students to develop.

When the guidelines in this revised Primary Science Curriculum Guidelines are effectively implemented, they will ensure that our students have the foundation of basic scientificconcepts and principles that develop the attitudes, skills and knowledge necessary for them to successfully work and live in the 21st Century.

ACKNOWLEDGEMENTS

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Finally, we extend our appreciation to the contributions of Ms. Tamika Bowe for clerical support and the Primary Science Coordinators and Primary Science Professional The following persons are singled out for special commendations in bringing to fruition this curriculum revision exercise and their unwavering commitment and dedication to its completion:

- Mrs. Lakia Williamson-Brown, B.Ed. M.Sc. – Certified STEM Specialist, Workshop Facilitator and Science Coordinator at Sadie Curtis Primary School;
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- Mr. Corey Cole, B.Ed. - Workshop Coordinator, former Science Coordinator, presently at Martin Town Primary School;
- Mrs. Barbara Dorsett, B.Ed., M.Sc. - Education Officer for Primary Science – Chairperson of the Curriculum Production Team.

Workshop participants throughout The Bahamas.

MINISTRY OF EDUCATION

VISION

Our vision is for a Bahamian education system that will foster academic excellence and equip students with multiple literacies that will enable them to make meaningful contributions as nation builders who are globally competitive.

MISSION STATEMENT

The mission of the Department and Ministry of Education is to provide all persons in The Bahamas an opportunity to receive a quality education that will equip them with the necessary beliefs, knowledge, attitudes and skills required for life, both in a democratic society guided by Christian values and in an inter-dependent changing world.

BELIEF STATEMENTS

We believe that:

1. The learning environment should be student-centred;

2. At each grade level students should acquire specific skills to prepare them for the succeeding grade level;

3. All students should have equal opportunity to learn based on their needs, interests and abilities;

4. Students should have opportunities to question, analyse, reason and make decisions as well as to develop self-confidence and greater freedom of expression.

5. All students should acquire essential survival skills enabling them to function well in society;

6. Technology should be integrated into content and instruction;

7. Content should be culturally relevant while still allowing a global perspective;

8. The methods used for assessing achievement should reflect the teaching and learning strategies employed in the curriculum;

9. Student success is integrally linked to parental involvement and community support;

10. An understanding of science is essential for everyone. All students should have the opportunity to participate in scientific inquiry;

11. Students should be able to apply scientific knowledge and scientific method to issues and problems related to self and society.

PROFILE OF THE IDEAL GRADUATE

The principal objective of the Bahamian education system is to develop productive citizens capable of caring for themselves and contributing positively to the national development process. Based on its consultation with stakeholders, the Ministry of Education has developed a profile for the ideal graduate. Among other qualities, the ideal graduate should:

- possess relevant knowledge in core disciplines/learning areas to be functionally literate;
- think critically, be an innovative problem solver and show initiative;
- demonstrate creativity and innovation;
- communicate effectively and collaborate willingly;
- demonstrate flexibility and adaptability;
- use social skills effectively;
- appreciate Bahamian culture and utilize the appropriate cultural skills;
- work productively and diligently with high level competency;
- guide and inspire others to do their best;
- have an appropriate awareness of the forces that shape and influence his/her life and surroundings;
- exhibit civic responsibility and display behaviour that benefit the wider community;
- appreciate his/her role in and responsibility to the local community, The Bahamas, the Caribbean region, the Commonwealth of Nations and the world;
- demonstrate integrity and ethical behaviour at all times;
- possess digital literacy and appreciate the role of technology and innovation in national development;
- display skills and competencies that reflect career and college readiness;
- possess ability to work effectively in teams; and
- embrace his/her role as an environmental steward.

Adapted from the Ministry of Education's Shared Vision for Education

PRIMARY SCIENCE MISSION STATEMENT

The Primary Science Unit recognizes the place of science in everyday human affairs and aim for scientific literacy that is operational in understanding oneself. We seek to provide a level of understanding and scientific literacy that will prepare students to be informed and participative citizens who are able to make judgments and decisions regarding science applications that may have social, health or environmental impacts.

BROAD OBJECTIVES

The team responsible for effecting the necessary revisions to the Primary Science Curriculum holds the view that the curriculum should achieve two broad objectives:

- Provide courses of study that challenge participants to acquire scientific skills and academic standards consistent with emerging global workforce requisites while simultaneously promoting self-confidence, character strengthening, creativity and personal initiative.
- Improve the use of technology in the teaching/learning process.

RATIONALE

To provide opportunities that expose and engage students in The Bahamas in acquiring scientific knowledge, skills and attitudes which will enhance critical thinking, problem-solving and organizational skills. In so doing, students will be able to participate in varied scientific and technological careers in the global environment, as well as realize the impact that they make on the natural world and appreciate the need for its sustainability.

OBJECTIVES

- Use materials and scientific equipment correctly and safely.
- Demonstrate critical thinking and problem solving.
- Make accurate observations and measurements.
- Engage in cooperative learning activities.
- Communicate information effectively.
- Utilize classification process and recognize scientific relationships.
- Apply scientific principles and concepts to create products.
- Make inferences and draw conclusions.
- Transfer and integrate relevant skills and content from other disciplines.
- Make informed, responsible and wise decisions.
- Design, conduct and evaluate scientific investigations.
- Demonstrate critical thinking by responding to “what if” scenarios (situation analysis).
- Appreciate and utilize environmental conservation strategies.
- Pursue new scientific knowledge.

DEFINITION OF TERMS

This document comprises several components. Below is a brief description of each.

Overarching Goal: defines the ultimate outcome of learning and outlines the intended purpose of the curriculum document.

Sub-Goals: form the major contextual framework for instruction.

Standards: show what students should be able to do at the end of schooling at a particular grade level.

Benchmarks: show the level of progression for students at each grade level upon the completion of the year of instruction.

Scope and Sequence: shows the content to be covered for each grade level and the order in which each should be covered. It also provides an indication of the level of proficiency at which students should be performing for each grade level.

Pacing Guide: shows the sequence of topics and estimated length of time that should be spent on each topic.

Scope of Work: provides the basic content that should be included in lessons along with suggested activities, assessments and resources.

OVERARCHING GOAL

To empower individuals to become critical thinkers, problem-solvers, innovators, visionaries, decision makers, scientifically and technologically literate citizens who will appreciate and embrace sustainability of the natural environment.

SUB-GOALS

- To encourage students to maintain and expand their sense of wonder and excitement for the natural world.
- To engage in scientific inquiry as a means of becoming problem solvers.
- To assist students in the application of scientific knowledge and principles to stimulate their creative expressions.
- To enable and encourage children to participate in actions that can make positive change in the world.
- To apply scientific knowledge and skills to stimulate innovations in technology.
- To enable students to participate in critical discussions as it pertains to their life.
- To promote an appreciation for the safe and sustainable use of resources.
- To obtain basic knowledge, skills and attitudes which provide a scientifically literate foundation for future learning.

STANDARDS AND BENCHMARKS

Strand: Life Science

Standard 1: KNOWS ABOUT THE DIVERSITY AND UNITY THAT CHARACTERIZE LIFE.

Benchmarks for Grade 1:

- Knows the basic needs of animals and plants.
- Investigates the characteristics and needs of animals and plants.
- Demonstrates awareness that animals and plants depend on their environment to meet their basic needs.
- Describes the requirements for good health for humans.

Standard 2: KNOWS THE GENERAL STRUCTURE, ORGANIZATION AND FUNCTIONS OF CELLS IN ORGANISMS.

Benchmarks for Grade 1:

- Knows the importance and functions of the eyes, ears, tongue, skin and nose as sense organs.
- Identifies the stages in the life cycle of plants, animals and human beings.

STANDARDS AND BENCHMARKS

Strand: Earth Science

Standard 1: UNDERSTANDS ESSENTIAL IDEAS ABOUT THE COMPOSITION AND STRUCTURE OF THE UNIVERSE AND THE EARTH'S PLACE IN IT.

Benchmarks for Grade 1:

- Knows the basic composition of the earth's atmosphere.
- Understand basic features of the earth describes some natural occurrences using observations.
- Describes some natural occurrences using observations.
- Describes local natural habitats.

Standard 2: UNDERSTANDS BASIC FEATURES OF THE EARTH

Benchmarks for Grade 1:

- Knows that earth has several landforms.
- Knows that earth has several bodies of water.
- Investigates changes that occur in a daily cycle and in a seasonal cycle.
- Knows the basic composition and structure of the universe (e.g. identifies the moon and stars as objects in the night time sky).

STANDARDS AND BENCHMARKS

Strand: Physical Science

Standard 1: UNDERSTANDS BASIC CONCEPTS ABOUT THE STRUCTURE AND PROPERTIES OF MATTER.

Benchmarks for Grade 1:

- Distinguishes between objects and materials and identifies and describes the properties of some materials.
- Investigates the properties of materials and makes appropriate use of materials when designing and making objects.
- Describes the function of specific materials in manufactured objects that can be use in daily life.

Standard 2: UNDERSTANDS ENERGY TYPES, SOURCES AND CONVERSIONS AND THEIR RELATIONSHIP TO HEAT AND TEMPERATURE.

Benchmarks for Grade 1:

- Demonstrates an understanding of ways in which energy is used in life daily.
- Describes different uses of energy at home, at school and in the community and suggests ways in which energy can be conserved.

Standard 3: UNDERSTANDS THE NATURE OF SCIENTIFIC KNOWLEDGE AND INQUIRY

Benchmarks for Grade 1:

- Identifies familiar technological items and describes their use in daily life.
- Uses familiar technology appropriately (e.g. telephone, tablets, computers).
- Makes things using a variety of tools and techniques (e.g. glue, stapler, hammer).

STANDARDS AND BENCHMARKS

Strand: Environmental Science

Standard 1: INVESTIGATES AND ARTICULATES WAYS TO CONSERVE AND MANAGE NATURAL RESOURCES.

Benchmarks for Grade 1:

- Understands how local resources are utilized in The Bahamas.
- Understands the importance of conservation and preservation (as it relates to plants and animals).
- Describes local natural habitats for animals.

STANDARDS AND BENCHMARKS

Strand: Life Science

Standard 1: KNOWS ABOUT THE DIVERSITY AND UNITY THAT CHARACTERIZE LIFE.

Benchmarks for Grade 2:

- Demonstrates an understanding of the similarities and differences among various types of animals and the ways in which animals adapt to differentenvironmental conditions.
- Investigates physical and behavioural characteristics and the process of growth of different types of animals.
- Knows that animals require air, water, food and shelter while plants require air, water, nutrients and light.
- Identifies ways in which humans can affect other animals.

Standard 2: KNOWS THE GENERAL STRUCTURE, ORGANIZATION AND FUNCTIONS OF CELLS IN ORGANISMS.

Benchmarks for Grade 2:

- Knows that plants and animals closely resemble their parents.
- Identifies constant traits and changing traits in animals and plants as they grow.
- Identifies the major parts of plants (e.g. seeds, stem pistil).

STANDARDS AND BENCHMARKS

Strand: Earth Science

Standard 1: UNDERSTANDS ESSENTIAL IDEAS ABOUT THE COMPOSITION AND STRUCTURE OF THE UNIVERSE AND THE EARTH'S PLACE IN IT.

Benchmarks for Grade 2:

- Knows that earth materials consist of solid rocks, soils, liquid water and the gases of the atmosphere.
- Explains how rocks are alike and different.
- Describes changes in the sky as related to the sun, moon and stars.

Standard 2: UNDERSTANDS BASIC FEATURES OF THE EARTH.

Benchmarks for Grade 2:

- Demonstrates an awareness of the forms in which water and air are present in the environment and describes ways in which living things are affected by water and air (e.g. describes weather changes and how they affect people).
- Investigates the visible effects of air and water in the environment.
- Describes ways in which clean air and water are vital for meeting the needs of humans and other living things.

STANDARDS AND BENCHMARKS

Strand: Physical Science

Standard 1: UNDERSTANDS ENERGY TYPES, SOURCES AND CONVERSIONS AND THEIR RELATIONSHIP TO HEAT AND TEMPERATURE.

Benchmarks for Grade 2:

- Demonstrates an understanding of ways in which energy is used in daily life.
- Demonstrates an understanding of the movement of air and water as sources of energy.
- Design and construct devices that are propelled by moving air or moving water.
- Knows that the sun supplies heat and light to earth.
- Describes the position and movement of objects and demonstrates an understanding of how simple mechanisms enable an object to move.
- Knows that the position of an object can be changed by magnetic force.

Standard 2: UNDERSTANDS THE NATURE OF SCIENTIFIC KNOWLEDGE AND INQUIRY.

Benchmarks for Grade 2:

- Knows that learning can come from careful observations and simple experiments.
- Knows that tools can be used to gather information (e.g. thermometers, rulers, magnifiers, balances).
- Knows ways that technology is used at home and school.
- Knows that most things are made of parts, and they may not work if some parts are missing.
- Understands how some elements or components of simple systems work together (e.g. parts of a bicycle).

STANDARDS AND BENCHMARKS

Strand: Environmental Science

Standard 1: INVESTIGATES AND ARTICULATES WAYS TO CONSERVE AND MANAGE NATURAL RESOURCES.

Benchmarks for Grade 2:

- Understands the use of trees, sand and ground resources in The Bahamas.
- Describes ways we use local resources (e.g. sun, wind, ocean and forest).
- Understands the behaviours necessary to conserve natural resources.

STANDARDS AND BENCHMARKS

Strand: Life Science

Standard 1: KNOWS ABOUT THE DIVERSITY AND UNITY THAT CHARACTERIZE LIFE.

Benchmarks for Grade 3:

- Knows that plants and animals need certain resources for energy and growth (e.g. food, water, light and air).
- Demonstrates an understanding of the similarities and differences in the physical characteristics of different plant species.
- Knows that plants and animals have features that help them live in different environments.
- Identifies the major parts of plants and describes their basic functions.

Standard 2: KNOWS THE GENERAL STRUCTURE, ORGANIZATION AND FUNCTIONS OF CELLS IN ORGANISMS.

Benchmarks for Grade 3:

- Knows that dietary habits and behaviour are related to an organism's health.
- Knows that life processes of an organism are related to its use of nutrients, water and oxygen.
- Classifies different types of animals (e.g. distinguishes among vertebrate groups).
- Identifies major parts of plants.
- Identifies traits that remain constant in some plants as they grow.

STANDARDS AND BENCHMARKS

Strand: Earth Science

Standard 1: UNDERSTANDS ESSENTIAL IDEAS ABOUT THE COMPOSITION AND STRUCTURE OF THE UNIVERSE AND THE EARTH'S PLACE IN IT.

Benchmarks for Grade 3:

- Understands the sun's importance to living things on earth.
- Understands how the movements of the earth cause day, night and the seasons.
- Examine the relationship between the sun and the earth as it relates to position and motion.

Standard 2: UNDERSTANDS BASIC FEATURES OF THE EARTH

Benchmarks for Grade 3:

- Understands the concept of water (e.g. defines the terms weather, temperature and wind direction; describes weather conditions; classifies clouds according to how they look and the weather conditions with which they are associated).
- Knows that water is an important natural resource.
- Knows that water can be a liquid or a solid and can be change from one form to the other.
- Describes ways in which clean air and water are vital for meeting the needs of humans and other living thin.

STANDARDS AND BENCHMARKS

Strand: Physical Science

Standard 1: UNDERSTANDS BASIC CONCEPTS ABOUT THE STRUCTURE AND PROPERTIES OF MATTER.

Benchmarks for Grade 3:

- Knows that things can be done to materials to change some of their properties, but not all materials respond the same way to what is done to them.
- Investigates the physical properties of a variety of objects.

Standard 2: UNDERSTANDS THE NATURE OF SCIENTIFIC KNOWLEDGE AND INQUIRY.

Benchmarks for Grade 3:

- Knows that scientific investigations generally work the same way in different places and normally produce results that can be duplicated.
- Knows that new tools and ways of doing things affect all aspects of life and may have positive or negative effects on other people.
- Knows that tools can be used to observe, measure, make things and do things better or more easily.
- Knows that people are always inventing new ways to solve problems and get work done (e.g. computer is a machine that helps people work and play).

STANDARDS AND BENCHMARKS

Strand: Environmental Science

Standard 1: INVESTIGATES AND ARTICULATES WAYS TO CONSERVE AND MANAGE THE ENVIRONMENT.

Benchmarks for Grade 3:

- Examines the life cycle of insect vectors.
- Describes the process of proliferation and elimination of vectors in our environment.
- Understands the impacts of water and land pollution.
- Knows citizens responsibilities to the environment.

STANDARDS AND BENCHMARKS

Strand: Life Science

Standard 1: KNOWS ABOUT THE DIVERSITY AND UNITY THAT CHARACTERIZE LIFE.

Benchmarks for Grade 4:

- Distinguishes between animals that are vertebrates and invertebrates (e.g. state characteristics).
- Classifies different types of animals.
- Describes the changing requirements of plants as they grow.

Standard 2: KNOWS THE GENERAL STRUCTURE, ORGANIZATION AND FUNCTIONS OF CELLS IN ORGANISMS.

Benchmarks for Grade 4:

- Demonstrates an understanding of the structure and function of the respiratory system and the interaction of organs within it.
- Investigates the structure and function of the major organs of the respiratory system.
- Demonstrates an understanding of factors that contribute to good health.

STANDARDS AND BENCHMARKS

Strand: Earth Science

Standard 1: UNDERSTANDS ESSENTIAL IDEAS ABOUT THE COMPOSITION AND STRUCTURE OF THE UNIVERSE AND THE EARTH'S PLACE IN IT.

Benchmarks for Grade 4:

- Knows the basic composition and structure of the universe.
- Understand basic features of the inner and outer planets.

Standard 2: UNDERSTANDS BASIC FEATURES OF THE EARTH.

Benchmarks for Grade 4:

- Knows that earth has several layers.
- Knows that the movement of the ocean is affected by the moon.
- Investigates changes in weather patterns.

STANDARDS AND BENCHMARKS

Strand: Physical Science

Standard 1: UNDERSTANDS BASIC CONCEPTS ABOUT THE STRUCTURE AND PROPERTIES OF MATTER.

Benchmarks for Grade 4:

- Investigates the physical and chemical changes in matter.
- Demonstrates an understanding of the characteristics of pulleys and gears.
- Designs and makes pulley systems and gear systems and investigates how motion is transferred from one system to another.

Standard 2: UNDERSTANDS THE NATURE OF SCIENTIFIC KNOWLEDGE AND INQUIRY.

Benchmarks for Grade 4:

- Knows that technologies often have costs as well as benefits and can have an enormous effect on people and other living things.
- Knows areas in which technology has improved human lives (e.g. transportation, communication, nutrition, sanitation, health care).
- Knows that tools can be used to observe, measure, make things and do things better or more easily.
- Knows that people are always inventing new ways to solve problems and get work done.

STANDARDS AND BENCHMARKS

Strand: Environmental Science

Standard 1: INVESTIGATES AND ARTICULATES WAYS TO CONSERVE AND MANAGE NATURAL RESOURCES.

Benchmarks for Grade 4:

- Categorizes the differences among mangroves.
- Examine threats to mangroves and describe how the threats can be eliminated.
- Categorizes various types of native and medicinal plants and their use.
- Understands ways to conserve native plants.
- Knows citizens responsibilities to the environment.

STANDARDS AND BENCHMARKS

Strand: Life Science

Standard 1: KNOWS ABOUT THE DIVERSITY AND UNITY THAT CHARACTERIZE LIFE.

Benchmarks for Grade 5:

- Knows different ways in which living things can be grouped and the purposes of different groupings.
- Classifies different types of animals (e.g. distinguishes among invertebrates).
- Describes ways in which classification systems can be used in everyday life.

Standard 2: KNOWS THE GENERAL STRUCTURE, ORGANIZATION AND FUNCTIONS OF CELLS IN ORGANISMS.

Benchmarks for Grade 5:

- Demonstrates an understanding of the structure and function of the skeletal system and the interaction of organs within this system.
- Classifies different types of plants (e.g. identifies and compare monocots and dicots).
- Demonstrates an understanding of factors that contribute to good health.

STANDARDS AND BENCHMARKS

Strand: Earth Science

Standard 1: UNDERSTANDS ESSENTIAL IDEAS ABOUT THE COMPOSITION AND STRUCTURE OF THE UNIVERSE AND THE EARTH'S PLACE IN IT.

Benchmarks for Grade 5:

- Knows different ways in which living things can be grouped and the purposes of different groupings.
- Understands basic features of the earth.
- Describes some natural occurrences using observations.
- Knows the basic composition and structure of the universe.

Standard 2: UNDERSTANDS BASIC FEATURES OF THE EARTH.

Benchmarks for Grade 5:

- Understands that fossils are made up of the remains of living things.
- Investigates the major climatic factors associated with weather and designs; constructs and tests a variety of instruments for recording various features of the weather.
- Knows the basic composition and structure of the universe (e.g. identifies the moon and stars as objects in the night time sky).
- Examines how weather forecasts influence decisions concerning human activity and how humans have adapted to a variety of weather conditions.

STANDARDS AND BENCHMARKS

Strand: Physical Science

Standard 1: UNDERSTANDS BASIC CONCEPTS ABOUT THE STRUCTURE AND PROPERTIES OF MATTER.

Benchmarks for Grade 5:

- Investigates the physical and chemical changes in matter.
- Demonstrates an understanding of the characteristics of pulleys and gears.
- Designs and makes pulley systems and gear systems and investigates how motion is transferred from one system to another.

Standard 2: UNDERSTANDS THE NATURE OF SCIENTIFIC KNOWLEDGE AND INQUIRY.

Benchmarks for Grade 5:

- Knows that technologies often have costs as well as benefits and can have an enormous effect on people and other living things.
- Knows areas in which technology has improved human lives (e.g. transportation, communication, nutrition, sanitation, health care).
- Knows that tools can be used to observe, measure, make things, and do things better or more easily.
- Knows that people are always inventing new ways to solve problems and get work done.

STANDARDS AND BENCHMARKS

Strand: Environmental Science

Standard 1: INVESTIGATES AND ARTICULATES WAYS TO CONSERVE AND MANAGE NATURAL RESOURCES.

Benchmarks for Grade 5:

- Examines threats to marine resources.
- Understands ways to conserve marine resource.
- Knows the major differences between conservation and preservation.
- Knows citizens responsibilities to the marine environment.

STANDARDS AND BENCHMARKS

Strand: Life Science

Standard 1: KNOWS ABOUT THE DIVERSITY AND UNITY THAT CHARACTERIZE LIFE.

Benchmarks for Grade 6:

- Understands that all living things are composed of cells.
- Knows that each plant or animal has different structures which serve different functions in growth and reproduction.
- Identifies the similarities and differences in plant and animal cells.
- Knows that plants and animals progress through life cycles of birth, growth and development; the details of these life cycles are different for different organisms.

Standard 2: KNOWS THE GENERAL STRUCTURE, ORGANIZATION AND FUNCTIONS OF CELLS IN ORGANISMS.

Benchmarks for Grade 6:

- Demonstrates an understanding of the structure and function of the digestive system and the interaction of organs within this system.
- Investigates the structure and function of the teeth.
- Demonstrates an understanding of factors that contribute to good oral hygiene.

STANDARDS AND BENCHMARKS

Strand: Earth Science

Standard 1: UNDERSTANDS ESSENTIAL IDEAS ABOUT THE COMPOSITION AND STRUCTURE OF THE UNIVERSE AND THE EARTH'S PLACE IN IT.

Benchmarks for Grade 6:

- Demonstrates an understanding of the patterns of change observable on earth as a result of the movement of the different bodies in the solar system and of the physical characteristics of the different components of the solar system.
- Describes technological and scientific advances that enable humans to study space and explain how these advances have affected the quality of life on earth.
- Knows that astronomical objects in space are massive in size and are separated from one another by vast distances.

Standard 2: UNDERSTANDS BASIC FEATURES OF THE EARTH.

Benchmarks for Grade 6:

- Knows that fossils provide evidence about the plants and animals that lived long ago and the nature of the environment at that time.
- Investigates the major climatic factors associated with weather, and designs, constructs and tests a variety of instruments for recording various featuresof the weather.
- Knows how features on the earth's surface are constantly changed by a combination of slow and rapid processes.
- Examines how weather forecasts influence decisions concerning human activity and how humans have adapted to a variety of weather conditions.

STANDARDS AND BENCHMARKS

Strand: Physical Science

Standard 1: UNDERSTANDS BASIC CONCEPTS ABOUT THE STRUCTURE AND PROPERTIES OF MATTER.

Benchmarks for Grade 6:

- Knows that objects can be classified according to their properties (e.g. mass, density, volume, weight and gravity).
- Knows that properties such as length, weight, temperature and volume can be measured using appropriate tools.
- Knows that materials have different states, and some common materials such as water can be changed from one state to another by heating or cooling.
- Demonstrates an understanding of the properties of air and explain how these can be applied to the principles of flight.
- Identifies design features (of products or structures) that make use of the properties of air and give examples of technological innovations that have helped inventors to create or improve flying devices.

Standard 2: UNDERSTANDS THE NATURE OF SCIENTIFIC KNOWLEDGE AND INQUIRY.

Benchmarks for Grade 6:

- Knows that scientific investigations involve asking and answering a question and comparing the answer to what scientists already know about the world.
- Plans and conducts simple investigations (e.g. makes systematic observations; conducts simple experiments to answer questions).
- Knows that tools can be used to observe, measure, make things and do things better or more easily.
- Knows that good scientific explanations are based on evidence, observations and scientific knowledge.

STANDARDS AND BENCHMARKS

Strand: Environmental Science

Standard 1: INVESTIGATES AND ARTICULATES WAYS TO CONSERVE THE ENVIRONMENT AND MANAGE NATURAL RESOURCES.

Benchmarks for Grade 6:

- Examines environmental threats which endanger the animals.
- Understands ways to conserve the environment.
- Explains ways in which people may live more sustainably.
- Knows that climate change affects natural disasters.
- Knows citizens responsibilities to the environment.

HOW TO USE THE PRIMARY SCIENCE CURRICULUM

Teachers know that a curriculum guide is the most important document available to them, and without one, it will be difficult to write lesson plans. Using the Primary Science Curriculum Guide will support teachers in creating effective lesson plans that are based on the goals and learner outcomes outlined in the document. This document is intended to provide facilitators with the overview of the outcomes framework for primary science education. It also includes suggestions to assist teachers in designing creative, critical thinking learning experiences and assessment tasks for primary school students.

Standards and Benchmarks can be split into two categories. The content standards are guidelines which dictate the crucial skills, knowledge and understanding that a student must learn in the specific science content area. Benchmarks point you to where the students should reach academically. Benchmarks also provide a structure for external assessment.

Scope and Sequence is a list of concepts, topics and materials to be observed and covered (where possible in this document). The Scope refers to topics and areas of developmentwithin the Primary Science Curriculum, and the Sequence is the order in which those skills are taught.

The **Pacing Guide** helps you to see the big picture for the school year. It provides an opportunity for facilitators/teachers to pace out and create an impetus for a certain period of time and to identify standards or units to be taught during that time. The Pacing Guide also ensures that grade level teams are concentrating on identical topics/lessons in a specified time period.

The **Scope of Work** encompasses the theory, planning, design, development, implementation and evaluation of units of Life, Earth, Physical and Environmental strands of the Primary Science Curriculum.

SCOPE AND SEQUENCE

PRIMARY SCIENCE CURRICULUM

SCOPE AND SEQUENCE

STRAND 1: LIFE SCIENCE **GRADES: 1-6**

Fundamental concepts and principles of life science include the study of living organisms, their structure and function, their behaviours and their relationship with the environment.

	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
LIFE SCIENCE	**Characteristics of Organisms**	**Characteristics of Organisms**	**Characteristics of Organisms**	**Characteristics of Organisms**	**Characteristics of Organisms**	**Characteristics of Organisms**
	1. A1 Observe human body models and identify external body parts and their use. **1. A2** Communicate names and function of sense organs in the human body (eyes, tongue, ears, nose and skin). **1. A3** Observe and compare physical growth development in humans (example: boys and girls). **1. A4** Experiment with manipulative to demonstrate habits which support good health. **1. A5** Infer results from poor health habits.	**1. A1** Conduct research about animals in the environment. **1. A2** Compare body coverings of animals. **1. A3** Observe animal parts to predict how they function and move. **1. A4** Predict and infer what animals need for survival. **1. A5** Compare animal habitats using virtual and physical field area.	**1. A1** Observe a variety of organisms to determine which are vertebrates. **1. A2** Observe and examine birds, mammals and fish to communicate why they are vertebrates. **1. A3** Compare mammals to birds and birds to fish.	**1. A1** Compare vertebrates and invertebrates. **1. A2** Investigate and record traits common to reptiles and amphibians. **1. A3** Investigate and record traits/ characteristics common to arthropods. **1. A4** Compare insects and spiders using live specimen and models. **1. A5** Infer how life cycles of mosquitoes and cockroaches differ.	**1. A1** Research and communicate traits/ characteristics common to all invertebrates. **1. A2** Compare traits of invertebrates and vertebrates. **1. A3** Observe models of mollusks and stinging cell animals and identify their characteristics. **1. A4** Compare traits of mollusks and stinging cell anmals.	**1. A1** Observe and describe the structure of a cell in organisms (plant/animal). **1. A2** Compare plant and animal cells. **1. A3** Identify sponges as invertebrates and describe traits/characteristics of sponges.

PRIMARY SCIENCE CURRICULUM

SCOPE AND SEQUENCE

STRAND 1: LIFE SCIENCE **PRIMARYSCIENCE CURRICULUM** **GRADES: 1-6**

Fundamental concepts and principles of life science include the study of living organisms, their structure and function, their behaviours and their relationship with the environment.

	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
LIFE SCIENCE	**Structure and Functions in Living Systems**	**Structure and Functions in Living Systems**	**Structure and Functions in Living Systems**	**Structure and Functions in Living Systems**	**Structure and Functions in Living Systems**	**Structure and Functions in Living Systems**
	1. B1 Describe the basic needs for living things (plants/animals). **1. B2** Compare characteristics/traits of living and non-living things. **1. B3** Research and explain use of plants and animals. **1. B4** Infer why body coverings are important for a variety of indigenous and international animals.	**1. B1** Observe models to identify the basic parts of the human skeleton. **1. B2** Communicate the importance of the human skeleton using models and visuals. **1. B3** Compare skeletons of various animals. **1. B4** Infer how poor health habits affect personal and family health. **1. B5** Predict the basic needs of plants for survival. **1. B6** Observe a live plant to record its parts. **1. B7** Classify and compare a variety of fruit and vegetable seeds.	**1. B1** Infer how proper nutrition is related to good health. **1. B2** Observe and predict appropriate exercises and food choice to develop a healthy lifestyle. **1. B3** Identify local and international health resources, and communicate their function. **1. B4** Observe plants to identify their parts. **1. B5** Experiment, observe and research to describe the function of plant parts.	**1. B1** Observe a model and diagram of the respiratory system and explain the function. **1. B2** Experiment and describe seed germination.	**1. B1** Observe diagrams and teaching models to identify parts of the skeletal system. **1. B2** Observe six main food groups, and explain the nutrients found in each group. **1. B3** Research to explain functions of the skeletal system. **1. B4** Compare seed and non–seed plants. **1. B5** Infer how proper nutrition is related to good health. **1. B6** Compare seed and non–seed plants. **1. B7** Compare monocots and dicots.	**1. B1** Observe and identify parts of the digestive system **1. B2** Analyse the process and function of the digestive system. **1. B3** Use models to identify the parts and function of the teeth. **1. B4** Observe and describe the type of teeth in human. **1. B5** Infer ways to develop good oral hygiene. **1. B6** Observe a varietyof flowers. Label their parts and explain their functions. **1. B7** Research to communicate the life cycle of a flowering plant. **1. B8** Experiment to explain the process of photosynthesis.

PRIMARY SCIENCE CURRICULUM

SCOPE AND SEQUENCE

STRAND 2: EARTH AND SPACE SCIENCE **GRADES: 1-6**

Fundamental concepts and principles of Earth and space science are related to the origin, Structure and physical phenomena of the Earth and the Universe.

	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
EARTH SCIENCE	**Properties and Structure of Earth's Systems**	**Properties and Structure of Earth's Systems**	**Properties and Structure of Earth's Systems**	**Properties and Structure of Earth's Systems**	**Properties and Structure of Earth's Systems**	**Properties and Structure of Earth's Systems**
	2. A1 Infer of what the earth'satmosphere is composed. **2. A2** Research and observe several bodies of water on earth (ponds, lakes, oceans). **2. A3** Observe and explain landforms found on earth. **2. A4** Experiment to explain how hills are formed.	**2. A1** Observe rocks and minerals to identify their traits. **2. A2** Compare a variety of rocks. **2. A3** Compare rocks and minerals. **2. A4** Experiment and research to communicate some uses of rocks and minerals.	**2. A1** Investigate to identify earth's natural resources and their origin. **2. A2** Observe earth's natural resources and uses. **2. A3** Infer the importance of natural resources to the survival of people. **2. A4** Predict ways to care for earth's resources.	**2. A1** Research to identify and describe the three layersof the earth. **2. A2** Investigate the movement of the ocean and how it is affected by the moon. **2. A3** Experiment to describe three properties of air. **2. A4** Predict and identify the elements which contribute to weather. **2. A5** Compare weather and climate. **2. A6** Experiment with weather instruments to describe their use.	**2. A1** Infer what are fossils and compare types of fossils. **2. A2** Analyse the process of fossil formation. **2. A3** Hypothesize how scientists know which fossils are the oldest.	**2. A1** Compare coal, oil and natural gas. **2. A2** Analyse advantages and disadvantages of fossil fuels. **2. A3** Compare petroleum and natural gas.

PRIMARY SCIENCE CURRICULUM

SCOPE AND SEQUENCE

STRAND 2: EARTH AND SPACE SCIENCE **GRADES: 1-6**

Fundamental concepts and principles of Earth and space science are related to the origin, Structure and physical phenomena of the Earth and the Universe.

	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
EARTH SCIENCE	**Changes in the Earth and Sky**	**Changes in the Earth and Sky**	**Changes in the Earth and Sky**	**Changes in the Earth and Sky**	**Changes in the Earth and Sky**	**Changes in the Earth and Sky**
	2. B1 Investigate how weather is the combination of factors (temperature, wind, precipitation, clouds and sunlight. **2. B2** Identify and explain types of weather (windy, sunny, cloudy, rainy, snowy). **2. B3** Examine weather tools and their function and predict weather conditions using these instruments (thermometer, rain gauge, wind vane, anemometer, barometer). **2. B4** Explain how seasons affect weather (spring, summer, fall and winter).	**2. B1** Predict factors which contribute to weather. **2. B2** Observe the immediate environment and communicate the kinds of weather experienced in The Bahamas. **2. B3** Observe weather instruments and their uses. **2. B4** Hypothesize the different ways in which weather affects people.	**2. B1** Experiment to explain the water cycle and its relationship to weather and climate. **2. B2** Interpret diagrams to explain the changes that occur at each phase of the water cycle. **2. B3** Observe and classify clouds according to their traits. **2. B4** Analyse weather conditions associated with different types of clouds.	**2. B1** Research the characteristics of the eight planets and classify them as inner and outer planets. **2. B2** Compare the inner and outer planets.	**2. B1** Analyse layers of the atmosphere. **2. B2** Observe and research conditions that change weather. **2. B3** Infer how weather changes affect people. **2. B4** Experiment with weather instruments to describe their functions.	**2. B1** Observe tools that measure factors of weather. **2. B2** Observe and describe factors that make up weather. **2. B3** Measure weather conditions using weather instruments. **2. B4** Observe the environment to compare weathering and erosion. **2. B5** Compare traits/characteristics of storms.

PRIMARY SCIENCE CURRICULUM

SCOPE AND SEQUENCE

STRAND 2: EARTH AND SPACE SCIENCE **GRADES: 1-6**

Fundamental concepts and principles of Earth and space science are related to the origin, Structure and physical phenomena of the Earth and the Universe.

	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
EARTH SCIENCE	**Universe and the Solar System**	**Universe and the Solar System**	**Universe and the Solar System**	**Universe and the Solar System**	**Universe and the Solar System**	**Universe and the Solar System**
	2. C1 Observe and communicate how the sun, moon and stars are visible in the sky at different times of the day. **2. C2** Distinguish between objects that are common to the daytime and nighttime sky.	**2. C1** Describe the differences between the moon and earth. **2. C2** Analyse changes in the moon. **2. C3** Identify and compare constellations.	**2. C1** Explain the sun's position in relation to the earth. **2. C2** Describe the motion of the earth around the sun. **2. C3** Investigate to explain seasonal changes.		**2. C1** Observe and communicate the make up of the solar system. **2. C2** Research to compare planets. **2. C3** Compare rotation and revolution. **2. B4** Communicate how the sun benefits the earth and other planets. **2.** B5 Compare and analyse objects in space (asteroids, comets, meteors and meteoroids).	**2. C1** Hypothesize which planets are susceptible to life. **2. C2** Observe and identify equipment used to study objects in space. **2. C3** Analyse distances between planets.

PRIMARY SCIENCE CURRICULUM

SCOPE AND SEQUENCE

STRAND 3: PHYSICAL SCIENCE **GRADES: 1-6**

Fundamental concepts and principles of physical science include the study and analysis of the nature and properties of living and non-living matter and energy

PHYSICAL SCIENCE

Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
Properties and Changes in Matter	Properties and Changes in Matter	Properties and Changes in Matter	Properties and Changes in Matter	Properties and Changes in Matter	Properties and Changes in Matter
3. A1 Classify objects according to their physical properties (size, colour and shape). **3. A2** Experiment to identify how matter changes state, size, colour and shape. **3. A3** Compare physical changes in matter.	**3. A1** Infer why the sun is the greatest source of energy on Earth. **3. A2** Identify other sources of light energy besides the sun. **3. A3** Infer why water is a source of energy and explain its use. **3. A4** Predict what would happen if there was no water on earth. **3. A5** Research and experiment to explain wind as a source of energy.	**3. A1** Experiment with materials to identify matter as solids, liquids and gases. **3. A2** Investigate how matter changes from one form to another. **3. A3** Examine objects to communicate the physical properties of matter. **3. A4** Experiment to discover the length, mass and volume of objects using metric units.	**3. A1** Observe a variety of materials to identify properties of matter. **3. A2** Investigate physical changes in matter. **3. A3** Compare physical properties and physical changes in matter. **3. A4** Use a balance to measure and record mass of objects. **3. A5** Experiment with graduates and measuring cylinders to measure the volume of matter.	**3. A1** Investigate energy and compare various forms of energy. **3. A2** Compare potential and kinetic energy. **3. A3** Investigate how energy changes **3. A4** Analyse the impact of technology on forms of energy. **3. A5** Investigate compound/ complex machines that use the lever and screw to help us do work.	**3. A1** Analyse physical properties and changes in matter. **4. A2** Experiment to explain physical changes in materials. **3. A3** Observe chemicals that will cause changes in matter. **3. A4** Compare physical and chemical changes in matter.

PRIMARY SCIENCE CURRICULUM

SCOPE AND SEQUENCE

STRAND 3: PHYSICAL SCIENCE **GRADES: 1-6**

Fundamental concepts and principles of physical science include the study and analysis of the nature and properties of living and non-living matter and energy.

	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
PHYSICAL SCIENCE	Properties and Changes in Matter	Properties and Changes in Matter	Properties and Changes in Matter	Properties and Changes in Matter	Properties and Changes in Matter	Properties and Changes in Matter
	3. B1 Investigate force as a push or pull. **3. B2** Compare pushes and pulls. **3. B3** Experiment to identify poles of a magnet. **3. B4** Experiment to find out which objects a magnet will attract/repel.	**3. B1** Experiment with magnets and explain what they do. **3. B2** Classify materials according to their magnetic force.		**3. B1** Experiment with materials to discover what is force and work. **3. B2** Measure and record pulls using a spring scale. **3. B3** Analyse work and infer how it is related to force. **3. B4** Demonstrate with household objects and tools to explain what a simple machine is. **3. B5** Observe and identify objects as wedges or inclined planes.		**3. B1** Experiment to explain relationships among mass, density, volume, weight and gravity. **3. B2** Examine and identify tools used to measure matter.

PRIMARY SCIENCE CURRICULUM

SCOPE AND SEQUENCE

STRAND 4: ENVIRONMENTAL SCIENCE **GRADES: 1-6**

Fundamental concepts and principles of Environmental Science include the investigation and articulation of ways to conserve and manage natural resources

ENVIRONMENTAL SCIENCE

Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
Use and Conservation of Environmental Resources	Use and Conservation of Environmental Resources	Use and Conservation of Environmental Resources	Use and Conservation of Environmental Resources	Use and Conservation of Environmental Resources	Use and Conservation of Environmental Resources
4. A1 Identify products we use from nature. **4. A2** Examine products that come from trees. **4. A3** Summarize actions that help conserve paper and keep the environment clean and litter-free. **4. A4** Investigate types of animals found in a school yard. **4. A5** Investigate how litter can harm plants and animals. **4. A6** Demonstrate how plants and animals should be protected.	**4. A1** Identify ways we use trees, sand and ground resources in The Bahamas. **4. A2** Infer ways we use the sun and wind in The Bahamas. **4. A3** Identify animals we use for food from the ocean and forest. **4. A3** Examine way in which help and harm the environment.	**4. A1** Explain what are vectors and identify some insect vectors in our community (mosquitoes, cockroaches, etc.). **4. A2** Compare the life cycle of mosquitoes and cockroaches. **4. A3** Suggest ways to decrease land pollution which contributes to insect vectors.	**4. A1** Identify 4 kinds of mangroves and their functions. **4. A2** Identify and suggest ways to eliminate threats to mangroves. **4. A3** Examine a variety of Bahamian native plants and their uses. **4. A4** Communicate ways in which native plant may be conserved.	**4. A1** Identify external features of a Spiny Lobster (crawfish) and research laws that govern its preservation and conservation. **4. A2** Identify external features of a conch and explain its importance to the Bahamian economy. **4. A3** Identify distinguishing external features and their function of a Nassau Grouper. **4. A4** Explain why the Nassau Grouper's population is endangered and suggest ways to conserve it. **4. A5** Infer ways in which our changing climate will affect our coral reef and investigate how coral nurseries are used to help conserve coral species. **4.A7** Explain the effects of pollution on marine resources and suggest ways to prevent ocean pollution.	**4.A1** Explain ways in which humans harm the environment. **4.A2** Describe effects of climate change and explain how climate change affects natural disasters and sea level rise. **4.A3** Suggest ways we may live more sustainably. **4. A4** Investigate alternative source of energy that do not require the burning of fossil fuels.

PACING GUIDE

GRADE 1 PACING GUIDE

No. of Weeks/Periods	Topics	Page No.
2/30 minutes period	The Human Body: External Body Parts/Function of Body Parts	54
1/30 minute period	The Human Body: Function of Sense Organs	55
2/30 minute periods	The Human Body: Stages in Human Development	57
1/30 minute period	The Human Body: Physical Changes	59
2/30 minute periods	The Human Body: Healthy Habits	60
2/30 minute periods	Living and Nonliving Things	62
1/30 minute period	Living Things: Plants Need/Animals Need	63
2/30 minute periods	Living Things: Uses of Plants and Animals	64
1/30 minute period	Living Things: Plant Structures/Parts	65
2/30 minute periods	Animals Body Coverings	66
2/30 minute periods	The Earth	67
1/30 minute period	Bodies of Water on Earth	68
2/30 minute periods	Earth Landforms	69
3/30 minute periods	Weather and Seasons	70 - 71
1/30 minute period	Changes in the Sky	73
1/30 minutes period	Properties and Changes in Matter: Physical Properties	74

GRADE 1 PACING GUIDE

No. of Weeks/Periods	Topics	Page No.
1/30 minute period	Properties and Changes in Matter: Physical Changes	74
1/30 minute period	Forces and Energy: Pushes and Pulls	75
1/30 minute period	Forces and Energy: Magnets	76
1/30 minute period	Uses of Nature	77
1/30 minute period	Paper Conservation	79
1/30 minute period	Animals Around Us	82
1/30 minute period	Litter	83
1/30 minute period	Protecting Plants and Animals	84

GRADE 2 PACING GUIDE

No. of Weeks/Periods	Topics	Page No.
1/30 minute period	Animals: Animals in the Environment	84
1/30 minute period	Animals: Body Coverings and Parts	86
1/30 minute period	Animals Movement	87
1/30 minute period	What Animals Need to Survive	88
2/30 minute periods	Animal Habitats	89
1/30 minute period	The Human Body: The Skeleton	91
1/30 minute period	The Human Body: Body Health	94
1/30 minute period	Plants: What Plants Need to Grow	96
1/30 minute period	Plant Parts/Plants Function	97
2/30 minute periods	Plants: Seeds	98
1/30 minute period	Earth's Resources: Rocks and Minerals	99
1/30 minute period	Earth's Resources: Uses of Rocks and Minerals	103
1/30 minute periods	Weather: Weather in The Bahamas	104
2/30 minute periods	Weather Changes: Weather Instruments	105
1/30 minute periods	How Weather Affects People	107
1/30 minute period	Changes in the Sky: The Moon and Its Changes	109

GRADE 2 PACING GUIDE

No. of Weeks/Periods	Topics	Page No.
1/30 minute period	Constellations	114
1/30 minute period	Force and Energy: Sources and Use of Energy	116
1/30 minute period	Force and Energy: Magnets	120
2/30 minute periods	Resources: Using Trees, Sand and Ground Resources	122
2/30 minute periods	Resources: Using the Sun and Wind	124
2/30 minute periods	Resources: Forest and Ocean Foods	125
2/30 minute period	Ways People Harm the Environment	126
2/30 minute periods	Ways People Help the Environment	127
2/30 minute periods	Ways People Help the Environment	127

GRADE 3 PACING GUIDE

No. of Weeks/Periods	Topics	Page No.
2/30 minute periods	Vertebrates: Characteristics/Traits	130
2/30 minute periods	Vertebrates: Mammals	131
2/30 minute periods	Vertebrates: Birds	132
2/30 minute periods	Vertebrates: Fish	135
1/30 minute period	Human Body: Nutrition and Healthy Habits	137
1/30 minute period	Human Body: Health Resources	138
2/30 minute periods	Plants: Plant Parts	139
2/30 minute periods	Plants: Function of Plant Parts	140
2/30 minute period	Earth's Materials: Natural Resources	141
1/30 minute period	Earth's Materials: Sources/Importance of Natural Resources	143
1/30 minute period	Earth's Air and Water: The Water Cycle	144
1/30 minute period	Earth's Air and Water: Clouds Formation	145
1/30 minute period	The Earth: Position of Earth in the Solar System	146
1/30 minute period	The Earth: Movement of Earth	147

GRADE 3 PACING GUIDE

No. of Weeks/Periods	Topics	Page No.
1/30 minute period	Seasons: Causes of Seasons	148
1/30 minute period	Matter: States of Matter	149
1/30 minute period	Matter: Changes in State	150
1/30 minute period	Matter: Physical Properties	151
1/30 minute period	Matter: Measuring Length	152
1/30 minute period	Matter: Measuring Mass	153
1/30 minute period	Measuring Volume	154
2/30 minute periods	Vectors	155
2/30 minute periods	Life Cycle of Vectors	159
2/30 minute periods	Pollution	162

SCOPE OF WORK

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Fundamental concepts and principles of life science include the study of living organism, their structure and function, their behaviours and their relationships with the environment.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: The Human Body **Strand 1: Characteristics of Organisms**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	1. Identify external body parts of humans.	• External: - outside. • The human body is made up of internal and external parts. Some external parts are: head, arms, legs, feet, nose, ears, eyes, lips, toes,and fingers.	• Observation • Make predictions • Collaborative work	• Cooperation • Questioning	**1.a. Human Model:** Cut out different body parts from a book or a magazine and stick them on a piece of paper to create flashcards. Teacher or student can pick up any one flash card. The player who picks it up gives clues and challenges the other player to guess the right body part. **b. What Do You See?** Using hand mirrors, have students view their external body parts and give a brief description. **c. Match Me if You Can:** Have students glue external body parts in the correct positions on an outlined sheet showing a boy or a girl.	www.momscience.com www.kidsz.com Harcourt Bk. 2	Using a human model, number the body parts. Have students name the numbered body parts by attaching the correct name to numbered parts. Create a Kahoot game on external body parts.

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Fundamental concepts and principles of life science include the study of living organism, their structure and function, their behaviours and their relationships with the environment.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: The Human Body **Strand 1: Characteristics of Organisms**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	2. Describe the functions of the following external body parts of humans (legs, arms, torso, head).	• Each external body parthas a function. • **Function** means the job of something. • **Locomotion** means movement. • **The legs** are used for locomotion, like walking, running, swimming and jumping. • **The arms** are used for holding, pushing, lifting, throwing and holding things. • **The head** houses the brain**,** which is the control centre of the body. • **The torso**, also known as the body trunk, is the area between the head and legs. The torso is used to bend and twist the body around.	• Observation • Make prediction • Collaborative work • Cooperation • Questioning	• Cooperation • Questioning • Curiosity	**1.a. Body Match:** Students will match the external body parts with its correct functions. **b. Body Collage:** Teacher will assist students in tracing their body outline. Then, using collage material, students will enhance each external body part. **c. External Body Song:** Using the song. "Head, Shoulders and Toes", the teacher will have students learn this song along with adding other external body parts to the song to help students recognize external body parts.	www.momscience.com Harcourt Health and Fitness Bk. 1	Have students put together an external body parts puzzle. Give them specific time to put puzzle pieces together. Have students' present body collages constructed. Have students sing the song "Head, Shoulders, Knees and Toes" with added body parts to the verses.

Fundamental concepts and principles of life science include the study of living organism, their structure and function, their behaviours and their relationships with the environment.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: The Human Body (Sense Organs) **Strand 1: Characteristics of Organisms**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	3. Identify the five sense organs in the human body.	• The Human has sense organs which enables it to tell what is going on in their environment. • **An environment** is the surroundings or conditions inwhich a person, animal or plant lives. • Human beings have **five** sense organs. They are: ○ **Nose** ○ **Eyes** ○ **Ears** ○ **Tongue** ○ **Skin**	• Making predictions • Make inferences	• Curiosity • Think independently	**1.a. Station Identification:** Create a chart or use a power point presentation to highlight pictures of an eye, tongue, ear, nose, and a hand. Using the following vocabulary words (see, touch, feel, hear and smell) mounted on hard card stock and pasted on popsicle sticks, instruct students to hold up the popsicle stick that highlights the correct function of each sense organ when called. **b. What's Your Taste?** Blind fold students and allow them to taste sample foods. Have students identify the foods using sense organs.	Science Horizon Kindergarten Edition Science Horizon Big Shared Book (Kindergarten)	On a flat Human Model, students will attach the correct sense organ card next to its body part. Using colour codes, have students complete a worksheet in which they use different coloured crayons to identify the five human sense organs.

Fundamental concepts and principles of life science include the study of living organism, their structure and function, their behaviours and their relationships with the environment.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: The Human Body (Sense Organs) **Strand 1: Characteristics of Organisms**

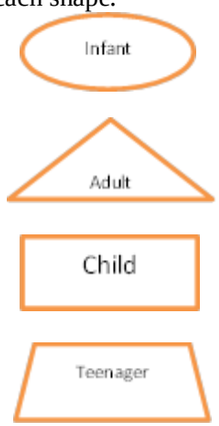
	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	4. Describe the functions of the five sense organs.	• We use our sense organs to observe, explore and learn about the environment. • **The nose** is used for smelling. • **The eyes** are used forseeing. • **The ears** are used for hearing. • **The skin** is used for touching and feeling. • • **The tongue** is used for tasting.	• Make predictions • Make inferences	• Curiosity • Think independently	**1.a. Sensory Station:** Teacher will set up tables with items for students to touch, see, smell, hear and taste. **Examples:** • **HEARING:** bells, whistle, drum,s etc. • **TASTE:** fruit, chips, etc. • **SMELL:** perfume, spices, etc. • **TOUCH:** sandpaper, fluffy teddy bear, etc. • **SEEING:** coloured paper, etc. **b. Sentence Construction:** Have students write one sentence using the five sense organs.	Harcourt Science Teacher's Edition Bk. 1 Harcourt Health and Fitness Bk.1 www.pinterest.com	The students will be given organ parts (cut out pieces) and organ function sentences. Match the correct organ part with the correct function sentence strip. Glue them on the paper provided. Create a model on one of the five sense organs. Write about it and present it to the class.

Fundamental concepts and principles of life science include the study of living organism, their structure and function, their behaviours and their relationships with the environment.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: The Human Body **Strand 1: Characteristics of Organisms**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	5. Identify the stages in human development.	Human beings stages of development: **infant → child → teenager → adult** • **An infant** is a young baby. The infant continues to grow into a child, a teenager, and then an adult. • **An adult** is a fully grown individual.	• Make inferences and draw conclusions • Pursue new knowledge	• Curiosity • Think independently	**1.a. Picture Frame** Students will make a pictorial representation of themselves from infant to five years. Students will use a timeline to label each picture. **b. Stages of Life** Using pictures showing the four stages of human development, have students place pictures in the correct order to show the stages of human development.	Science Horizons Bk.1 Harcourt Science Bk. 2 Harcourt Health and Fitness Bk. 1	Give each student four different shapes. Write a different stage on each shape. Have students put the shapes in the correct order by attaching a string to the pre-punched holes on each shape. 

Fundamental concepts and principles of life science include the study of living organism, their structure and function, their behaviours and their relationships with the environment.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: The Human Body **Strand 1: Characteristics of Organisms**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	6. Describe physical changes that occur at each stage of human development.	• Infants are small. They are born with no teeth and sleep a lot. Infants cannot care for themselves. From a baby, human beings enter the childstage. Children can talk, walk and run. They begin to learn how to take care of themselves. From this stage, a child moves into a teenager. Teenagers then become adults. Adults are able to care for themselves. They do not get taller but change as they grow older.	• Observation • Making inferences • Making predictions	• Thinking independently	**1.a. Picture Timeline:** Have students create a picture timeline in which they will gather pictures showing different stages of human development, using cut outs from magazines. **b. Growth Chart:** Make a growth chart. Measure the height of studentson the growth chart. Have students compare their heights.	Harcourt Science Bk. 2 Your Health Harcourt Brace Bk. 1 Harcourt Health and Fitness Bk. 1	Students will complete a worksheet in which they write a sentence or draw a picture in response to the following questions: 1. How does a baby look? 2. What are some things children can do that babies cannot? 3. How does a teenager look? 4. How does an adult act? Have students draw a picture of how they look now and another picture of how they think they would look as a teenager and an adult.

Fundamental concepts and principles of life science include the study of living organism, their structure and function, their behaviours and their relationships with the environment.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: Healthy Habits **Strand 1: Characteristics of Organisms**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	7. Describe habits that help keep people healthy. 8. Identify foods that help keep the body healthy.	• Healthy means being well. For our bodies to grow strong and healthy, we must eat healthy foods, exercise and get enough rest. • **Exercise** means to move the body. • **Rest** means to stop moving. Habits that can promote a healthy include bathing, brushing teeth, and washing hands before and after meals and after using the restroom. • Foods that help keep the body healthy include fruits, vegetables, meat, cereals and water.	• Making inferences • Drawing conclusions • Pursue new knowledge	• Curiosity • Think independently	**1.a. Wash Along and Sing:** While singing the song, "Bingo" for 20 seconds, teacher can have students show the proper way of washing the hands. **b. Picture Story:** Have students draw pictures of themselves and classmates participating in health activities. **2.a. Food-Store List:** Create a healthy food store list. **b. A Trip to the Food Store:** Set a table with items found in the food store. Have students shop for healthy food items.	Science Horizon Bk. 1 Focus On Science Level B. Harcourt Health and Fitness Bk. 1	Students will share their picture stories. Make a web with the words "Staying Healthy" in the middle. Draw and write at least three things you do to stay healthy. Complete a worksheet in which students will have to circle and colour healthy snack choices. Create a poster to show how to keep the body healthy.

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: Healthy Habits **Strand 1: Characteristics of Organisms**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	9. Infer what happens if your body is not kept clean and healthy.	• If we don't keep our bodyclean and healthy, we can become sick due to germs. • **Germs** are microscopic organisms that can make a person ill.	• Making inferences • Drawing conclusions • Pursue new knowledge	• Curiosity • Think independently	**1. a. Wash Up!** Using food colouring and sandshow students how germs canbe destroyed using soap and water. **b. Show Time:** Demonstrate several actions to the class. Discuss how the actions are unhealthy (e.g. sneezing in hands etc.	YouTube videos Science Horizon Level B Harcourt Health and Fitness Bk. 1	Have students write a short poem on keeping germs away from the body. Draw a picture showing how the use of soap and water can get rid of germs.

Fundamental concepts and principles of life science include the study of living organism, their structure and function, their behaviours and their relationships with the environment.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: Living and Non-Living Things **Strand 1: Characteristics of Organisms**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	1. Identify living and non-living things.	•**Living things:** are things that can grow, move, breathe, reproduce and excrete. Examples include: plants and animals. •**Non-living things:** are things that cannot grow, move, breathe, reproduce or excrete. Examples include: rocks, water, cars etc.	• Making inferences • Drawing conclusions • Pursue newknowledge	• Curiosity • Think independently	**1. a. A Day at The Farm** Visit a farm or take a nature walk. Have students identify living and non-livings they observe while at the farm or on the nature walk. **b. Box It!** Distribute boxes of materials with pictures of living things and pictures of non-living things. Have students sort the pictures into two groups (living and non-living). Label two boxes (living and non-living). Have students place pictures of living things in the box labelled 'Living Things 'and place pictures of the non-living things in the box labelled 'Non-living Things'.	Harcourt Science Bk. 1	Draw pictures of the living and non-living things observed on the farm or on nature walk. Have students collect examples of living and non-living things in the school yard, bring to class and categorize them as living and non-living.

Fundamental concepts and principles of life science include the study of living organism, their structure and function, their behaviours and their relationships with the environment.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: Plants and Animals **Strand 1: Characteristics of Organisms**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	1. Determine what living things (plants and animals) need to stay alive.	• Animals need air, food, water and shelter to live inits environment. • Plants need light, water, air,warmth, and nutrients from the soil to live in its environment. • **Environment:** is a place where living and non-livingthings interact.	• Making inferences • Drawing conclusions • Pursue new knowledge	• Curiosity • Think independently	**1.a. Plant a Seed** Plant seeds and investigate what plants need to grow. Share what you see. **b. Animals vs. Plants** Make a drawing of a plants and animals in an ecosystem. Make a list to tell what things are needed by the plants and animals in that ecosystem needs to survive.	Harcourt Science Bk. 1 Science Horizon Bk. 1	Make animal ecosystem using different materials. Place small animals and plants in the ecosystem. Worksheet on the needs of plants and animals.

Fundamental concepts and principles of life science include the study of living organism, their structure and function, their behaviours and their relationships with the environment.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: Uses of Plants and Animals **Strand 1: Characteristics of Organisms**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	1. Identify and describe ways people use plants and animals.	• People use plants for food,to provide clothing, shelter and medicines. Plants are also used to beautify our surroundings. • Many native plants such asaloe and rooster comb are used as medicines. • People eat the meat of someanimals and use their skin and other body parts to makeclothing, shoes and jewellery. • Some people also use animals to help them survive, work and as pets. • Working dogs help the visual impaired. Also somecanines are used as Police Officers. • Herding dogs, sled dogs, horses, cows and mules areused to pull carts.	• Making inferences • Drawing conclusions • Pursue new knowledge	• Curiosity • Think independently	**1.a. Name It** Using a game of Kahoot or Quizzes, have students play an identification game on plants and animals. **b. Classification** Students will work in cooperative groups to investigate things people use from plants and animals using picture cards. Students will classify the cards and sort them into groups by matching each picture with the plant and animal in which they are derived.	YouTube videos Science Horizon Level B Harcourt Health and Fitness Bk. 1	Create a class booklet of plants and animals that are used as food, medicine, clothing, furniture, shoes, shelter etc. Share findings from classification activity.

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: Living and Non-Living Things **Strand 1: Characteristics of Organisms**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	2. Explain how plant structures (parts) help them survive.	• Plant structures help it to live and survive. Some plants have different leaves,stems and roots that help them survive in their environments.	• Making inferences • Drawing conclusions • Pursue new knowledge	• Curiosity • Think independently	**1.a. Plant Cut Outs** Using coloured construction paper cut out plant structures. Have students discuss the parts and its functions. **b. Leaf Observation** Collect leaves from various plants. Place leaves in the sunlight for one hour and observe each leaf. Have students draw and colour pictures of the leaves before and after being exposed in the sunlight.	YouTube videos A World of Science Bk. 1	Draw a picture of a bee on a flower. Write or illustrate two ideas about how the bee uses its body parts and flower parts to survive. Draw a picture showing parts of a plant. Have students use vocabulary words to name each plant structure and give its function.

Fundamental concepts and principles of life science include the study of living organism, their structure and function, their behaviours and their relationships with the environment.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: Animal Body Coverings **Strand 1: Characteristics of Organisms**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	5. Explain how body coverings help animals survive.	• Animals have a variety of body coverings that help them survive. These body covering include, fur, scales,hair, spines, etc. • The body coverings of animals help them protectthem from weather conditions, protect them predators, help them camouflage etc.	• Making inferences • Drawing conclusions • Pursue new knowledge	• Curiosity • Think independently	**1.a. Scavenger Hunt** Have students using words and pictures move around the classroom for the animals in which each body covering belong. **b. Picture Me** Students will pick a name of an animal from a secret bag. The student will be giving a one minute to draw the body covering of the animal while the other students guess the name of the animal.	National Geographic online journals	Worksheet on animal body parts. Have students draw their favourite animal,highlight the body covering of the animal.

Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINE
SCOPE OF WORK

GRADE 1

Topic: The Earth **Strand 2: Properties and Structure of Earth's Systems**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS/	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE	1. Identify that earth is made up of land, water and air.	• We live on planet earth. • **Planet**: an object found orbiting the sun. • Earth is made up of land, water and air. Most of Earth is covered with water. • The **atmosphere** is a blanket of air that surrounds the earth. • **Air** is a mixture of gases.	• Formulate models • Observing	• Curiosity • Thinking independently	**1.a. Earth Model Display** Have students create a model of the earth using recycled material. Students will label the land, sea and air. **b. What on Earth Charades** Teacher will read characteristics of land, air and sea and have students guess which earth structure is being described.	A globe Harcourt Science Bk. www.Youtube.com Colouring sheets	Colouring worksheet Create a pamphlet providing facts about the earth's structure.

Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: The Earth **Strand 2: Properties and Structure of Earth's Systems**

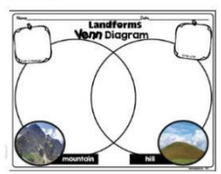
	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE	2. Differentiate among bodies of water on earth.	• Earth is covered with ¾ of water. • Most of earth is covered with salt water and the rest is covered with freshwater. • Some bodies of water that are found on earth are made of salt water and some are made of fresh water. • **Oceans**: a large body of salt water. • **Ponds:** a smaller body of salt water. • **Lakes:** a still body of fresh water surrounded by land.	• Observation	• Thinking independently	**2.a. Body of Water Field Trip** Have students visit various bodies of water. Observe and discuss similarities and differences. **b. Island Rep** On a sheet of paper, draw a shape of an island. On a separate sheet of paper, draw, colour and cut out four differentbodies of water. Paste and label bodies of water found onyour island.	Pictures of bodies of water found on Earth.	Write correct name of each body of water under each body of water picture.

Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: The Earth **Strand 2: Properties and Structure of Earth's Systems**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE	3. Compare and contrast earth landforms such as hills and mountains. 4. Investigate how hills are formed.	• **Landform:** is any kind of structure or formation that is solid, made of dirt including soil and rock, found on the Earth's surface. • Some earth landforms include hills, valleys, mountains and flatlands. • **A hill:** is a raised area or mound of land. • **A mountain:** is the highest kind of land. • Hills are formed when bits of rock, soil, and sediment get washed away and placed in a pile somewhere else.	• Making inferences	• Thinking independently	**3.a. Clay Modelling** Using clay, have students make models of two different landforms after viewing a YouTube video on landforms. **b. Landform Collage** Using pictures found in magazines, have students create a landform paper collage highlighting different types of landforms. **4.a. Hill Creation** In groups have students make a hill model using soil, sand water. **b. Picture Me** Students will draw a picture of them on a hill	www.YouTube.com	1. Complete a fill in the blank worksheet on landforms. 2. Use a Venn Diagram to compare and contrast land forms.  1. Draw a picture of yourself on the hill. Write at least two sentences to tell about your picture.

Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: Weather and Seasons **Strand 2: Properties and Structure of Earth's Systems**

EARTH SCIENCE

LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
1. Define the term weather and identify types of weather. 2. Observe and record weather changes using the thermometer.	• **Weather:** is what the air outside is like. • Weather is always changing. Weather can be warm, cool, snowy, windy, rainy, cloudy or sunny. • **Thermometer:** a tool used to measure temperature (how hot or cold something is).	• Making inferences	• Curiosity	**1.a. Weekly Meteorologist** Using a weekly weather chart, have students record the weather using basic weather symbol drawings. Mon. | Tues. | Wed. | Thurs | Fri. Draw or write what you observe and record on the chart. **b. What Do You See?** Have students look outside the window and observe what people are wearing. Ask: What can you tell about the weather based on how people are dressed? Repeat each day of the week. Make a chart to show. **2.a. Thermometer Model** Using paper and plastic and other materials, have students create a thermometer.	www.quizzes.com	1. Create a flip chart using pictures or words to show four different weather conditions. Have students present findings from weather record chart. Have students record temperatures of objects before and after being placed in the sun.

Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: Weather and Seasons **Strand 2: Properties and Structure of Earth's Systems**

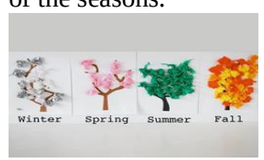
	LEARNER OUTCOMES	CONTENT/CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE	1. Observe clouds and how they are formed.	• Clouds are found in the sky. Clouds help us to decide what type of weather to expect. • Light, fluffy clouds often mean that there will be nice, sunny weather. • Thick, grey clouds often bring rain or snow. • Clouds are created when water vapor, an invisible gas, turns into liquid water droplets.	• Observation	• Thinking Independently	**1.a. Clouds in a Jar** Materials: Jar with lid, warm water, and ice cubes. Procedure: **i.** The teacher will put warm water in the jar. **ii.** Turn the jar lid upside down on the jar. Observe. **iii.** Place ice on the lid. Observe. Infer how clouds are formed.	www.liveworksheets	Fold a construction paper in half. Cut out a cloud shape. Open the paper. On one half of the paper draw clouds you would see on a sunny day. On the other half draw clouds you would see on a rainy day.

Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: Weather and Seasons **Strand 2: Properties and Structure of Earth's Systems**

	LEARNER OUTCOMES	CONTENT/CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE	1. Name the four seasons.	• A season: is a time of year. • There are four seasons. They are spring, summer, fall and winter. • Weather changes when a new season comes. • **In spring** the weather gets warm, the rain falls and plants begin to grow. • **In summer** the weather can be hot, plants grow leaves and flowers. • **In fall** the weather gets cool. Some trees lose their leaves. • **In winter** the weather can get very cold and snow sometimes fall. • In the Bahamas the weather is mostly sunny all year round.	• Engage in collaborative activities	• Questioning and Posing Problems	**1.a. Four Seasons Portfolio** Have students create a giant four-page seasons portfolio highlighting the four seasons. Students will add pictures showing what happens, and what can be seen during each season, or things they like to do in each season. **b. Season Fashion Show** Students will dress in outfits that are worn during each season. Engage students in a discussion as to why their outfits are appropriate for each season.	Pictures www.fourseasons.com	Give students a circle wheel divided into four sections. Write the names of a season on each section. Then draw how a tree would look during each season of the year. Have students dress up a handmade tree to depict one of the seasons. 

Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: Changes in the Sky **Strand 2: Universe and the Solar System**

	LEARNER OUTCOMES	CONTENT/CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE	1. Identify and discuss the importance of the sun. 2. Name natural objects seen at night time. 3. Explain the difference between day and night.	• The sun is a star. • A star is an object found in the sky that gives off light. • The sun is the closet star to Earth. • The sun lights up the sky each day. It is made up of very hot gases and heats the earth. • Some stars make a pattern called constellations. • At day time you may see the sun and clouds. • In the night time sky, you will see stars, planets and the moon. • The moon is a huge ball of rock. • Sunlight reaches one part of the Earth at a time. As the earth turns, it causes day and night. The part that sunlight reaches is called day. The part that sunlight does not reach is called night.	• Communication	• Observation	**1.a. Day Time Creation** Make model of the sun. Draw pictures illustrating activities that can be done on a sunny day. **2.a. Night Time Creation** Make a model of the moon. Draw pictures illustrating activities that can be done at night. **3a. Act it Out** Students will play charades to act out day and night.	Telescope Learning charts	Write sentences describing things you enjoy doing at day time. Write sentences describing things you enjoy doing at night time.

Fundamental concepts and principles of physical science include the study and analysis of the nature and properties of living and non-living matter and energy.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: Properties and Changes in Matter **Strand 3: Properties and Changes in Matter**

	LEARNER OUTCOMES	CONTENT/CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
PHYSICAL SCIENCE	1. Define the term matter. 2. Classify objects according to their physical properties such as size, colour, shape and size. 3. Experiment to describe physical changes in matter.	• **Matter** is anything that has weight and takes up space. Examples: water, air, desk, chair, rock etc. • Through our senses, we become aware of the world around us. Our senses help us learn about things. Everything in our environment is called matter. • Matter occurs in different shapes, sizes, colours, textures and weight. • We can change the size, weight, colour, shape, texture, state, etc. of matter. These changes are called **physical changes**. • A physical change occur when matter change forms. • The three states of matter are **solids, liquids and gases.**	• Making inferences	• Thinking independently	**Photo View** 1. a. Have students view a photo showing different items. Have students give examples of matter in the photo. **Nature Walk** 2. a. Take students on a nature walk around the school. b. Have one group identify things in nature that have specific colours. E.g. leaves,flowers, rocks animals etc. **Discovery Quest** 3. a. Students manipulate tools for measuring weight and length. b. Give students a blank sheet of paper and have them change the shape, size, colour and lengthof the paper.	Harcourt Science Bk. www.Youtube.cpm	Have students draw pictures of objects found in the classroom that are examples of matter. After blind folding the eyes of students, have students put a hand in a bag to guess what the object is by its shape and texture. Other objects can be used for students to infer what they are by using the 5 senses. Have students observe what would happen to ice if left outside the freezer. Then have students write one sentence explaining what they observed. Students will make a **State Matter Kit** consisting of 2 items that are solid, 2 liquid and 2 gas.

Fundamental concepts and principles of physical science include the study and analysis of the nature and properties of living and non-living matter and energy.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: Forces and Energy **Strand 3: Forces and Energy**

	LEARNER OUTCOMES	CONTENT/CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
PHYSICAL SCIENCE	1. Compare pushes and pulls.	A force is a push or a pull. Pushes and pulls make things move or stop moving. A push or a pull can make something change direction. A hard push moves things quickly, but a gentle push moves things slowly. When objects are pushed, they move away from us, but when objects are pulled, they move towards us. Heavy objects need more force to be moved than light objects. Forces such as wind and flowing water can be used to make things move also.	• Making inferences	• Collaboration	**Guess What** 1. The class will be divided into groups. Each group will be given an activity to perform by pushing or pulling, the other students will guess what the group is doing. 3. Students demonstrate how they would move a big boulder. Then, they would demonstrate how they would move a box of cotton. Class discussion would follow to compare the activities. 4. Students make a model of a windmill. Using photos have students identify whether a push or pull is taking place.	Harcourt Science Bk. 1 Harcourt Science Bk. 2 www.regentedu/acad/schedu/pdf/mcms/force_motion_energy-gr.1pdf www.eduplace.com/kids/hmxs/gl/magnets/cricket//sec14cc.html	I. The students will draw two pictures to show a ball is being caught. Write two sentences to explain how they caught the ball. Use the words push or pull to explain. Using a picture showing a person grocery shopping with a trolley. Write three sentences to explain how the trolley was moved. Use the words push and pull.

Fundamental concepts and principles of physical science include the study and analysis of the nature and properties of living and non-living matter and energy.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: Forces and Energy **Strand 3: Forces and Energy**

	LEARNER OUTCOMES	CONTENT/CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
PHYSICAL SCIENCE	2. Observe and identify poles of a magnet.	A magnet is a piece of iron that can attract or pull things. The things it pulls are usually made of metal. Some magnets are found in nature (lodestone). A magnet has two poles. These are the places where its pulling force is strongest. Every magnet has a north pole and a south pole. They are often called the N pole and the S pole. Two poles that are different attract each other. Two poles that are the same, repel or push each other away. -Repel:-	• Observations	• Curiosity	1. Divide students into groups. Give each group 3 objects to predict whether a magnet will attract it or repel it. Then they will experiment to test their predictions. All of the objects will be classified under the headings: Attract and Repel. Making magnets: The students will be divided into groups. Metal objects such as paper clips, nail, and scissors will be placed in each group. Each object will be tested to see if it would attract paper clips. Then the objects will be stroked twenty times in the same direction.	Magnets Iron filings	Students use magnets to pick up paper clips, pins or thumb tacks to demonstrate the objects that will be attracted. They will draw the picture after making the observation. Under the picture, explain where the poles are on the magnet and state how they know that. Group assessment. Each group will be given objects to use as a magnet: nail, pen, file, comb, etc. They will stroke the objects to magnetize them. Then, they will attempt to attract objects such as tissue, yarn, thread, paper, etc. This activity will be demonstrated in front of the class. The assessment will be based on the success of the experiment.

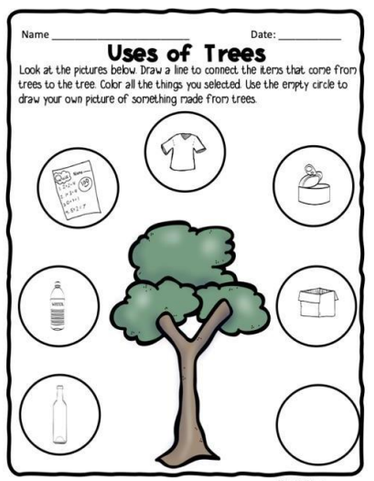
Fundamental concepts and principles of environmental science include the investigation and articulation of ways to conserve and manage natural resources.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: Uses of Nature

ENVIRONMENTAL SCIENCE

LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
1. Identify products we use from nature. 2. Identify products that come from trees.	Nature is made up of sunlight, air, water, land, plants, and animals. We need each of these elements to live. Trees provide many benefits to us and other living things. Plants provide food for animals and for people. We make cloth from some plants, such as cotton. Plants also help clean our air. We eat apples, oranges, grapes, tomatoes, lettuce, carrots, potatoes, beans, nuts, etc. We cut trees down to make many wood and paper products such as newspapers, wood toys, furniture, tissue, books, cardboard, boxes, plates, cups, napkins, etc.	• Observation • Communication	• Curiosity • Use resources wisely • Critical thinking • Creativity • Positive attitude to failure • Perseverance • Flexibility /adaptability • Questioning and Posing Problems • Creativity • Thinking independently • Cooperation • Open to new ideas	**Read Aloud** Have students read the story Marie's Pine tree **Nature Walk** Take students on a nature walk, either in a nearby park, trail or around the schoolyard. Have them point out the various elements of nature (e.g., sun, water, soil, rocks, trees, flowers, animals) and talk about why they are important. **Class Discussion** Sit students in a cool spot outdoors and talk about what a tree looks like and what it gives us. Do a sing along with them. Then, using a collection of objects or pictures, ask students to identify which come from trees and which do not. (Only some of the objects should be made from trees.)	Pictures or a collection of various objects The Giving Tree story https://archive.org/stream/TheGivingTree/The_Giving_Tree_djvu.txt *(To the tune of "Twinkle, Twinkle Little Star")* Don't waste paper, Save a tree. It is good for you and me. *Save a tree*, is our song. Everyone should sing along.	**Exit Ticket** **https://bnt.bs/curriculumhub/** 

Fundamental concepts and principles of environmental science include the investigation and articulation of ways to conserve and manage natural resources.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: Paper Conservation

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	SKILLS	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
ENVIRONMENTAL SCIENCE	3.Summarize /sequence actions that help conserve paper and keep the environment clean and litter-free.	Wasting paper uses up trees, which are important in our environment because they regrow slowly. **Littering** the environment with paper and other wastes looks bad, harms animals, is unhealthy, and is not fair to others. **Recycling** paper instead of putting it in the trash will help save trees. Everyone needs to help save paper and trees and keep our environment beautiful and clean.	• Compare and contrast behaviours. • Communicate	• Take only what you really need when using paper towels, napkins, tissues, and other things made from paper. • Use washable towels, napkins, plates, and cups instead of throw-away paper ones when you have the choice. • Recycle paper. Put trash in trash cans; do not litter. Etc. • Use only as much water as needed.	**Story** Read the story Jesse's Beach Party **Class Discussion** Display various items found in litter. Have students, using gloves, identify each item and separate the litter into items that are made from trees and items that are not made from trees. Once the items are separated, elicit from students what should be done with such items in the future. (*Some of the items should have been disposed of in trash cans, such as food wrappers. Tissues and copy paper can be turned into soil (composted). Paper such as newspapers and paper bags can be reused*.) Have student infer ways we could use less paper. **Investigation** Have students investigate behaviours thathelp conserve paper and keep the environment clean and litter-free by taking a litter walk around the school,	Treehouse party https://bnt.bs/curriculumhub/ Bring in various items that are commonly found as litter, both wood-based (e.g., candy wrapper, gum wrapper, food box, fast-food wrapper, paper bag, newspaper, popsicle stick, tissue, paper cup, paper plate, advertising flyer, torn comic book, store receipt, envelope) and nonwood-based (e.g., plastic bag, aluminium can,glass bottle, banana peel, old shoe, pen). *(to the tune of "London Bridge")* Don't use two when one will do, One will do, Think. Gloves	**Exit Ticket** **https://bnt.bs/curriculumhub/**

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: Paper Conservation

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
ENVIRONMENTAL SCIENCE					and seeing what kinds of litter they can find. Help them classify what they find into two groups. Things made from trees and those that are not. Once the items are separated, ask students what should have been done with all the paper products they found on the ground. (*see suggestions in 2 above).* Explain that some of the other litter items (aluminium can and glass bottle) canalso be used to make new aluminiumcans or glass bottles. Other items— food waste, broken pen—should be disposed of in the trash can. Have students put all the litter, except the recyclables, into the class trash can. **Scenarios** Read aloud or create a worksheet called "what prevents litter" where students will have to decide which picture shows the proper way to dispose of paper. Each row should have a series of illustrations depicting two different scenarios:		

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: Paper Conservation

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
ENVIRONMENTAL SCIENCE					One with the correct way to dispose of paper trash and the other with the wrong way. Have students identify the illustration that shows what the person should do with the paper trash. **Examples:** **1.** Jimmy and his parents are driving a long way to the beach. Should Randy throw the trash from his snack out of the car's window (*picture 1*), or should he put the trashin the litter bag in the car? (*picture 2)* **2.** Cassandra, Lynn, and their friends are having a picnic in the national park. When they're finished eating, should they pick up their trash and put it into the trash can in the park (picture 1) or should they leave the trash on the picnic bench? *(picture 2*) **3.** Jean is at the movies. Should he leave his popcorn box on the floor when he leaves (picture 1) or should he take the popcorn box to the trash can to throw it away? (*picture2*)		

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: Paper Conservation

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
ENVIRONMENTAL SCIENCE					4. Shirley is walking to her classroom. She sees a crumpled piece of notebook paper on the ground. Should she pick up the paper so that she can put it in the trash can (*picture 1*) Or should she leave the paper on the ground since she didn't put it there? (*picture 2*)		

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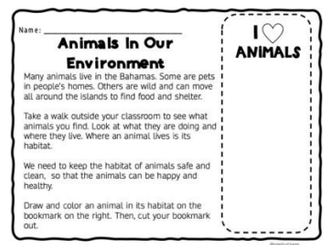
CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: Animals Around Us

ENVIRONMENTAL SCIENCE

LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	• RESOURCES	METHOD OF ASSESSMENT
a. Investigate what kind of animals live in a school yard.	Many animals live in the Bahamas. Some are pets in people homes and others are wild and move all over the islands to find food and shelter. Three common easily seen animals are various types of birds, lizards, and butterflies Some of the species we see in the Bahamas only spend their winter or summer here. These include sharks, butterflies, sea turtles and birds (Migratory animals). It is important for people on both sides of the world to take care of them.	• Make inferences • Investigate • Record • Make observations		**Investigation** Have students investigate what kinds of animals live on your school campus by guiding them on a nature walk along the border of the school yard or in a "forestry" or grassy area nearby. Give each group of 5 students an animal checklist on a clipboard to record sighted animals. If any animals are caught, they should be released unharmed before returning to the classroom. You may use a smart phone to capture pictures that you can share from a projector or smart board when you return to the classroom. **Group Presentation** Have students do cooperative group presentations of what animals live in their school yard. **Graph** Guide class to create a pictograph based on their findings of what animal live around their school.	Checklist of animals that students are likely to see around your campus. The list may include birds, butterflies, beetles, moths, wasps, spiders, lizards, snakes, grasshopper, caterpillars, bees, and dragon flies. Smart phone (optional) Grade One Resource Pack at https://bnt.bs/curriculumhub/ Migration video https://www.youtube.com/watch?v=vAtMF49bR28&list=RDvAtMF49bR28&start_radio=1&t=37	**Exit Ticket** **https://bnt.bs/curriculumhub/** 

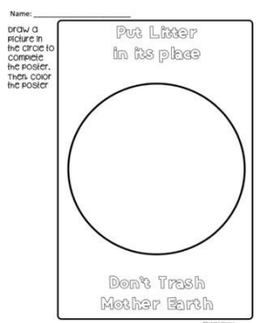
Fundamental concepts and principles of environmental science include the investigation and articulation of ways to conserve and manage natural resources.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: Litter

ENVIRONMENTAL SCIENCE

LEARNER OUTCOMES	CONTENT/CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
b. Investigate how litter can harm plants and animals.	Everything comes from the environment. The natural environment provides valuable resources for us to live. We waste natural resources in many ways in our homes. Wasting natural resources is not good for the environment. We can **conserve** natural resources and produce less waste in many ways.	• Investigate • Analyse	• Preserve protected places	**Obstacle Course** Plan a simple obstacle course around your classroom or in the outdoors. Each obstacle will represent a challenge that migrating (visiting) animal face. Explain that visiting animals' lives can be full of danger, some of which are represented in the obstacle course. You should note that animals may not encounter the obstacle every day, but many will encounter them as they travel from the Bahamas to other parts of the world. **Bumper Stickers** Lead a discussion on ways we may protect animals such as not littering. Have students design bumper stickers to encourage people to refrain from littering **Class Discussion** Show picture of environmental infractions, lead discussion on why those infractions can be corrected and what would be a better alternate decision in each of the cases.	Bits of paper song https://www.youtube.com/watch?v=rFFsQyZulZ4 Pictures of environmental infractions	**Exit Ticket** **https://bnt.bs/curriculumhub/** 

Fundamental concepts and principles of environmental science include the investigation and articulation of ways to conserve and manage natural resources.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 1

Topic: Protecting Plants & Animals

	LEARNER OUTCOMES	CONTENT/CONCEPT	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
ENVIRONMENTAL SCIENCE	c. Explain how we may protect plants and animals	In the Bahamas there are many areas called **National Parks**, where plants and animals are protected. However, animals move from place to place. They are not always in the national parks. We must do our part to keep our environment clean, so when animal move around they do not get sick from eating garbage or hurt from getting trapped by garbage.			**Fieldtrip** Take a field trip to a National Park (Nassau, Grand Bahama, Abaco, Inagua, Eleuthera, Exuma, Andros, Crooked Island, San Salvador) or a place that houses protected animals such as Ardastra Garden and zoo (Nassau), Pineville Motel (Andros), Garden of The Groves (Grand Bahama) or Adventure Learning Center (Nassau) **Guest Speaker** Invite a guest Speaker from an environmental agency or non-profit organization to speak about protected plants and animals. **Planting** Demonstrate or have students propagate a native tree. Discussion how we care for native plants in the beginning. Talk about how native plants, (once they start growing) require very little care because they are best suited for growing in the Bahamas.		**Exit Ticket** https://bnt.bs/curriculumhub/

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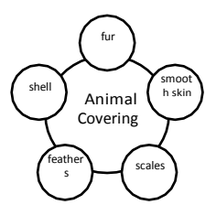
CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Animals - Animals in the Environment **Strand 1: Characteristics of Organisms**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	1. Identify animals in your environment.	• There are many animals in the world. • Animals that are similar are placed in the same group. • Scientists use grouping to study the habits of animals. Example: chicken, goat, turtle, snake dog, bear, camel, elephant, giraffe turkey, etc.	• Observing • Recording	• Display interest in and respect for animals.	1.a. Go on a nature walkaround the school. Provide the students with a list of possible animals they may observe. Have the students tick animals on the list that are observed. 1b. Make a mural of animals using pictures cut from magazines. 1c. Students will observe and discuss a PowerPoint presentation -How Scientist Classify Animals?	The Mailbox – worksheet Materials: small containers Materials: magazines https://betterlesson.com/lesson/631841/classifying-animals	Animal Scavenger Hunt - Create a list of animal features for students to find in their environment. Example: Find and animalthat has feathers_____. Students are given a list of animals to place underthe correct heading: shell, fur, feather, scales and smooth skin. Example: lizard, snail, fish, pigeon, etc. 

Fundamental concepts and principles of life science include the study of living organisms, their structure and function, their behaviours and their relationships with the environment.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Animals – Body Coverings and Parts **Strand 1: Characteristics of Organisms**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	2. Group animals by body coverings and parts.	• Some of the things that scientists look for when deciding which group to put an animal in, are the animals' body parts, what materials cover the animals' body, and how the animal moves. • Some animal body coverings and parts include birds with feathers and wings, fish with scales, fins and a tail, dogs with hair and legs, bears with fur, snails with a shell and frogs with a smooth skin.	• Observing • Recording		2a. Cut out various pictures of animals. Glue them onto coloured paper into groups based on body coverings and parts. Discuss why each animal belongs in a certain group. Predict how they move, based on the body parts observed. 2b. Display pictures of different body coverings and parts of animals. Have the students write the name of an animal that has that body covering or part. 2c. Kahoot Game - Guess the Animal.	Liveworksheet https://www.liveworksheets.com/gm1565337zh embed.kahoot.	Students work in cooperative groups to put puzzles where animals must be matched with their correct body parts or coverings. Then write the name of the animal and how it moves under the completed puzzle.

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Animals – Movement **Strand 1: Characteristics of Organisms**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	3. Describe different ways in which animals move.	• Animals move in different ways, such as walking, running, jumping, swimming, hopping creeping and flying.	• Observing • Recording		3a. .Play the game "Animal Charades". The students will choose a word card with the name of an animal on it. They will act out the way the animal moves and the class will guess the name of the animal. 3b. Have students choose an animal from a box. Demonstrate how the animal moves. Write a sentence about it. **3c. Grouping Animals Animal Sort** The students will complete an interactive sorting activity on how animals move.	Materials: animal word cards, glue, coloured paper http://www.crickweb.co.uk	

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Animals – What Animals Need to Survive **Strand 1: Characteristics of Organisms**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	1. Identify things animals need for survival.	• Animals need food, air and water to live. Animals also need a safe place to live. A **shelter** is a safe place to live.	• Observing • Communicating • Measuring	• Curiosity of how animals survive	1a. Make a flipbook to show the basic needs of animals - include food, air, water and shelter to live. 1b. Create an Animal. Draw and colour a pictureof your animal. Then, listthe following: o your animal's name o your animal's basic needs o where your animal lives 1c. The students will view a video and complete a worksheet on what animals need to survive.	https://www.readingrockets.org/content/pdfs/conceptmap1.pdf	Create a concept map of what animals need to survive. Create a brochure all about animals. In it, write: What Animals Need to Survive.

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Animals – Animal Habitats **Strand 1: Characteristics of Organisms**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	2. Define the term habitat. 3. Compare animal habitats.	• A place where an animal lives is called its **habitat**. Animals find habitats where they can meet their needs. Animals get food, water and shelter from their habitats. Example: forest, ocean, ponds, garden • Animals can live on land. Example: dogs and lizards. They can live in water. Example: turtles, frogs and	• Observing • Recording		**2a. Habitat Diorama** Discuss what a habitat is. Make a Habitat Diorama. **2b. Animal Habitats** Have the students draw four different habitats. Then paste a picture of an animal found in each habitat. 2c. Play the interactive game "Match the Habitat". **3a. Animal Habitat Hunt** Have the students go outside. Give students card with an animal on it and a short description of its habitat. See how many habitats the students find as a class. Make a list of the habitat and the animal foundthere.	www.bbc.co.uk/bitesize www.cserc.org/sierra-fun/games/match-habitat/ Liveworksheet https://www.liveworksheets.com/jl1818499tq Worksheet place.com Animal –Habitat	Give students a sheet with scenes of two different habitats. Have students work in pairs. Instruct them to draw animals that live in each habitat. Then cut out and glue them on the appropriate habitat. Complete the following worksheet.

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Animals – Animal Habitats **Strand 1: Characteristics of Organisms**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE		fish. Animals can even live in trees. Example: birds. Animals can also live under the ground. Example: crabs, worms and ants.			**3b. Habitat Hero** Have the students make a simple habitat and place them outdoors to helpan animal. **3c. Habitat Maker** Have the students use this online game to create different habitats. 3d. Field Trip to Ardastra Gardens & Zoo	www.mrnussbaum.com	

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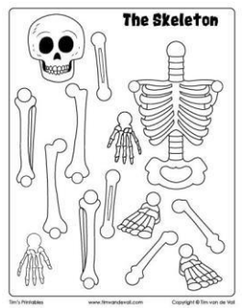
CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: The Human Body - The Skeleton **Structure and Function of Living Systems**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	1. define the term skeleton	• All the bones in the human body together are called the **skeleton.**	• Observing • Communicating • Measuring	• Appreciate differences among humans • Curiosity • Cooperation	1a. Make a skeleton model using everday materials. e.g. straw, pasta, paper plates. Discuss the function of the skeleton. 1b. Make a moveable skeleton using cut outs of the parts and join them with string. **1c. Build a Skeleton** Students will build a skeleton by dragging and dropping pieces.	https//classroom kids health.orgbody parts Materials: straws, pasta,paper plates (Skeletonmodel) teacher planet Materials: bulletin board paper, measuring tape dairy.edu.au/build-a-skeleton Liveworksheet https://www.liveworksheets.com/if1899576rh	Cut and Paste bones to create a skeleton model.  Write two sentences to tell what the skeleton does using word cards. For example: movement , skull, ribs, heart, brain

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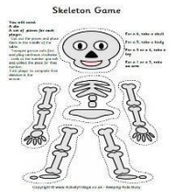
CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: The Human Body – The Skeleton **Structure and Function of Living Systems**

LIFE SCIENCE

LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
2. Identify the main bones and their function	• Some bones that make up the skeleton are: skull - protects thebrain ribs - protects the heart and lungs. backbone - protectsyour spinal cord	• Observing • Communicating • Measuring		2a.. The students will play the Skeleton Game  2b. Have students work in groups of three to trace a body using chalk on black bulletin board paper. Then measure and record the length of the outline. Have students add in the bones. 2c. Label the main bones of the human skeleton by dragging each label to the right place.	preschoolactivitie Skeleton Game www.sciencekids.co.nz/	Human Skeleton - The bones and the parts they protect Complete the chart using words and pictures. Bone / Body part it protects / Picture of the organ 1. ribs 2. skull 3. backbone

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: The Human Body – The Skeleton

Structure and Function of Living Systems

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	3. Explain the function of the skeleton	• The job of the skeleton is to hold up your body and give it shape. • Some bones help you to move such as your leg, arm, and hipbone. • Your **backbone** helps you to stand up straight.	• Observing • Communicating • Measuring		3a. Have students use an outline of a human skeleton. Label the main bones and write two sentences to tell the function of the bones. 3b. Have students view a model or picture of a skeleton. Discuss the function of the skeleton. Then demonstrate function/job of the skeleton using actions. **3c. YouTube Video** Students will observe and discuss the video on the human skeleton and its functions.	www.youtube.com/watch	

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: The Human Body - Body Health **Structure and Function of Living Systems**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	1. Examine ways to keep the body healthy.	• It is important to keep the body fit so we can be healthy and happy. • We can keep our bodies healthy by eating **balanced diets**, exercising, playing, resting and keeping ourselves and surroundings clean. • We can also keep healthy bathing, brushing teeth, and washing our fruits and vegetables.	• Interpret and make conclusion from data • Observing	• Appreciate the need to care for our bodies in order to live a healthy life.	1. Keeping Healthy Charades – Have students mime/act out ways to keep the body healthy and have the other students guess what they are doing. If the pupils have trouble thinking of things to do write them on small pieces of paper, fold and let pupils choose an activity without the rest of the class knowing. Discuss why each activity is important. 1b. Using props have students choose one object and demonstrate how it is used to keep us clean and healthy. Then have the students list ways of keeping our body healthy. 1c. YouTube Video- How to keep your body clean and healthy - Students will watch the video and complete the online activity.	www.bestbones forever.gov. Materials: toothbrush,towel, soap, skipping rope	Give the students a paper plate. Have the students divide the plate in four. Then draw and label activities that keep them healthy. Example Template: Complete the worksheet. Fill in the blanks. Use the words from the box below. milk diet vegetables exercising

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: The Human Body – Body Health **Structure and Function of Living Systems**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	2. Explain howhealthy habits affect bones	• You can keep your bones strong and healthy by: eating the right foods such as milk, cheese andvegetables. exercising every day helps to make bones stronger such as walking,running, playing, and swimming.	• Interpret and make conclusion from data • Observing		2a. Make a fruit smoothie with native fruits in season. Discuss how eating healthy helps our bones. 2b. Play music and have students complete a series of exercises to work different parts of the body. 2c. Watch a video and then complete an online activity.	Materials: native fruits youtube.com/watch?v=mN5ZwgT8fMw https://www.bbc.co.uk/bitesize/topics/z9yycdm/articles/zxvkd2p	You can keep your bodyhealthy by eating a balanced____and _____. You can keep your boneshealthy by drinking _____and eating fruits and_____. Students work in groups to create a flyer encouraging the practice of healthy habits and how to keep bones healthy.

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Plants - What Plants Need to Grow **Structure and Function of Living Systems**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	1. Experiment to tell what plants need to grow.	• Plants need light, air and water to grow. It also needs nutrients or minerals from the soil. • Each part of a plant helps the plant to get what it needs. Most plants get light from the sun. • Plants get water and minerals from the soil. • When a plant gets what it needs, it can grow and change	• Observation • Experimenting • Measuring • Classifying	• Display interest and respect for plants.	1a. Plant 2-3 seeds in the soil and water the seeds. Put the cup in a sunny spot. Observe and draw what you see every 2 or 3 days. Measure your plants once a week. Record your results. 1b. Observe a plant using a hand lens. Identify each of its parts. Draw a plant and label its parts. 1c. Students will complete a Quizziz activity online -Plants need water, light.	Materials: Various seeds, plants, hand lens, containers, cups, soil, fruits Twinkl.co.uk / plants need worksheet https://quizizz.com/ Worksheetplace.com Liveworksheet https://www.liveworksheets.com/or38457xx	Example Template: Complete a worksheet- Plant Needs…

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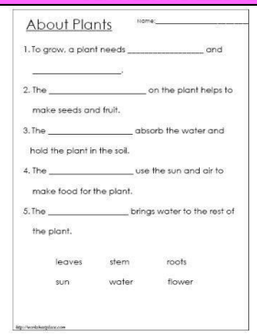
CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Plants – Plant Parts **Structure and Function of Living Systems**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	2. Observe plants to identify plant parts.	• Plants have different parts. • Most plants have roots, a stem, and leaves. • Many plants also have flowers. • Each plant part has a special job to do in order for the plant to live and grow.	• Observation • Experimenting • Measuring • Classifying		2a. Play a matching game. Match pictures of plant parts to the correct labels. 2b. Collect a variety of seeds from fruits. Use hand lenses to observe the seeds. Discuss how the seeds are alike and different. **2c. Parts of a Plant online Activity** Drag and drop words in a box to label the parts of a plant.	Worksheetplace.com www.turtlediary.com/game/plant-parts-labeling.html Liveworksheet https://www.liveworksheets.com/jl443645em	 Make a model of a plant using various art materials provided and label its parts.

Fundamental concepts and principles of life science include the study of living organisms, their structure and function, their behaviours and their relationships, with the environment.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Plants: Seeds **Structure and Function of Living Systems**

LIFE SCIENCE

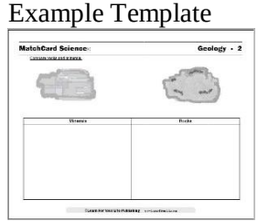
LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
3. Identify seeds from various plants. 4. Classify seeds according to colour, size andshape.	• Different plants grow from different seeds. Example: tomato, mango, tamarind, watermelon, corn, peas, beans and sunflowers. • Seeds can be classified or grouped according to their shape, size and colour.	• Observation • Experimenting • Measuring • Classifying		3a. Before the lesson have each student bring afruit from home (If possible have a few extra fruits on hand for students without). Instruct the students to eat their fruit and save the seed (s) on a plate. Discuss how the seed looks, the most popular seed among the students etcetera. 3b. Matching Seed Game Provide the students pictures of plants and containers with different seeds. Have them match the seeds with the correct plant. 4a. Use sorting bins or paper plates marked off in sections to classify a variety of seeds according to colour, size and shape. 4b. Place students in cooperative groups. Give each group a blank graphic organizer and a set of bags each containing seeds from a fruit. Complete the graphic organizer (seasonal fruits can also be used). Black Seeds | White Seeds | Brown Seeds | |	Liveworksheet https://www.liveworksheets.com/vz722412lc Liveworksheet https://www.liveworksheets.com/lr1241403tr	Give students a worksheet with pictures of various fruits on it. Students will cut out pictures of various seeds and glue it onto the correct fruit.

Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Earth's Resources - Rocks and Minerals **Strand 2: Universe and the Solar System**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE	1. Compare and contrast rocks and minerals	• **Resources** are things we get from living and non-living things such as rocks, soil, water and air to meet our needs. • A **mineral** is a natural solid found in the earth. People find minerals in rocks. Copper, graphite and diamonds are minerals. • A **rock** is a hard, non-living thing that is made up of one or more minerals from the Earth. Some rocks are: marble, limestone, pumice and sandstone.	• Observing • Recording • Classifying • Communicating	• Curiosity about rocks and minerals. • Appreciate the importanceof rocks inour everyday life.	**1a. This is my Rock** The students will work in groups to observe two rocks using a hand lens. They are to observe the colour, size, texture etc. of each rock. Then they will record the similarities and differences using the worksheet below. **1b. Classify It!** The students will work in groups to compare and contrast a rock and a mineral (use samples or pictures). Have the students share and discuss observations. Then complete the Venn diagram. 	Materials: rocks, hand lens worksheet place http://www.madsciencelessons.com/	**Rocks - Compare andContrast** The students will use vocabulary words and write sentences to compare and contrast rocks and minerals using the chart below. Vocabulary: hard, non-living, shiny, smooth, bumpy, sandstone, etc. Example Template 

Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Earth Resources – Rocks and Minerals **Strand 2: Universe and the Solar System**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE					**1c. Earth, Our Home** Move the magnifying glass over each rock to see what minerals are inside.	Liveworksheet https://www.liveworksheets.com/zz229757mu Interactivesites.weebly.com/rocks and minerals	

Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Earth Resources - Rocks and Minerals **Strand 2: Universe and the Solar System**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE	2. Classify rocks and minerals according to their physical properties	• Rocks and minerals can be described according to their origin, size, shape, texture and colour/shade.	• Observing • Recording • Classifying • Communicating		**2a. Rock Discovery** Distribute a number of rocks. Have students observe the rocks to discover what type they are. Then have them record it in the chart. Record the colour, textureetc. **2b. Rock Sort** Sort rocks into groups based on observations. Each group will be given an empty egg carton. Label the spaces with self - selected categories from observations made. Place a rock or mineral that has that property in the correct space.	Materials: rocks, minerals, egg cartons	Have students cut out pictures of various rocks and minerals and classify them according to shape, size and colour. Give each group a name and glue the pictures (in their groups) on a sheet of paper.

Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Earth's Resources - Rocks and Minerals **Strand 2: Universe and the Solar System**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE					**2c. Physical Properties ofRocks Slideshow** View the slideshow explainingthe physical properties ofrocks.	https://www.slideshare.net/moniquewilson/physical-properties-of-rocks?next_slideshow=1	

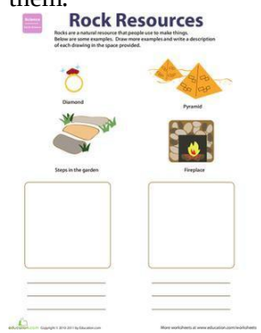
Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Earth's Resources - Uses of Rocks and Minerals **Strand 2: Universe and the Solar System**

EARTH SCIENCE

LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
3. Explain the uses of rocks and minerals.	• People use rocks and minerals in different ways. • Rocks are used to build things, such as houses, roads and walls. They are also used to make sculptures. • People use minerals to make coins, countertops, pencils and jewellery.	• Observing • Recording • Classifying • Communicating		**3a. School Yard Rock Hunt** Give each pair of students a clipboard, paper and pencils. Before going outside to the schoolyard, set a purpose. Challenge the pair of students to discover and write down as many different ways they can see rocks used outside. **3b. Rock It!** Distribute materials for students to cut two cards in a rock shape. Labelled one card rock and the other card mineral. Display a set of pictures on the board or computer images. Allow the students to raise their cards to identify a picture or image made from rocks or minerals. **3c. Slideshare** What do we use rocks for? The students will watch a slideshare of how rocks can be used.	Liveworksheet https://www.liveworksheets.com/xc1843540hq slideshare.net /whatdoweuserocksfor?	Uses of Rocks worksheet Students will draw two examples of a rock and mineral use, then write sentences to describe them.  https://www.education.com/worksheet/article/natural-resources-rocks/

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Weather – Weather in The Bahamas **Strand 2: Universe and the Solar System**

EARTH SCIENCE

LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
1. Describe and illustrate the weather in The Bahamas	• **Weather** is what the air outside is like. The air may be warm or cool. It may also be rainy, sunny, windy, or cloudy. Weather can change quickly. • In The Bahamas, the weather remains the same for long periods of time. For most of the year, the weather in The Bahamas is warm and sunny.	• Observing • Communicating • Recording • Interpretin gdata	• Appreciate theimportance ofweather in ourdaily lives. • Curiosity abouthow weather is studied.	**1a. How's the Weather?** Discuss the weather. Then have the students cut and paste pictures to show what the weather outside is like on that day in The Bahamas. **1b. Weather Wheel** The students use materials to make a weather wheel. Then use it to show the weather in The Bahamas on that day. Write a sentence about it. **1c. Weather Recording** Watchand record the weather for a week using a weather chart. 	Freeprintable/ Weatherwheel First grade a la carte - How's the weather	Create a booklet about the weather. In it describe weather conditions in The Bahamas. Add additional pages for further assessment.

Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Weather Changes - Weather Instruments **Strand 2: Universe and the Solar System**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE	1. Identify instruments used to measure weather conditions	• People who study the weather use several different instruments to assist them with their work. • **A rain gauge is used** for measuring rainfall. A **wind vane** is used for measuring direction of the wind. A thermometer is used for measuring how hot or cold an object is compared to another object.	• Observing • Communicating • Recording • Interpretin gdata		1a. Make a simple rain gauge using a measuring cup (or similar container). During the rainy season, put the rain gauge outside to collect rainwater. Each week record the amount of rain collected in the rain gauge using a weather log. Compare rainfall from week to week. **1b. Instrument Flashcards** Make instrument flashcards (use 5x7 cards) for a rain gauge and wind vane. Glue a picture of each instrument on one side and the definition of the instrument on the other side of each card. **1c. Making Thermometer** Have students pour ¼ cup of water and ¼ cup of isopropyl alcohol into an 11-ounce water bottle that already has a few drops of red food colouring in it. The children each place a clear, non-bendable straw into a bottle and use modeling clay to make a lid that holds the straw in place.	www.weatherwizkids.com	Use the weather booklet previously created to add the two weather instruments discussed that are used to measure weather conditions in The Bahamas.

Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Weather Changes – Weather Instruments **Strand 2: Universe and the Solar System**

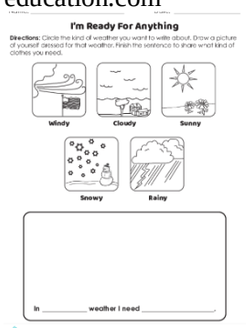
	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE					Students will discover that when they place their hands around the bottle, without squeezing, the liquid inside will expand from the warmth and go up the straw just like a regular liquid thermometer. Place the thermometers in the window, outside or in a shadow so that the children can see how the level of liquid in the straw changes with temperature. **1c. Weather Video** Weather and how to measure It- Watch the video and discuss it in class.	You tube Video - Weather and How to Measure It	.

Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Weather Changes – How Weather Affects People **Strand 2: Universe and the Solar System**

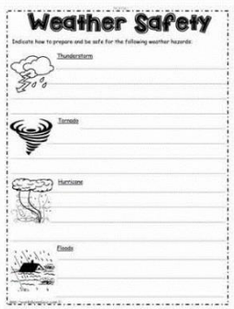
	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE	1.Describe ways weather affects people	• People who predict what the weather will be like in the future are called **Weather Forecasters**. • Weather can change over a period of time. The kinds of weather can affect what we do, the kinds of activities we take part in and the clothes we wear. We use sunglasses, hats and umbrellas to protect us from the sun, raincoats and umbrellas to protect us from rain. People have made all of these things to solve problems related to the weather. • Some workers who depend on weather forecasters are pilots, sea captains, truck drivers and farmers.			**1a. Dress Up for the WeatherRole Play** Before the Activity: Collect various clothes so you can create a Weather Dress-Up area in your classroom. Have children work in small groups. Explain to children that each group will have a turn dressing up for different kinds of weather. Once children are dressed up, have them describe the type of weather. Have them pretend to play in the weather. Continue with each group. 1b. Watch the reporting of a weekly weather forecast online. Make a list of persons that may depend on the weather to their job. Discuss how the weather conditions will affect various workers.		Circle the kind of weather you want to write about. Draw a picture of yourself dressed for that weather. Write a sentence to tell what kind of clothes you need. education.com 

Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Weather Changes - How Weather Affects People **Strand 2: Universe and the Solar System**

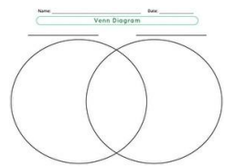
	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE	2. Explain safety precautions that can be taken during extreme weather	• There are certain safety precautions that should be taken during severe weather conditions. Some examples of severe weather conditions that are most common to The Bahamas and the safety precautions needed are: Flood: stay on high ground. Lightning storms: stay indoors orlow to the ground. Tornado: stay indoors away fromwindows; or a windowless room. Thunderstorm : do not stand under a tree; stay away from water (pools, puddles, bathtubs) Hurricane: stay indoors away from windows; secure property, can good and medicine. Follow an evacuation route to a safer place away from the hurricane's path.			1c. Make a scrapbook showing ways weather affects people. Use pictures and drawings. 2a. Observe a video showing extreme weather such as a hurricane. Have a class discussion about hurricanes. Discuss important items to have during a hurricane and other safety precautions. **2b. Build a Kit Game** Play the game by picking the correct items needed to prepare for a storm. **2c. Prepare with Pedro** Download and complete the Disaster Preparedness Activity Book.	https://www.ready.gov/kids/games/data/bak-english/index.html https://www.ready.gov/sites/default/files/2019-06/prepare_with_pedro_activity_book_eng.pdf	Write a sentence to tell how to be safe and prepare for the following weather. Worksheet Place 

Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Changes in the Sky - The Moon and its Changes **Strand 2: Universe and the Solar System**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE	1. Describe the likes and differences between the moon and Earth 2. Experiment to identify the source of moonlight	• The moon is not like Earth. The moon is not able to support life like Earth. It has rocks and soil, but it does not have air or living things. Ice has been found on the moon but it has no liquid water. It orbits the Earth. • The **moon** is the largest object you can see in the night. It does not shine because it has no light of its own. The moon appears to shine because of the sunlight that reaches it.	• Observing • Communicating • Inferring • Investigating	• Curiosity about the universe	**1a. Earth Moon and Sun Model**Observe pictures of the Earth and moon. Distribute materials to make a model of the Earth and moon. Discuss the earth and moon in relation to the sun. 1b. Watch the Educational Video "What does the Moon Do? - 10 Moon facts for Kids". List 4 of the moon facts in a science book/journal. **1c. Earth and Moon Facts** Discuss facts about the Earth and the moon. Provide students with Earth and Moon facts to cut and paste under the correct column on the sheet provided. Then write in likes and differences.	https://www.youtube.com/watch?v=RWo1Gx53l3M Liveworksheet https://www.liveworksheets.com/nb1617987br	Complete a Venn diagram to compare and contrast the Earth and moon 

Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Changes in the Sky - The Moon and its Changes **Strand 2: Universe and the Solar System**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE	3. Describe and explain changes in the moon	• The moon orbits or moves around the Earth. As it does this, its shape appears to change because the sun shines on and off one side of the moon.. This is why the moon appears to have different shapes at different times of the month. These shapes are called **the phases of the moon.** • Some phases of the moon are: **new moon** - the moon is between the Earth and sun.We cannot see the Moon atall. **first-quarter moon** - after aweek, the moon orbits one quarter of the way.	• Observing • Communicating • Inferring • Investigating		<table><tr><td>Moon Facts </td><td>Earth Facts </td><td>Likes</td><td>Differences</td></tr><tr><td></td><td></td><td>1.</td><td>1.</td></tr><tr><td></td><td></td><td>2</td><td>2.</td></tr></table> **2a. By the Light of the Moon** Cover a ball, orange or clay ball with foil. Push a pencil into it for a handle. Compare how the ball looks when light from the flashlight is shining on it. Discuss how the flashlight represents the sun and provides the moonlight.	Materials: An orange,or ball that size (per group) Piece of foil that is big enough to cover each orange Flashlight (per group, pencil, bike reflector	Example: Complete a Worksheet – The Moon Topic: The Moon Answer the following statements using the words below. Earth, light, moon, phases, sun 1. The ball of rock that orbits the earth is the___. 2. The moon has no___off its own. 3. The moon gets light from the____. 4. The different shapes that the moon seems to have as it orbits Earth are called ___. 5. We see different phases of the moon because it moves around ___.

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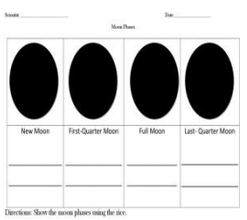
CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Changes in the Sky – The Moon and its Changes **Strand 2: Universe and the Solar System**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE					**2b. Moonlight Magic** Turn on the flashlight Have each student shine the beam directly onto the bike reflector and observe what happens. Turn off the flashlight. Discuss what happens. Then have the students observe a picture of the moon and discuss how it relates to this experiment and where the moon's light comes from. **2c. The Moon Flashcards/ Quizlet** Review the moon vocabulary flashcards. Play thematching game and complete the test.	https://quizlet.com/65260841/the-moon-flash-cards/	Students are given some rice and glue to illustrate the four phases of the moon using the lab sheet. Then explain each phase in their own words. Example:  Betterlesson.com - Moon Phase lab sheet

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Changes in the Sky - The Moon and its Changes **Strand 2: Universe and the Solar System**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE		**full-moon** - we can see all the moon's lightedside. **last-quarter moon** - the moon is three quarter ofits way around the Earth. .			**3a. Oreo Moon Phases** Give each student a paper plate sectioned off in four and four Oreo cookies. Then follow the steps: 1. Colour an edge of the plate with a yellow crayon to represent the sun and label each section with one of the four phases studied. 2 Paste a picture of earth in the centre or use a blue icing top cupcake to represent the earth. 3. Separate each cookie and use a plastic spoon to scrape the icing as needed to represent the different phases of the moon. The teacher will name each phase for students to place the cookie that represents that phase on a paper plate. **3b. Phases of the Moon Mini-Book** Givethe students materials to make a mini- book of the phases of the moon discussed. Have students glue pictures of each phase of the moon on a separate card and label it. Then put the cards in order and staple them on the left side.	Materials: Oreo cookies or similar cookies, picture of Earth or a cupcake, paper plates https://www.scholastic.com/parents/kids-activities-and-printables/printables/science-worksheets/minibook-moon-phases.html	

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Changes in the Sky – The Moon and its Changes **Strand 2: Universe and the Solar System**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE					 **3c. Phases of the Moon Video** The students will view the video. Then discuss it. Have students choose a phase from the video presentation and write a sentence to describe it.	Liveworksheet https://www.liveworksheets.com/qx1675970nc https://www.youtube.com/watch?v=76-HAqNKqKA	

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Changes in the Sky **Strand 2: Universe and the Solar System**

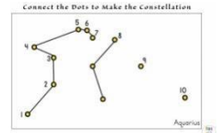
	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE	1. Identify and compare common constellations.	• You can see stars in the night sky. A star is a body in space. Stars give off light as the sun does. Some stars seem to form pictures in the sky. A group of stars that form a star picture is called a **constellation.** • Some common constellations include the Big Dipper, Little Dipper and Orion the Hunter.	• Observing • Communicating • Inferring • Investigating		**1a. Constellations: Connectsthe Dots in the Sky!** The class will watch the video. Discuss how constellations are made and the ones mentioned in the video. **1b. Constellation Viewer** Prep: Print out constellations. 1. On a black piece of paper trace a circle around the wide end of a plastic cup. 2. Cut out the paper circle. 3. Choose and cut out a constellation. Glue the constellation to the black circle. 4. Optional: cut slashes in paper to help it fold down better. 5. Use a thumbtack to poke holes where stars are.	https://www.youtube.com/watch?v=1sZ15SUeS9w https://inventorsoftomorrowdotcom.files.wordpress.com/2017/02/ccf58-viewerfile.png https://inventorsoftomorrow.com/2017/02/27/make-a-constellation-viewer/	

Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Changes in the Sky – Constellations **Strand 2: Universe and the Solar System**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE					6. Put disc on top of the cardboard tube; fold paper down; hold with rubber band. 7. Tape paper down and tape label on. 8. Look through viewer at light. (You can also shine a flashlight through the viewer to project the constellation image on the wall.) **1c. Create Constellation Flashcards Video** The students will follow the instructions on the video to make their own set of constellation flashcards.	Materials: Cardboard tubes, rubber bands, black paper, cup, glue, thumbtacks, copy of constellations templates https://www.youtube.com/watch?v=xow-JqNAvJQ Liveworksheet https://www.liveworksheets.com/ka1650812dn	Worksheet - Connect the Dots Students will connect the dots on the worksheet to form different constellations. Then correctly label each one. Note. Remove answers from bottom of worksheet.  https://www.themomentsathome.com/wp-content/uploads/2018/06/Copy-of-UpdatedConstellationPack.pdf https://www.funwithmama.com/constellations-for-kids/

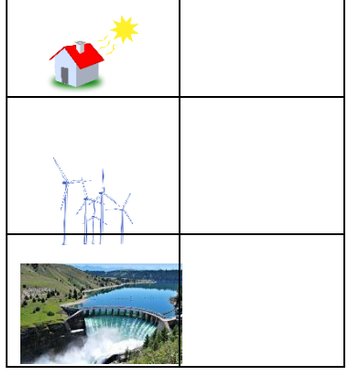
Fundamental concepts and principles of physical science include the study and analysis of the nature and properties of living and non-living matter and energy.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Forces and Energy - Sources of Energy **Strand 3: Forces and Energy**

PHYSICAL SCIENCE

LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
1. Define the term energy**.** 2. Identify three sources of energy.	• **Energy** is the ability to do work. It is needed to change things and to make them move. • **A source** is a place where something comes from. Three sources of energy are the sun, wind and water. • The sun is the most important source of energy for the earth. Energy from the sun is called solar energy. It comes in the form of light and heat.	• Observing • Recording • Communicating • Experimenting	• Appreciate the importance of energy.	**1a. The Sun** The students will brainstorm information about the sun. Discuss what the earth would be like without the sun. **1b. Sunbeams!** Draw and colour a picture of the Sun. Then write the forms of energy that we get from the sun on a sunbeam. **1c. Video Watch** The students will observe anddiscuss a video on the sources of energy.	https://www.youtube.com/watch?v=Giek094C_l4	Sources of Energy The students will name the source of energy for each picture: wind, sun, and water energy to complete the chart below. Example of Template: Complete the chart below. Pictures / Source of Energy? 

Fundamental concepts and principles of physical science include the study and analysis of the nature and properties of living and non-living matter and energy.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Forces and Energy– Uses of Energy **Strand 3: Forces and Energy**

PHYSICAL SCIENCE

LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
1. Describe uses of energy provided by the sun, wind and water.	• Energy is used all around us every day. There are many uses of energy. For example, energy is used by cars, toys, to make fires, fly kites, watch television etc. • The main source of light is the sun. Light is a form of energy that you can see. People use light in many ways. At home you use a lamp to read. • Almost all the heat energy that we receive on earth comes from the sun.	• Observing • Recording • Communicating • Experimenting		**1a. Energy Detective!** In your home or school find and make a list of objects that use light or heat energy. (drawings can also be done) **1b. Use the Sun's Heat to Melt Chocolate!** 1.Place one piece of chocolate on each paper plate. 2. Put one plate outside in the sunlight. 4.Put another outside in theshade. 5.Place the third plate indoorsin a sunny spot. 6.Place the fourth plate indoorsin a dark spot. 7.Wait for an hour and compareyour results. What did the heat energy do to the chocolates? Which chocolate melted thefastest?	Liveworksheet https://www.liveworkshe ets.com/sj1838897h i	Uses of Energy (Provide students with pictures or magazines) https://www.nurturinglearning.com/sorting-energy/ Complete the table. Cut, sort and paste the pictures onto the table under the correct heading. Example of Template: Uses of Energy Light energy | Heat energy | Wind energy | Water energy

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Forces and Energy– Uses of Energy **Strand 3: Forces and Energy**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
PHYSICAL SCIENCE		• Heat energy can be used for a number of things including cooking, ironing, baking and changing water into steam. • People use air in many ways. Moving air is wind. Wind energy can be changed into electricity. A windmill or wind turbine does this. People use air to make things fly (e.g. a kite, airplane and hot air balloon).			**1c. Make a simple Pinwheel** Step #1: Take your piece of paper and cut it into a perfect square. An easy way to do this is fold the paper into a triangle, taking one corner and lining it up to the other side. This will leave excess on one side that, once cut, gives you a square. Step #2: Fold the paper diagonally so it turns into a triangle and crease it lightly. Repeat this for the opposite direction as well. You will then unfold and have a creased "X" on the page.	Materials: Crayons or Markers Pencil Push Pins Safety Scissors	**Uses of Energy** Use these types of energy to complete the chart below: light, heat, wind, water Example of Template: Objects | Type of energy used 1.sailboat | 2. light bulb | 3. kite | 4. melting ice | 5. power plant |

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Forces and Energy- Uses of Energy **Strand 3: Forces and Energy**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
PHYSICAL SCIENCE		• Water is one of the most important substances on earth. People can also use the energy of moving water. They use moving water to make electricity at power plant.			Step #3: Cut along the creases about halfway to the middle of the paper. Be sure not to cut all the way. Step #4: Bend each corner into the middle. Make sure to bend and not fold. Once all 4 corners are in the middle push the push pin through them all as well as the straw or eraser. Be careful! 1d. Watch and discuss the video https://www.liveworksheets.com/sd1284981or	https://www.easy-crafts-for-kids.com/paper-windmill.html https://www.youtube.com/watch?v=fjuvatIoSzY	

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Forces and Energy - Magnets **Strand 3: Forces and Energy**

PHYSICAL SCIENCE

LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
1. Predict which objects are attracted to magnets. 2. Experiment to discover which objects are attracted to magnets.	• **Magnets** can push or pull certain Magnets metal objects. A **pole** is the place on a magnet that has the strongest pull. Magnets have a north pole and a south pole. • Opposite poles attract each other. **Attract** means to pull toward. Like poles repel each other. **Repel** means to push away. Some objects that magnets will attract are: paper clips, metal keys and screws.	• Observing • Communicating • Predicting • Experimenting	• Curiosity of how magnets work.	1a. Show students a variety of objects one at a time. They will hold up a yes/no card to predict whether the object is magnetic or not. 2a. Students will keep a two column list of the objects that are magnetic and not magnetic. Then, experiment with a magnet to see if their predictions were correct. **1b. Go Fish!** Go fishing with a magnet. Make a fishing pole by tying one end of a piece of string to a magnet and the other end to a pencil. Place a group of common classroom objects on a desk. Predict which objects the magnet will attract. 2b. Dip the magnet into the group of objects and observe which objects it picks up.	Materials: Magnets, string, pencils, coins, rubber nail, paper	Students will use materials given to create a magnet foldable. 1. Name the poles of a magnet and what they do. 2. Name objects that are attracted to a magnet. https://www.pinterest.fr/pin/119204721363707480/

Fundamental concepts and principles of physical science include the study and analysis of the nature and properties of living and non-living matter and energy.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Forces and Energy – Magnets **Strand 3: Forces and Energy**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
PHYSICAL SCIENCE					**1c. Magnets Video Watch** Students will observe and discuss the video. **2c. Magnazone InteractiveGame** The students will play the interactive magnetic force game on a device or on a device used by the teacher and shared with the class.	https://slideplayer.com/slide/3914226/ http://interactivesites.weebly.com/magnets- and-compass.html	

Fundamental concepts and principles of environmental science include the investigation and articulation of ways to conserve and manage natural resources.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Using Trees, Sand and Ground Resources

ENVIRONMENTAL SCIENCE

LEARNER OUTCOMES	CONTENT/CONCEPT	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
Identify ways we use trees, sand, and ground resources in The Bahamas.	The environment is everything around us. Some things in the natural environment are just there naturally, a part of nature—soil, sand, rocks, water, air, plants, animals, people. Other things in the environment are made by people—buildings, cars, televisions, toys. The natural environment provides valuable resources that we use to live. Everything comes from the environment: we build houses and make paper from trees; we use plants and animals for food and clothing; we drink water and use it to clean; we burn fossil fuels (oil, natural gas, and coal) for heat, transportation, and electricity.	• Make observations • Analyse patterns • Use cause and effect. • Construct explanations		**Video** Show a portion of the Living of the Land and Sea video. Give ways in which Androsians use the land resources **Sorting Activity** Divide your white board, chalkboard, or a bulletin board in three sections. Write Sand, trees and underground on the column. Introduce 6-8 flash cards with the pictures and words (glass, water, paper, cardboard box) that are made from those three natural resources. Have students classify items into the three columns. **Creative Writing** Have students write about how we use nature	https://vimeo.com/254024737	**Exit Ticket** **https://bnt.bs/curriculumhub/** Name: _____ Date: _____ Natural Resources Write T or F to tell if the sentences below are true or false. Color the picture. ___ Paper is made from trees. ___ Glass is made from sand. ___ Trees are made by nature. ___ Plastics are made from trees. ___ Metal are made from trees. ___ We eat food from the forest. ___ We eat foods from the ocean. ___ We use groundwater. ___ We use water from the sea in our homes.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Using Trees, Sand and Ground Resources

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
ENVIRONMENTAL SCIENCE		The Bahamas sells sand to other countries. Sand is used to make glass.			**Cut & Paste** Have students cut out pictures from magazines old book or labels to create Natural Resource charts **Demonstration: How to Make "Glass"** Gather the following materials: – 1 cup sugar – a hot plate and pot – pane of tempered glass – 1/4 cup water Explain to students that although sugar isn't really used to make glass, they can make a kind of glass out of sugar to get an idea of how sand is used to make real glass. Heat the water to boiling and stir in the sugar until it dissolves. Pour the mixture over the pane of glass and allow it to cool (about 15 minutes). Have students look through the "sugar glass." If allowed to sit overnight, the "sugar glass" will become frosted.		

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Using the Sun & Wind

ENVIRONMENTAL SCIENCE

LEARNER OUTCOMES	CONTENT/CONCEPT	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
Infer ways we use the sun and wind in the Bahamas	The sun provides light and heat energy. We use light to see. Heat energy can be used for cooking, ironing, and baking. People use air to make things such as airplanes and hot air balloon fly. The Bahamas has a warm **climate** which make the sun and wind easy to use. Using the sun and wind for energy does not pollute the air. The way we get energy to our homes now pollutes the air.	• Inference • Observation • Investigation		**Solar Heater** In groups, allow students to warm water using the sun **Kite Making** Have students investigate which material is best for making a kite then, Construct kites in groups **Group Presentations** Have students do group presentations on their kite design and construction.	http://www.nrel.gov/docs/gen/fy01/ 30928.pdf Science Horizons Bk. 2 Harcourt Science Bk. 2	**Exit Ticket** **https://bnt.bs/curriculumhub/**

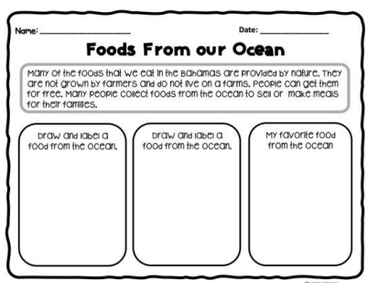
Fundamental concepts and principles of environmental science include the investigation and articulation of ways to conserve and manage natural resources.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Forest and Ocean Foods

ENVIRONMENTAL SCIENCE

LEARNER OUTCOMES	CONTENT/CONCEPT	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
Identify animals that we use for food from the ocean and forest.	Many of the foods we eat in the Bahamas is provided by nature. conch, grouper, lobsters, and land crabs do not come from farms. To ensure we can have those animals for food in the future we must not eat the babies. We must also not take the parents when they are making babies. The Bahamas has rules to protect some of them, to ensure people use them wisely.			**Video** Watch and discuss video "Living of the Land and Sea". **Creative Writing** Have students write friendly notes to students in other classes to inform them about foods from the ocean and forest. **Lunch and Learn** Have your class host a lunch and learn session for at least 10 teachers and administrators. Provide a Bahamian appetizer. Your students should talk about what foods we get from the land and sea and about our ground water resources.	Go on a national park or protected area field trip https://vimeo.com/254024737	**Exit Ticket** **https://bnt.bs/curriculumhub/**  Name: _____ Date: _____ **Foods From our Ocean** Many of the foods that we eat in the Bahamas are provided by nature. They are not grown by farmers and do not live on a farms. People can get them for free. Many people collect foods from the ocean to sell or make meals for their families. draw and label a food from the ocean. draw and label a food from the ocean. My favorite food from the ocean

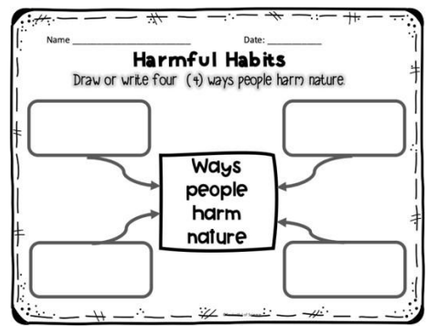
Fundamental concepts and principles of environmental science include the investigation and articulation of ways to conserve and manage natural resources.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Ways People Harm the Environment

ENVIRONMENTAL SCIENCE

LEARNER OUTCOMES	CONTENT/CONCEPT	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
Examine ways that people can harm habitats.	The actions of humans can affect the places where plants and animals live. Sometimes our actions can destroy some habitats. For example, throwing litter on the ground. We waste **natural resources** in many ways in our homes by using more than we need or by using them unnecessarily. When we waste natural resources, we must get more from the environment, which costs money and uses up natural resources that we could run out of. When we use products and throw them away, we produce lots of trash and **pollution** in the environment.	• Illustrate • Organize • Synthesis		**Compare and Contrast** Have students draw and colour pictures of clean environment and a dirty one. Lead a discussion on which one they would prefer to live in **Clean-up** Organize a schoolyard or beach clean up **Reusing** Reuse plastic container and tin cans, etc. in your classroom. Have students compile a list of things that can be reused at home. Have them create a pledge for their parents to encourage them to reuse items instead of discarding them as waste **Flyer** Have students create flyers to encourage people to preserve and protect habitats. Flyers should give reasons why we should do preserve habitat.	www.ymparisto.fi>...<naturconserv ation www.onvironment.fi_protectingand monitoringnaturalhanitats www.crd.bc.ca/watersheds/protectiom/.../protectanimals.htm www.endangeredpecie.com/ways_to _help_htm.	**Exit Ticket** **https://bnt.bs/curriculumhub/** 

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Ways People Harm the Environment

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
ENVIRONMENTAL SCIENCE		Wasting natural resources is not good for the environment. Resources such as ground water can be depleted. Because The Bahamas has no rivers, most of its water for our homes come from the ground. **Salt water** can be changed into fresh usable water, but it is very expensive. In the Bahamas the usable **fresh water** sits on top of the saltwater in the ground. If we waste water, we will use up all of fresh water supply.			They should provide tips on things that they should not do. **"Closed Classroom" Experiment.** Tell students that for the next week, the trash in their classroom will not be emptied. (You may have to get the cooperation of the custodian to do this, and you may have to get more trash cans.) Tell students that they are going to have to be careful about what they throw away. Explain that at the end of the week, they'll check to see how much trash they have and if anything didn't need to be thrown away. **Conduct a Litter Experiment.** Before students enter the classroom, scatter various litter items around the room. Do not mention the litter. Watch students' reactions and behaviours. Eventually, ask students how they feel about having their environment littered. Discuss the problems litter can cause.		

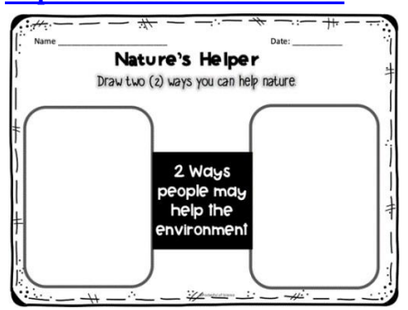
Fundamental concepts and principles of environmental science include the investigation and articulation of ways to conserve and manage natural resources.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Ways People Help the Environment

ENVIRONMENTAL SCIENCE

LEARNER OUTCOMES	CONTENT/CONCEPT	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
Describe behaviours thatconserve natural resources.	We can do many things to help conserve natural resources and produce less waste and pollution. Sometimes our actions help to improve some habitats. For example, keeping our environment clean. We should do all we can to protect the **habitats** in our neighbourhoods. • Use only the paper products really needed. • Turn off unused lights, televisions, computers, andother appliances when theyare not being used. • Turn off water faucets while brushing teeth and when the water is not needed.			**Video** Show a video about how people live in the environment and what can happen to the environment if people pollute it. **Online Research** Allow students to bring their hand-held devices to school. Have them research work that's going on to help the Bahamian environment by writing the words "Bahamian Environment" on the board. Guide them through typing the term into Google. Have them look at both the "All" and the "Photo" tabs. Discuss their finding. Explain that doing a Google search lets you quickly see what people are doing to help the environment because Non-profit often share what they are doing online.	Bye-Bye Bernie" Video Think Earth Song Natural Resource Cards (*trees, plants, animals, sand, water, metal ore, and fossil fuels*).	**Exit Ticket** https://bnt.bs/curriculumhub/ 

Fundamental concepts and principles of environmental science include the investigation and articulation of ways to conserve and manage natural resources.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 2

Topic: Ways People Help the Environment

ENVIRONMENTAL SCIENCE

LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
	• Close doors and windows when heat or air conditioning is on. • Recycle paper, glass, metal, and plastic when possible. Put all trash in trash cans; do not litter.			**Cap Design** Allow students to create designs to promote environmental stewardship. You may want to discuss some ideas before assigning this activity to your class. 		

Fundamental concepts and principles of life science include the study of living organisms, their structure and function, their behaviours, and their relationships with the environment.

CURRICULUM GUIDELINES

GRADE 3

Topic: Vertebrates **Strand 1: Characteristics of Organisms**

LIFE SCIENCE

LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
1. Define the term vertebrates. 2. Classify vertebrates according to their traits.	• Animals with backbones are called **vertebrates**. • A **backbone** is a row of bones in the middle of an animal's back. • Scientists classify animals with backbones into five groups based on common **traits/characteristics**. • **Traits** are body features or the things that animals do. • The five groups of vertebrates are **mammals**, **birds**, **reptiles**, **amphibians**, and **fish**.	• Collect data • Make inferences • Formulate models • Utilize classification process. • Demonstrate critical thinking	• Curiosity • Cooperation • Questioning and Posing Problems • Thinking independently	**1a. Backbone Exploration** With head slightly bowed, use fingertips toobserve feel and describe the bones in the back of the neck, or the feel thebackbone of a classmate. **1b. Backbone Observation** Observe the backbone of a snapper that has been eaten. **1c. Backbone Model** Using yarn,circle pasta, gummy life savers (or other materials), build a model of abackbone. **2a. Animal Sort** Sort plastic animals or animal pictures into a five-column chart. Mammals | Birds | Fish | Reptiles | Amphibians | | | | | | **2b. Vertebrate Charades** – A student acts out a vertebrate and the other students try to guess what it is.	Harcourt Science Book 3 Science Horizons Book 3 https://www.upliftingmayhem.com/diy-mobile-backbone/?utm_medium=social&utm_source=pinterest&utm_campaign=tailwind_tribes&utm_content=tribes&utm_term=306388538_8809686_104029 (backbone model) https://youtu.be/P9ptHAClC4Q	Collect pictures of vertebrates and create a vertebrate collage. Draw a picture of any vertebrate and write two characteristics of that animal.

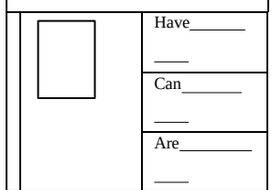
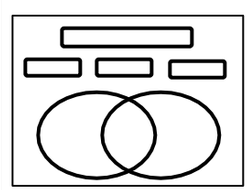
Fundamental concepts and principles of life science include the study of living organisms, their structure and function, their behaviours, and their relationships with the environment.

CURRICULUM GUIDELINES

GRADE 3

Topic: Vertebrates – Mammals **Strand 1: Characteristics of Organisms**

LIFE SCIENCE

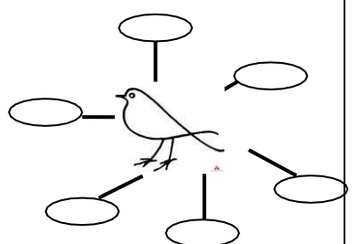
LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
1. Observe and describe traits common to mammals.	• **Mammals** are covered with **hair** or **fur**. • They give birth to live young and feed them with milk. • They use **lungs** to breathe. • Mammals are warm-blooded.	• Make accurate observations. • Collect, process and interpret data.	• Curiosity • Scepticism	**1a. Bring Your Pet to School** Have students bring in a pet mammal (dog, cat, hamster, rabbit, or guinea pig) to observe its traits. **1b. Mammal Collage** Create a picture collage of different mammals in the shape outline of amammal (rabbit, dog, horse, etc.) **1c. Online Quiz** - Complete a Quizziz or Kahoot quiz online.	Harcourt Science Book 3 Science Horizons Book 3 https://quizizz.com/admin/quiz/5de96a249dc378001c18c13b https://youtu.be/E6JTM83aOhw	Cut and paste (or draw) a picture of a mammal and write sentences giving traits of the mammal. 
2. Distinguish between land and water mammals.	• Some mammals live on land. • Human, goats, sheep, lions, elephants, tigers, dogs, cats, monkeys, rats, and mice are land mammals. • Some mammals live in water. • Dolphins and whales are mammals that live in water.	• Utilize classification process • Make inferences • Pursue new knowledge.	• Questioning • Thinking Independently	**2a. Picture It** - Observe pictures of water mammals and infer how theybreathe under water. **2b. Instructional Video** - Watch a video on water mammals **2c. Graphic Organizers** - Use a t-chart to list examples of land and water mammals. **land mammals** | **water mammals**		Complete a Venn diagram to compare land and water mammals. 

Fundamental concepts and principles of life science include the study of living organisms, their structure and function, their behaviours, and their relationships with the environment.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Vertebrates – Birds **Strand 1: Characteristics of Organisms**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	1. Observe and describe traits common to birds.	• **Birds** are covered with **feathers**. • Feathers help to keep birds warm. • Some feathers help birds to fly. • Birds have **wings** to help them fly. • Birds have two feet • The shape of a bird's foot can be used to tell where a bird lives. • Birds reproduce by laying eggs. • Birds are warm-blooded. This means their body temperature stays the same.	• Make accurate observations and measurements • Use materials and scientific equipment correctly and safely • Make inferences and draw conclusions • Pursue new knowledge	• Questioning and posing problems • Open to new ideas • Cooperation	**1a. Bird Watching** Designate an area in the school yard for bird watching. **1b. Word Web** Create a web of words relating to birds such as wings, feathers,beak, fly, etc.  **1c. Live Samples** Compare a chicken bone to a bone from beef using a balanceand hand lens. **1d. Quiz Time** Complete a quiz an interactive quiz on birds using Quizizz, Kahoot or Pickers	Harcourt Science: Book 3 Science Horizons Book 3 https://youtu.be/jF0Id-hH9y4 https://quizizz.com/admin/quiz/61a6b5ad31ea64001e4946b4	Complete a worksheet in which students are required to: 1. Label the general parts of a bird (wings, feet, feathers, beak) 2. Circle the characteristics that relate to birds: fly swim cold-blooded warm-blooded 4 feet 2 feet feathers fur lay eggs live birth

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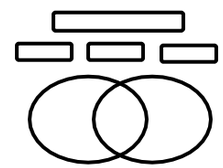
CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Vertebrates – Birds **Strand 1: Characteristics of Organisms**

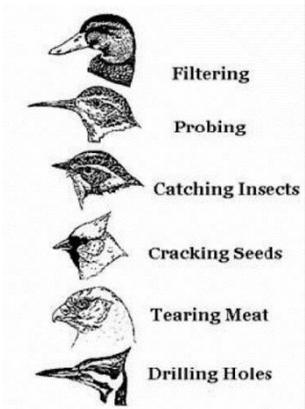
	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	2. Compare birds to mammals 3. Infer a bird's diet based on the shape of its beak.	• Like mammals, birds have **lungs** to help them breathe air. • Many birds also care for their young for a while after they are born. • Unlike most young mammals, young birds hatch from eggs. • Birds have **beaks** to eat with. • The shape of a bird's beak determines what they eat.	• Make inferences and draw conclusions • Utilize classification process and recognize relationships • Collect, process and interpret data	• Open to new ideas • Questioning and Posing Problems • Cooperation • Thinking Independently	**2a. Picture Observation** Observe pictures of various birds and mammals, then list characteristics on a t-chart. Discuss the characteristics they share and ones that are unique to each group. **2b. Movie Review** Watch aclip of the "Angry Birds" movie when the eggs were returned and hatched. Discuss how we are able to tell which chick belongs to which birds. **3a. Beak Match** Match thepicture of a beak to the food the bird might eat. **3b. Beak Investigation** Investigate how the shape of a bird's beak is related to the food it eats.	Harcourt Science: Book 3 Science Fusion: Book 3 https://youtu.be/qN6nJn62zEM (movie clip) https://www.exploringnature.org/db/view/Match-the-Birds-Beak-to-Their-Food-Colour https://youtu.be/wChGsM-YsxA (bird beak activity)	Use a Venn diagram to compare birds to mammals. 

Fundamental concepts and principles of life science include the study of living organisms, their structure and function, their behaviours, and their relationships with the environment.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Vertebrates – Birds **Strand 1: Characteristics of Organisms**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE					Materials: ✓ chopsticks/2 pencils ✓ pliers ✓ clothespin ✓ spoon ✓ forceps ✓ raisins ✓ birdseed ✓ paper plates ✓ plastic/gummy worms ✓ cooked spaghetti ✓ cooked rice ✓ peanuts in shells ✓ water in a cup Procedure: i. Make a chart showing Food | Best Tool | Observation ii. Put the tools on the side of the desk. The tools represent the birds' beaks. iii. Put one type of food in the middle of the desk at a time. Try picking up food with each type of beak. iv. Draw conclusions about which tool works best for which foods.		

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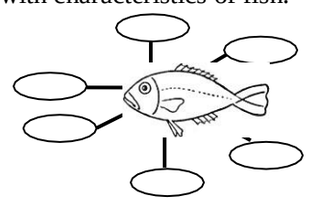
CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Vertebrates – Fish **Strand 1: Characteristics of Organisms**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	1. Observe and describe the body parts of fish and their functions.	• Fish live in water. • They are covered with **scales** and have **fins**. • Fins help them move through the water. • Fish breathe through **gills** and lay eggs. • Fish are cold-blooded animals.	• Make accurate observations and measurements • Make inferences and draw conclusions	• Open to new ideas • Questioning and posing problems	**1a. Live Sample Observation** Observe a fish in the class-room aquarium. **1b. Aquarium Visit** - Visit Atlantis Aquarium to observe various types of fish. **1c. Fish Web** – Create a word web with characteristics of fish. 	Harcourt Science Book 3 Science Horizons Book 3 Treasures in the Sea https://www.amnh.org/content/download/35218/519301/file/TreasuresintheSea.pdf https://youtu.be/c9QM87Jl7k4 https://kidfriendlythingstodo.com/ easy-paper-plate-fish-craft-for-kids-kid-friendly-things-to-do/	Label the parts of a fish and match each function to the part.
	2. Identify and describe the Nassau Grouper.	• The Nassau Grouper is one of the largest fish on the reef. • It has five (5) dark brown bands on the body, and a dark band running from the snout, through the eye, to the forehead side of the dorsal fin and a dark spot on the base of the tail fin.	• Pursue new knowledge	• Curiosity	**2a. Labelling** – Label the parts of agrouper diagram. **2b. Quiz Time** – Complete an interactive game on characteristics of a fish and the Nassau Grouper. **2c. Model** – Make a model of a fish using paper plates or cupcake liners.		Complete the 'Grouper Adaptations' worksheet (Treasures in the Sea pg. 65)

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Vertebrates – Fish **Strand 1: Characteristics of Organisms**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	3. Propose ways to protect the Nassau Grouper.	• It changes colour depending on the environment it is in. • This helps it to hide so it can ambush fish to eat. • Humans are the predators that have the biggest impact on the grouper population. • To protect the Nassau Grouper, a closed season from December to February was established. • Other measures are: marine parks and reserves where fishing of the grouper is prohibited; enforcement of the minimum legal harvest size of three pounds.	• Make predictions based on reasoning and prior knowledge • Make informed, responsible, and wise decisions.	• Tolerance of other's views • Questioning and Posing Problems	**3a. Help or Harm Paddles** Students hold paddles that have help on one side and harm on the other side. Read a statement and students hold up paddles to tell whether the statement would help or harm the grouper population. **3b. Pass the Part** In teams of two, students must take turns using their individual straws to suck up the parts of a grouper (printed on circular shaped paper)and place it on a diagram of a grouper. First team to place all of their parts on the grouper diagram or the team with the most correctly labelled parts win.	Treasures in the Sea https://www.amnh.org/content/download/35218/519301/file/TreasuresintheSea.pdf https://www.fisheries.noaa.gov/species/nassau-grouper	Label a diagram of a grouper, then suggest two ways we can protect the Nassau Grouper.

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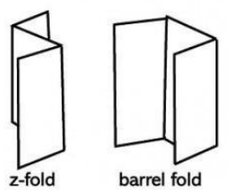
CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Nutrition **Strand 1: Structure and Function**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	3. Investigate appropriate exercises and practices to develop a healthy lifestyle	• One way to stay healthy is to exercise. • Playing active games (swimming, running, climbing, etc.) are good forms of exercise. • Your muscles stay in shape and your heart and lungs work better with exercise. • Your body also needs rest. • Children need 8-10 hours of sleep. • A good night sleep helps your body store up energy for the next day. • Developing healthful habits also keeps you fit (e.g. washing hair, washing hands before and after eating, cleaning nails, and changing into clean clothes, all help you keep fit.	• Make informed, responsible and wise decisions • Pursue new knowledge • Transfer and integrate relevant skills and content from other disciplines	• Cooperation • Scepticism • Open to new ideas	**3a. Let's Move** Participatein various exercises in the classroom. **3b. "Keeping Fit" Poster** Cut out pictures of various exercises to make a poster on "Keeping Fit". **3c. Sleep Log** For a week,record the times you go to sleep and the time you wakeup to determine if you get the right amount of sleep each night.	First Aid in Science brochure fold source: www.clip-library.com https://youtu.be/bwSJE7UqZf4 (Keeping Our Body Fit) https://www.housemixblog.com/2014/10/30/getting-my-kids-to-stay-in-bed/ (sleep log sample)	Produce a brochure outlining ways to stay healthy and fit. 

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Nutrition **Strand 1: Structure and Function**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	4. Identify Health Resources	• Health Resources include hospitals, clinics, doctors, nurses, and chemists. • A community nutritionist, a community counsellor, dental services, school health service and other health service providers are also Health Resources.	• Engage in collaborative activities • Collect, process and interpret data • Communicate information effectively • Pursue new knowledge	• Positive attitude to failure • Cooperation • Curiosity	**4a. Browsing Brochures** Collect and review brochures/flyers from various health institutions on the services they provide. **4b. Clinic Search** Look in the government pages of the phone book to search for the names of the public clinics to determine theone closest to the school or students' homes. **4c. Nurse's Visit** Invite the school nurse to speak to the students about her job as a nurseand at the school. **4d. Health Flyer** Create a flyeron the importance of getting a check-up.	Nutrition Ed. In Primary Schools Book 2 https://youtu.be/bwx2Z69S0YA (Doctor check-up)	Conduct a research and write a report on a job in the health field such as: ➢ doctor ➢ nurse ➢ chemist ➢ dentist ➢ nutritionist ➢ fitness instructor ➢ pharmacist ➢ physical therapist ➢ etc.

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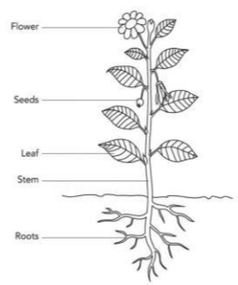
CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Plants Parts and Function **Strand 1: Structure and Function in Living Things**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	1. Observe plants to identify parts using hand lens.	• The main parts of a plant are the roots, stem, leaves and flower. • Each part of a plant has its own function (job to do). • Roots hold the plant in place and help to keep the soil from washing away. • They also take in water and minerals from the soil for the plant. • Some plants store food in their roots. • Carrots, potatoes, yams, beets and cassavas are examples of this. • Stems support the plant and transport materials between the roots and leaves. • They hold out the branches and leaves to catch the sunlight.	• Make accurate observations • Collect, process, and interpret data • Utilize classification process and recognize relationships	• Curiosity • Cooperation • Questioning and posing problems	**1a. Root Observation** – Pull up weeds and use a magnifying lens to observe root hairs. Observe how soil clings to roots. **1b. Name the Part** – Using live samples, name the parts of the plant, roots can be inferred if not visible. **1c. Produce Parts** – Collect pictures (or the actual item) of various produce. Create a table on a chart paper. Determine which part of the plant the produce represents. Fill in your findings on the table. For example, broccoli is the flower of a plant and carrot is the root of a plant. <table><tr><td>root</td><td>stem</td><td>leaf</td><td>flower</td></tr><tr><td></td><td></td><td></td><td></td></tr></table>	Harcourt Science Book 3 First Aid in Science https://youtu.be/TD60-3rqPXg image source: www.clarendonlearning.org https://www.liveworksheets.com/fn1927433rj	On a worksheet, label the parts of a plant and complete sentences on the function of each part. 

Fundamental concepts and principles of life science include the study of living organisms, their structure and function, their behaviours, and their relationships with the environment.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Plants Parts and Function **Strand 1: Structure and Function in Living Things**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
LIFE SCIENCE	2. Experiment with plant parts and describe their functions.	• Plants with green make food in their stems. • Some plants also store food in their stems. • The leaf is the part of the plant that makes food. • A leaf has veins that carry water and nutrients. • Leaves help keep the air clean by taking in carbon dioxide through small holes on the underside of the leaves. • Plants use carbon dioxide to make food. • When plants make food, they give off oxygen.	• Formulate hypothesis • Make predictions based on reasoning and prior knowledge • Engage in collaborative studies • Make accurate observations	• Curiosity • Scepticism • Questioning and posing problems	**2a. Leaf Prints** Collect samples of leaves. Place a plain white paper over the leaf. Moving the crayon sideto side to colour over the areawhere the leaf is situated. Observe the veins of the leaf on the paper. **2b. Celery Experiment** Place in 8 ounces of water into each of two glass jars. Put 3-4 drops of food colouring in each jar (different colours may be used for each jar). Place 3 stalks of celery with leaves still attached into each jar. Observe the movement of water through the stem of plants. **2c. Leaf Experiment** Using a potted plant or a plant in the school yard, cover one or two leaves of the plant with black construction paper. Observe what happens to the leaf that iscovered.	Harcourt Science Bk. 3 https://youtu.be/aL-DY9h5U7c (how plants make food) https://masandpas.com/leaf-printing/ (leaf print activity) https://www.teaching-tiny-tots.com/toddler-science-celery-experiment.html (celery experiment) https://www.123homeschool4me.com/simple-geranium-photosynthesis-experiment-for-kids/ (leaf experiment)	On chart paper create a model of a plant using various materials. Labels the parts of the plant and write a description of its function under each part.

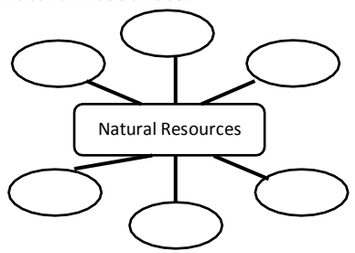
Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Natural Resources **Strand 2: Properties and Structure of Earth Systems**

EARTH SCIENCE

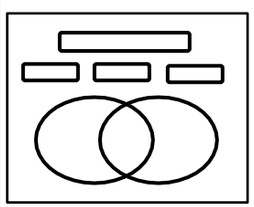
LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
1. Investigate to identify Earth's natural resources.	• A **natural resource** is something found in nature or earth that people can use to meet their needs. • Natural resources include air, water, soil, plants, animals, minerals and fuels. • Natural resources are used in many ways. • **Air** is found above the Earth's surface. • Air is a mixture of gases. • **Oxygen** is a gas found in the air that animals need to breathe in. • Plants need **carbon dioxide** gas from the air. • Water is also needed by all living things. • Without water, living things would die.	• Engage in collaborative activities • Collect, process and interpret data • Communicate information effectively • Pursue new knowledge	• Curiosity • Cooperation • Questioning and posing problems • Thinking Independently	**1a. Resource Research -** Read textbooks, story readers and visit the internet to define natural resources. **1b. Word Web -** Create a webthe show the various natural resources.  **1c. Name that Resource –** Think of things around the home or look for things around the class and identify the natural resource that it comes from. For example: books, pencils, desks or clothing comes from trees. **1d. Level Up** – Play an online game on natural resources.	Science Horizons Book 3 Science Fusion Book 3 Harcourt Science Book 3 https://www.generationgenius. com/videolessons/natural-resources-video-for-kids/ https://www.pinterest.com/pin/486670303464637953/ (resource web) https://quizizz.com/admin/quiz/607d24bb872fe6001bf88a88 (online quiz)	Create a booklet of the uses of a particular natural resource. For example, a booklet on the uses of water or air. Make a poster entitled natural resources. Paste pictures of the different natural resources Classify resources as natural or manmade. natural resources | manmade resources

Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINE
SCOPE OF WORK

GRADE 3

Topic: Natural Resources **Strand 2: Properties and Structure of Earth Systems**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE	2. Research the uses of Earth's natural resources.	• There are two kinds of water on earth: salt water and fresh water. • Salt water can be found in the ocean. • Fresh water can be found in rivers, ponds, streams and lakes. • Some water on the earth is solid. Solid water is ice. • At the North and South Poles it is always cold. • The ice and snow do not melt. These are called **glaciers** and **ice bergs**. • Soil is used for growing crops and making bricks. • Plants are used for food, furniture, paper and clothes. • **Minerals** are used to make coins, furniture and jewellery.	• Collect, process and interpret data. • Make accurate observations and measurements. • Utilize the classification process and recognize relationships • Design, conduct and evaluate scientific investigations	• Curiosity • Questioning and posing problems • Positive attitude to failure	**2a. Picture Sort** Place pictures of items into twogroups: resources and products **2b. Research Report** Complete a research report template on the North Pole or the South Pole. All About A Research Report Written and Illustrated By: **2c. Soil Investigation** Have students collect about a cup of dirt or soil from their yards. Students will place the soil in a jar and fill the jar with water leaving about 2 cm at the top. Shake the jar of soil and water for about 5 minutes to ensure the soil is full saturated. Then let stand for 24 hours. Observe the amounts of clay, sand, and silt in the soil.	Science Horizons Book 3 Science Fusion Book 3 Harcourt Science Book 3 https://familygardenlife.com/ learn-make-soil-testing-fun-kids/ (soil investigation) https://www.k5learning.com/ science-worksheets/first-grade-1/environment /natural-resources (picture sort)	Fill in a chart on how people use different natural resources. Soil | Water | Plants | Mineral Complete a Venn diagram on salt water and fresh water, where they are found, animals that live in them, and their uses. 

Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Natural Resources **Strand 2: Properties and Structure of Earth Systems**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE	3. Communicate the importance of natural resources to the survival of people.	• Natural resources are needed for the survival of people. People need air to breathe. • Air dries wet clothes, fills tires on cars and balls, and helps things to fly and hot air balloons to rise. • Moving air which is **wind** can be changed into electricity. • Winds turn the blade of a windmill which turns whets to produce electricity. • Water is needed for drinking bathing, cleaning, washing clothes and dishes, swimming, boating and for transporting things on the ocean. • Water is also used to make electricity at power plants. • Minerals are used to make coins, furniture, and jewellery. • Fuels are used to run engines of cars, trucks, etc. in factories, power companies and many other uses.	• Communicate information effectively • Apply principles and concepts to make products • Demonstrate critical thinking and problem solving • Make inferences and draw conclusions	• Open to new ideas • Questioning and posing problems • Thinking independently	**3a. Science Talk** Have a class discussion about whypeople need resources. **3b. Air Power** Complete one of the following activities to show how air can move objects: Make a pinwheel Make a balloon rocket Make a hovercraft **3c. Story Time** Write a story about what would happen of the world ran outof fuel. **3d. Picture It** Create a collage on the different usesof water. **3e. Word Search** Use an online word search generatorto create and complete an interactive word search featuring natural resources.	Science Horizons Book 3 Science Fusion Book 3 Harcourt Science Book 3 https://kidsactivitiesblog.com/ 47096/air-pressure-experiment-for-kids-2/ https://www.weareteachers.com/ balloon-experiments/ https://puzzlemaker.discovery education.com/word-search	Complete an online interactive worksheet. Write a paragraph, poem, song, or rap about natural resources.

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Water Cycle **Strand 2: Changes in Earth and Sky**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE	1. Interpret diagrams to explain changes that occur at each phase of the water cycle.	• The movement of water from Earth's surface into the air and back to the surface again is called the **water cycle**. • The first step in the water cycle is **evaporation**. Evaporation is the changing of a liquid into a gas. • When the sun heats water liquid water changes into a gas - **water vapor** - and rises into the air. • The second step in the water cycle is **condensation**. • When the water vapor reaches cooler air it condenses, which means it changes from a gas to a liquid. This forms clouds. • The drops of water in the clouds join up until they are too heavy to float. • Then they fall to the ground **precipitation** (rain, snow, hail or sleet). • Because the cycle keeps repeating itself, water is always being recycled.	• Recognize and control variables • Make accurate observations and measurements . • Collect, process and interpret data • Make inferences and draw conclusions	• Curiosity • Questioning and posing problems • Thinking independently	**1a. Vocabulary Practice** Using the flashcard app Quizlet, practice vocabulary words and meanings. **1b. Evaporation Watch** Half fill two plastic cups with water. Use a marker to mark the level of water on the outside of both cups. Place one cup near a window with direct sunlight and the other in the shade. Periodically check the level of water to the markings made on both cups. **1c. Make It Rain** Almost fill a clear plastic or glass cup with water leaving about an inch at the top. Spray shaving cream across the top of the water as clouds. Squirt several drops of food colouring. As the clouds become heavy the food colouring with "rain" into the cup.	Harcourt Science Book 3 Science Fusion Book 3 https://quizlet.com/_ajpcsg?x=1jqt&i=2rgvdk https://www.playfullearning. net/ resource/water-is-water-3-experiments-for-kids/ https://www.liveworksheets. com/ vg1665602nt	Draw and label a diagram of the water cycle. Complete an interactive worksheet labelling a diagram of the water cycle.

Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Clouds **Strand 2: Changes in Earth and Sky**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE	1. Experiment to describe how clouds are formed. 2. Classify clouds according to their traits.	• A cloud forms when water vapor in the atmosphere condenses. • Condensation happens when the water vapor rises, cools, and changes from a gas to liquid water. • These drops of water in a cloud are so small they stay up in the air. • **Cirrus Clouds** are thin, feathery clouds that form high in the sky and bring rain or snow. • **Cumulus Clouds** are big and fluffy and are usually associated with fair weather. • **Stratus Clouds** look like a dull grey blanket. They form close to the ground and bring rain.	• Use materials and scientific equipment correctly and safely. • Make inferences and draw conclusions • Collect, process and interpret data • Use materials and scientific equipment correctly and safely • Use classification process	• Curiosity • Perseverance • Questioning and Posing Problems • Cooperation • Questioning and Posing Problems • Thinking Independently	**1a. Cloud in a Bottle** – Fill a clear plastic bottle one-third full of warm water. If you squeeze and release the bottle (with the cap on) you will notice nothing happens. Now light a match and drop it into the bottle, then quickly close the bottle trapping the smoke inside.This time when you squeeze and release, a cloud will disappear whenyou squeeze and appear when you release. **2a. Sky Watch** – Go outside to observe the type of clouds in the sky. Draw and label clouds seen in a week. **2b. Cloud Model** – Use cotton, glue and construction paper to form the different types of clouds. **2c. Clouds Flap Book** – Create a clouds flap book. 	Science Fusion Book 3 https://www.weatherwizkids.com/weather-clouds.htm https://youtu.be/E8AvfXar9zs https://www.weatherwizkids.com/weather-clouds.htm https://www.livinglifeandlearning.com/types-of-clouds-activity.html (cotton clouds) https://thefirstgradefoodie.wordpress.com/2013/03/20/clouds/ (flap book)	Write story entitled, "A Day in the Life ofa Puddle". In a cloud cut out, write a paragraph explaining how a cloud forms. Label pictures of the three types of clouds. Match the type of cloud to the weather it indicates. Submit a video of clouds outside describing how the cloud looks and telling the type of cloud it is.

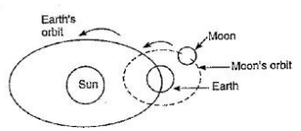
Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Earth **Strand 2: Universe and the Solar System**

EARTH SCIENCE

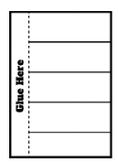
LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
1. Research to describe Earth and its place in the Solar System in relation to the sun.	• The **sun** is a star. • It is a huge ball of hot, glowing gases that give off radiant energy like other stars. • It is one million times larger than the earth. • The sun is in the centre of the solar system. • **Earth** is the third planet from the sun. • Earth has only one moon. • A **planet** is a large body of rock or gas that orbits the sun. • An **orbit** is the path an object takes as it moves around another object.	• Pursue new knowledge • Formulate models • Make accurate observations and measurements • Make inferences and draw conclusions	• Curiosity • Open to new ideas • Questioning and posing problems • Thinking independently	**1a. Astro Art** - Draw a diagram of Earth in orbit around the sun.  **1b. Word Play** - Use an interactive website to practice vocabulary words such as Quizlet or Quizizz. **1c. Rotation Demonstration** Experiment with a globe or a ball and a flashlight to assimilate the rotation of the Earth and how we get day and night.	Harcourt Science Book 3 Science Fusion Book 3 https://www.liveworksheets.com/nx1182544dt (globe experiment) https://quizlet.com/_an1gjk?x=1qqt&i=2rgvdk	Draw a diagram of the Solar system. Include labels of the sun, Earth and Earth's moon. Match the vocabulary words: sun, Earth, planet, orbit, star and moon to their meanings. Write a paragraph entitle 'Earth, My Home'. Include a picture of the Earth.

Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Movement of Earth **Strand 2: Universe and the Solar System**

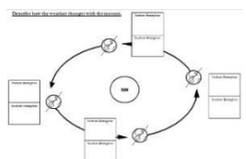
	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE	1. Demonstrate to describe the motion of the earth around the sun.	• Earth spins like a top. • This is called **rotation**. • Rotation is the spinning of an object on its axis. • Earth's **axis** is an imaginary line that goes through the North Pole and South Pole. • Earth rotates on its axis every 24 hours. • One rotation takes a day. • Earth also circles the sun. • This is called a **revolution**. • A revolution is the movement of earth around the sun. • Earth makes one revolution around the sun every 365¼ days. • One revolution takes Earth a year.	• Engage in collaborative activities • Make accurate observations and measurements • Collect, process and interpret data • Make inferences and draw conclusions	• Positive attitude toward failure • Cooperation • Perseverance • Thinking independently	**1a. Interactive Notebook** Create an interactive notebook foldable activity for the vocabulary words.  **1b. Sky Watch** - Observe the location of the sun at the start of the school day to the end of the school day. Infer why the location changed. **1c. Human Revolution** - Pair students up and allow them to demonstrate the movement of Earth. One students is the sun and the other is the Earth. **1d. Revolution Model** - Using cardstock paper cutouts and brad fasteners, create a moving demonstration of the earth orbiting the sun.	Harcourt Science Book 3 Science Fusion Book 3 https://glitterinthird.com/2014/ 12/reason-for-seasons.html (interactive notebook) https://enchantedlearning.com/ subjects/astronomy/planets/earth/ https://www.starhop.com/blog/ 2020/3/31/at-home-stem-activities-earth-moon-and-sun (paper orbit model)	Construct a model of Earth and the sun to demonstrate rotation and revolution. Match the vocabulary words to their meanings. Answer questions about the content in a physical or virtual worksheet.

Fundamental concepts and principles of earth and space science are related to the origin, structure and physical phenomena of the Earth and the Universe.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Seasons **Strand 2: Universe and the Solar System**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
EARTH SCIENCE	1. Interpret visuals to describe what causes seasons.	• Earth has seasons because its axis is tilted. • This means Earth is tipped to one side. • The tilt change the way the sunlight hits Earth at different times of the year. • This changes the amount of light and heat Earth's surface gets. • For part of the year the top of the axis (North Pole) points in the direction of the sun. This is summer in the northern half. • During that time the bottom of the axis (South Pole) points away from the sun. • When Earth is in this position, it is winter in the southern half. • Each season lasts three months.	• Engage in collaborative studies • Communicate information effectively • Make inferences and draw conclusions • Formulate models	• Curiosity • Cooperation • Tolerance of other's views • Thinking independently	**1a. Science Talk** - Hold a class discussion on 'The Reasons for Seasons'. Discuss what seasons are and why we have them. **1b. Video Presentation** Watch a You Tube video demonstrating seasons. **1c. Rotation Model** - Use a large ball and an apple with a pencil through it (as the axis) to demonstrate what happens as earth rotates and revolves around the sun. Note the times when the axis is pointing to the sun, away from the sun or to the side.	Harcourt Science Book 3 Science Fusion Book 3 http://sciencenetlinks.com/ lessons/the-four-seasons/ https://youtu.be/T6SSOo EMwAA https://www.learn4yourlife.com/ weather-lessons.html (blank diagram of seasons) https://www.liveworksheets.com/ bh2633052tg	Label the seasons on a diagram.  Write a paragraph describing how we get seasons. Include the names of the four seasons. Complete an interactive worksheet.

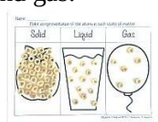
Fundamental concepts and principles of physical science include the study and analysis of the nature and properties of living and non-living matter and energy.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Matter **Strand 3: Properties and Changes in Matter**

PHYSICAL SCIENCE

LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
1. Experiment with manipulates to identify matter as solids, liquids and gases. 2. Investigate concrete models to compare some characteristics of solids, liquids, and gases. 3. Classify models into solids, liquids and gases.	• **Matter** is anything that has mass and takes up space. • Matter has three different forms called states. • The three states of matter are **solid**, **liquid**, and **gas**. • A solid takes up space and has a definite shape. It does not lose its shape. • Liquids have volume that stays the same, but it can change its shape. A liquid takes the shape of its container. • A gas does not have a definite shape. It takes the shape of the container. It fills empty spaces. A gas does not have a definite volume.	• Engage in collaborative activities • Make accurate observations • Make inferences and draw conclusions • Utilize classification process and recognize relationships	• Curiosity • Cooperation • Questioning and posing problems • Positive attitude to failure	**1a. "What's the Matter!"** – Place objects on the table. Students observe objects to see if they take up space, have volume and a definite shape. Make three groups of objects – Solids, Liquids, and Gases. **2a. Cereal Model** - Use cereal to represent the particles in a solid liquid and gas.  **3a. Matter Collage** – Cut out pictures of each kind of matter. Glue them on chart paper under the correct state of matter: Solid, Liquid, or Gas. Solid | Liquid | Gas	Harcourt Science Book 3 Science Fusion Book 3 https://www.liveworksheets.com/yf315155hu https://www.liveworksheets.com/ur1237299sx https://quizizz.com/admin/quiz/57d158c25ca407d9f795dc47	Label pictures as solid, liquid or gas Illustrate the particles in a solid, liquid and gas

Fundamental concepts and principles of physical science include the study and analysis of the nature and properties of living and non-living matter and energy.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Matter: Changes in State **Strand 3: Properties and Changes in Matter**

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
PHYSICAL SCIENCE	4. Experiment to show how matter changes from one form to another. 5. Investigate the effects of heating and cooling on matter.	• Water can be solid, gas or a liquid. • Water as solid may be ice or snow. • Water as gas is water vapor. • Adding heat or taking away heat causes matter to change states. • Adding heat makes the **particles** move faster. • Taking away heat, or cooling, makes the particles slow down.	• Formulate hypothesis • Design, conduct and evaluate scientific investigations	• Questioning and posing problems • Think independently	**4a. Melting Mayhem –** a. Place a clear plastic cup on a piece of paper towel. Put two ice cubes in the cup. b. Predict what the ice cubes will look like after 45 minutes. c. Observe what is in the cup after 45 minutes. d. Mark the outside of the cup to show how high the water is. Predict what will happen inside the cup by morning if you leave it out all night. Then leave the cup sitting out. e. Observe findings the next day. **5a. Easy Evaporation** – Experiment to see if exposure to more heat would speed up the rate of evaporation. a. Measure 100 ml of water and pour into a plastic cup. Repeat with a second cup. b. Place one cup in the shade like the classroom and one in the sun. c. At the end of the day use the measuring cup to measure the amount of water in each cup.	Harcourt ScienceBook 3 Science Fusion Book 4 https://www.liveworksheets.com /sp1487010yk https://www.ecosystemforkids. com/ quizzes/2nd-grade/Change-of-state-of-matter/online.html https://worksheetplace.com/ mf_pdf/3-States-of-Water-worksheet.pdf	Label pictures of water in its three states as solid, liquid or gas. Read a description and tell whether heat was added or taken away.

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Matter: Physical Properties **Strand 3: Properties and Changes in Matter**

PHYSICAL SCIENCE

LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
6. Investigate objects to observe the physical properties of Matter.	• The **physical properties** of matter include its colour, size, shape and texture. • A physical property is anything you can observe about an object using your senses. • Matter can also break, bend, stretch and magnets can attract objects with iron.	• Make predictions based on reasoning and prior knowledge • Engage in collaborative studies • Make accurate observations and measurements.	• Curiosity • Questioning and posing problems • Think independently	**6a. Obvious Observations** – Observe a variety of objects and record their physical properties. Record findings on a chart like the one below. **6b. I Spy Classroom Edition –** Describe the physical properties of different objects around the room beginning with the phrase, "I spy with my Scientific eye, something…" **6c. Grab Bag** – Place a variety of objects in a concealed bag. One by one a child puts their hand in the bag and describe the item, then try to guess what the item is.	Harcourt Science Book 3 Science Fusion Book 3 https://ecdn.teacherspayteachers.com/thumbitem/Properties-of-Matter-Foldable-1500873406/original-474574-2.jpg https://www.kidsacademy.mobi/printables/grade-2/science/physical-science/grade-2-physical-properties-of-matter-worksheet.pdf	Identify the matter based on the description of its physical properties. Create a physical properties of matter booklet. Paste or draw pictures on pages labelled things that are… (Properties such as blue, soft, bumpy, sweet, etc. may beused.)

Object	how it looks	how it feels	how it smells	how it sound
Penny				
Marble				
Key				
cotton				

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Measuring Matter **Strand 3: Properties and Changes in Matter**

PHYSICAL SCIENCE

LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
7. Experiment to discover the length of objects.	• Matter can be measured using a variety of instruments. • **Length** is the distance from one point to another. • Rulers, metersticks, and measuring tapes are used to measure length. • Length can be measured in meters and centimetres, or in yards, feet and inches.	• Use materials and scientific equipment correctly and safely • Collect, process and interpret data/ information • Make accurate observations and measurements	• Cooperation • Thinking independently	**7a. Measure Up** Use a metric ruler to measure the length of a desk, book, and pencil. Use a meterstick to measure the door, chalkboard, etc. **7b. Measure Me** Using a measuring tape, students work in pairs to measure parts of their body such as around the head and waist or the length of their arms and legs. **7c. That's About the Size of It -** Estimate the length, height or with of various items including a teddy bear, water bottle, book shelf, window pane, quarter, etc. Students record their estimates then use a ruler or measuring tape to find the actual measurement. Item | Estimate | Actual Length | | |	Science Horizons Book 3 https://youtu.be/ftB5VU64yGA https://quizizz.com/admin/quiz/58154b6255ffb1ad365fc7c6 https://www.liveworksheets.com/ in1353739vk https://www.liveworksheets.com/ mt1396422vh	Write which unit would be used to measure various items. Decide which tool would be best to measure various items. Choose the approximate length of given items. Measure items using a metric ruler.

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Measuring Matter **Strand 3: Properties and Changes in Matter**

PHYSICAL SCIENCE

LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
8. Interpret the metric table to identify the metric units used to measure mass.	• All matter has mass. • **Mass** is the amount of matter in an object. • The more mass an object has, the harder it is to move the object. • Scales and **balances** are used to measure mass. • Mass is measured in grams and kilograms or in pounds and ounces.	• Make predictions based on reasoning • Engage in collaborative activities • Use materials and scientific equipment correctly and safely • Make inferences and draw conclusions	• Cooperation • Questioning and posing problems • Curiosity	**8a. Study the Table of Measurements** **Units of Mass and Weight** **Metric Units** 1 kilogram (kg) = 1000 grams(g) 1 gram = 1000 milligrams (mg) **Customary Units** 1 ton = 2000 pounds (lb) 1 pound = 16 ounces (oz) **8b. Battery Balance** Using a balance and batteries of various sizes (AAA, AA, C, and D), compare the mass of batteries by trying to determine how many of one size it would take to balance with another size. For example, AAA to AA, C to D or AA to C. **8c. My Book of Mass** Create a picture book of various items (clipped from magazines, drawn or printed). Below each picture students can write the unit of measure (grams or kilograms).	Science Horizons Book 3 Science Fusion Book 3 https://www.math-salamanders.com/metric-conversion-chart.html https://youtu.be/ivAD44nh0D0 https://www.liveworksheets.com/sp1487010yk https://quizizz.com/admin/quiz/5ff50855090bd0001b4454d8	Decide which object is heavier of lighter. Circle the correct unit of measure (grams or kilograms/pounds or ounces). Demonstrate the use of a balance.

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Measuring Matter **Strand 3: Properties and Changes in Matter**

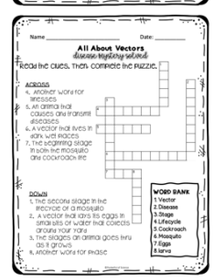
	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
PHYSICAL SCIENCE	9. Experiment with a graduate to measure the volume of liquids and solids.	• All matter takes up space. • The amount of space matter takes up is called its **volume**. • The volume of a liquid can be measured using a measuring cup. • A **graduated** cylinder is used to measure volume. • Volume is measured in units of millilitres and litres.	• Formulate hypothesis • Make predictions • Use materials and scientific equipment correctly and safely • Make accurate observations and measurements • Collect, process and interpret data • Draw conclusions	• Curiosity • Cooperation • Questioning and Posing Problems	**9a. Which Unit** Using pictures of various items like a tub, cup, teaspoon, etc., determine whether the unit litres and millilitres should be used. **9b. How Much Can It Hold** Select containers of various sizes. Predict which container will hold the most or/and least. Using a graduate, fill the containers one at a time to determine which container holds the most or least amount of water. **9c. How much can it Hold** Using a variety of containers, predict how much liquid each container can hold. Then fill items with liquid to measure how much the containers actually hold. Write findings on a chart. Item | Estimate | Actual Volume | | |	Science Horizons Book 3 Science Fusion Book 3 https://www.pinterest.com/pin/ 11118330321678080/ https://quizizz.com/admin/quiz/58f4cf206fdfb21100fc7090 https://youtu.be/ene2apts5VU	Read the volume of liquids in graduates and calculate the changes in volume when a solid is placed in the graduate. Record findings. Conduct a survey of which container can hold the most water. Verify predictions by measuring and comparing the amounts of water each container can hold, then graph and interpret the results.

Fundamental concepts and principles of environmental science include the investigation and articulation of ways to conserve and manage natural resources.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Vectors

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
ENVIRONMENTAL SCIENCE	1. Define vector. 2. Identify animals that may be vectors and spreaddiseases.	A **vector** is any animal that may cause and transmit disease. In the Bahamas common vectors include the following: Fleas - Flea bites may cause discomfort and an allergic reaction in some people. Locally, the cat flea is the most important flea pest to humans and many domestic animals like cats and dogs. In other parts of the world, plague can be found in wild rodents like chipmunks and ground squirrels. Houseflies - The common housefly is one of the most widely distributed insects and has the ability to transmit disease to people. Houseflies are commonly found in homes and restaurants. Because of its close association with people and its ability to transmit disease, it is considered a great threat to humans.	• Classification • Synthesis	• Curiosity • Cooperation • Critical thinking • Creativity	**Digital Poster** Have students choose a vector on which to do research for additional information. Then, have them make a poster or digital notice board to educate your school community. **Guest Speaker** Invite a speaker from Environment Health's Vector Control Education Section to speak on the effects of Vectors on our community and ways to eliminate them. **Brochure** Have students create a brochure that tells what vectors are, what contributes to the proliferation of vectors, and ways to eliminate vectors. Select the best overall one or two to duplicate and distribute around your school	Harcourt Science Bk.6 School Health & Family Life Education Curriculum Module – Reducing Pests and Insect Vectors. Environmental Health Education Division on Vector Control www.youtube.com Housefly from egg to adult in 14 days The Housefly	**Exit Ticket** https://bnt.bs/curriculumhub/ 

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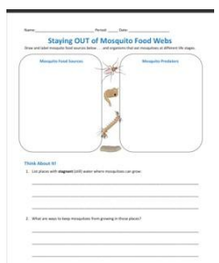
CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Vectors

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
ENVIRONMENTAL SCIENCE		They can carry more than 1 million kinds of bacteria on their bodies and can transfer these to contaminate surfaces and food. The common housefly can transmit the pathogens that cause shigellosis, typhoid fever, E. coli. and cholera. Rats – There are two species of rats that commonly become a problem in and around homes: the roof rat (black rat) and the Norway rat (brown rat). Roof rats and Norway rats contaminate food and animal feed and may transmit Salmonellosis, Leptospirosis and other diseases. These diseases may be contracted when food or water is contaminated with rat faeces or urine and is ingested or contacted by humans. Rats also harbor ectoparasites such as fleas and mites which may come in contact with humans and domestic animals.			**Infographic** In groups, have students create an infographic to illustrate "Effective ways to eliminate vectors". **Jeopardy Game**: In groups, have students develop Jeopardy games or puzzles on one of the vectors studied in this lesson using websites below: www.discovery.com www.kidsdomain.com www.puzzlemaker.com https://jeopardylabs.com/	Grade 3 resource Pack https://bnt.bs/curriculumhub/	

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Vectors

ENVIRONMENTAL SCIENCE	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
		Ticks - Ticks are capable of transmitting a wide variety of protozoan, bacterial, viral and fungal **pathogens**. Ticks may be carried by wild hogs and furry animals like dogs. Lyme disease is one tick-borne disease of great concern. Mosquitoes - Adult female mosquitoes may bite humans or other vertebrates, including pets, livestock and wildlife to obtain the blood required for egg development. Bites cause skin irritation and may become **infected** especially if the bite is scratched. Mosquitoes are known to transmit a wide range of pathogens, including viruses, and protozoans such as the parasite that causes malaria. They are known to transmit diseases like West Nile, Zika, Dengue Fever and Chikungunya.					

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Vectors

ENVIRONMENTAL SCIENCE	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
		Cockroaches – Cockroaches are proven or suspected carriers of the organismsthat cause the following infections: Salmonellosis, Typhoid, Fever, Cholera, Gastroenteritis, Dysentery, Leprosy, Plague, Campylobacteriosis, Listeriosis, Giardia.					

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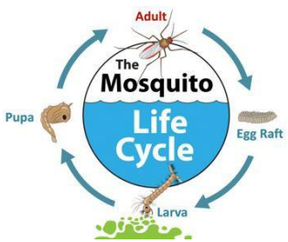
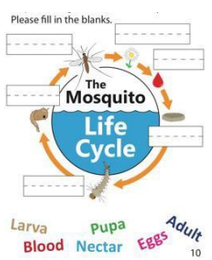
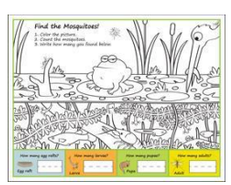
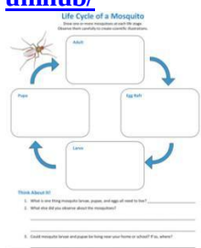
CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Vectors

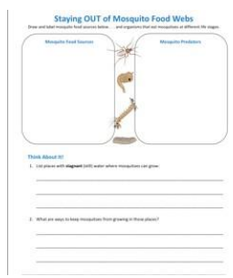
	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
ENVIRONMENTAL SCIENCE	1. Investigate the life cycle of a mosquito. 2. Explain why mosquitoes are classified as vectors. 3. Suggest ways we may eliminate mosquito vectors.	**LIFE CYCLE OF MOSQUITO**  • **Eggs:** floats in clumps (**egg rafts).** • **Larva**: young wingless form. • **Pupa:** do not eat or move while they are transforming. • **adult**: final stage when mosquito sheds and takes flight. Mosquitoes, like all insects (and other arthropods such as spiders and crustaceans), have an exoskeleton which protects their soft internal organs.	• Observation • Evaluation • Synthesis • Classification	• Curiosity • Critical thinking • Curiosity • Questioning and posing problems	**Investigation** Have students do an investigation to find out if there are items around your school campus in which mosquitoes may lay their eggs. **Worksheet**  	www.uen.org/themepark/cycles/animal.shtml PowerPoint Lesson presentation on vectors. www.youtube.com Mosquito eggs hatching Mosquito Life Cycle Grade 3 Resource Pack https://bnt.bs/curriculumhub/	**Exit Ticket** **https://bnt.bs/curriculumhub/** 

Fundamental concepts and principles of environmental science include the investigation and articulation of ways to conserve and manage natural resources.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Vectors

ENVIRONMENTAL SCIENCE	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
		Mosquitoes lay their eggs in stagnant water. If there are lids, old tires and containers that may catch rainwater lying around your yard, they will provide a place within which mosquitoes may lay their eggs, grow, and develop through their water stages (egg, larval and pupal). When mosquitoes meet their needs of water, food, and warmth, there will be a **metamorphosis** as they transform from larvae into pupae and pupae into adults. Larvae get oxygen from the surface. They suck in food like an underwater vacuum cleaner. They need warmth to develop into pupae. Both male and female feed mainly on fruit and plant nectar, but the female also needs the protein in blood to help her eggs develop.			**Observation:** If there are mosquito larva present around your school, you may let students collect samples in glass or plastic jars and observe using hand lenses and microscopes. **Worksheet**  Staying OUT of Mosquito Food Webs		

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Vectors

ENVIRONMENTAL SCIENCE	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
		Once she's had her fill of blood, she'll rest a couple of days before laying her eggs. After the airborne portion of their life cycle, females return to water to lay a new batch of fertile eggs. There are over 3,500 mosquito species worldwide. Mosquitos carry and spread disease to humans and cause millions of deaths every year. Only female mosquitoes bite people. To protect yourself and prevent mosquito bites you should do the following: • Empty any freestanding water since it is an ideal breeding ground for mosquitoes. • Wear protective clothing such as long sleeves and pants when outdoors in mosquito prone areas. • Use mosquito nets in and outside areas. • Use citronella candles or insect repellent. • Use mosquito traps in outdoor areas.					

Fundamental concepts and principles of environmental science include the investigation and articulation of ways to conserve and manage natural resources.

CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Pollution

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
ENVIRONMENTAL SCIENCE	1. Explain how water and land may be polluted. 2. Describe negative impacts of water and land pollution. 3. Suggest ways to prevent water and land pollution.	Pollution is any unwanted matter that can be added to air, water or soil. When harmful materials are dumped into the water, this causes water pollution. Garbage littered on the land may be carried into the sea by rain and wind. Pollution makes water and lands unsafe for humans and other animals. Chemical fertilizers also pollute land and **contaminate** water resources. You can keep the water and land clean by not dumping. People can make less trash by: <u>Reducing</u> – this is really the best way to reduce your overall waste footprint. If you never buy, use or have, then you will not have the waste to manage when done. Individuals average about 4.3 pounds of waste per day and we can all do something to reduce this amount. Buying durable products that will last longer, planning your purchases and cutting back, can help reduce waste.	• Observation • Evaluation • Synthesis	• Cooperation • Critical thinking • Creativity • Open to new ideas • Thinking independently	**Investigations** Have students observe and record the amount collected at school and home over a specific period. Lead guided comparison and discussion on how this helps or causes pollution of our surroundings. • Have them keep track of garbage accumulation in their personal neighbourhood or the schools to contact environmental Health Services when dumpsters are filled or need attention **Project Beach** Get students involved in Dolphin Encounters' Project Beach to clean up beaches and analyse the types of debris showing up on beaches.	Harcourt Science Bk.3 Harcourt Science Bk.2 Science Horizon Bk.2 www. Doodly.com www.Toonly.com Resource Pack **https://bnt.bs/curriculumhub/** Dolphin Encounter Bahamas	**Exit Ticket** **https://bnt.bs/curriculumhub/**

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Pollution

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
ENVIRONMENTAL SCIENCE		Reusing - finding uses for items versusdiscarding them into the landfill. When possible, we should only buy items that can be reused (for example reusable shopping bags to replace plastic bags). We should maintain and repair what we own, donate and give away items before you throw them away. Upcycling - making a creative or useful product from stuff that would have ordinarily been thrown away. We can find ways to repurpose items by finding alternative use for items that no longer serve their original purpose. Recycling - helps reduce pollution. Recycling is the process of converting garbage to raw materials and making them into new products. Recycling can help conserve resources. If aluminum is recycled, less bauxite, needs to be mined.			**Cans For Kids Project** Contact "Cans-for-kids" and set up an aluminum cans collection project. **Experiment** Have students conduct an experiment to find out how oil spills affect marine life by placing oil in water. Then dipping the feather into the water with oil. Have them observe what happens to the feather. Lead guided discussion how this would affect a bird's flying ability. Finally, have them use detergent and fresh water to clean the feather. They should record and present their methods.		

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Pollution

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
ENVIRONMENTAL SCIENCE		If plastic is recycled less petroleum needs to be extracted from the earth to make new plastic. When paper is recycled fewer trees need to be cut down. Making products from recycled plastic and water cause less pollution.			**Poster** Have students create a poster or use an animation software to create an animated video onsources of pollution and waysto prevent water and land pollution. **Outreach** Have students host a public zoom meeting, make a Courtesy Call on Environment Health Services in your community or make a presentation to your School's P.T.A about what they have learned and what their ideas to solve ourpollution problem are.		

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Pollution

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
ENVIRONMENTAL SCIENCE	1. Explain how air may be polluted. 2. Describe negative impacts of air pollution. 3. Suggest ways to prevent air pollution.	Air pollution is caused when cars, trucks, and factories burn fossil fuels. This can hurt people's lungs. Rain combines with air pollution and falls to the ground. This pollutes the land water. People can help keep the air clean by using bikes, buses or carpooling instead of one person in a car. They should not burn leaves or trash and reduce the use of fossil fuels.	• Observation • Evaluation • Synthesis	• Critical thinking • Thinking independently • Questioning and posing problems • Perseverance	**Air Quality Test** Have students conduct an air quality test by doing the following: • Cut ½ X3 strips of clear hard plastic. Cover with Vaseline. Adhere to different surfaces around your school. Check to see what collected on it after 15 mins, 30 mins and an hour. Discuss findings **Air Pollution Test** • To test for invisible gaseous pollutants, stretch three or four rubber bands over a piece of cardboard. Lay them in a shady place. Check the rubber bands each day. The faster they become brittle, the more pollutants there are in the air.		**Exit Ticket** **https://bnt.bs/curriculumhub/**

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CURRICULUM GUIDELINES
SCOPE OF WORK

GRADE 3

Topic: Pollution

	LEARNER OUTCOMES	CONTENT/ CONCEPTS	SKILLS	ATTITUDES	ACTIVITIES	RESOURCES	METHOD OF ASSESSMENT
ENVIRONMENTAL SCIENCE					**Photography** Have students take/find pictures of locals polluting the air (e.g. exhaust from a vehicle that need servicing). Have them make an electronic poster showing ways we pollute the air in the Bahamas or your island. Have them mount a display showing ways we pollute the air, impacts on our health and ways to prevent air pollution.		

Perspectives that Enrich Instruction

Scientific Literacy is an essential support for sustainable development in the global economy. It therefore stands to reason that one of the main goals of the Science Instructional Programme would be the promotion of Scientific Literacy.

The benefits that accrue from the promotion of Scientific Literacy in the curriculum are numerous, for as Scientific Literacy increases so does the students' appreciation of the **application of scientific principles to problem solving**. In addition, students are encouraged to focus their creative energies spawned by alert inquiring minds to produce positive end results that can be of economic, social and emotional value to themselves and society.

As educators zealously attempt to prepare students for coping with the challenges of life in a technology driven world, care should be taken to incorporate current and innovative practices in the Science Instructional Programme. These and other instructional strategies will:

- Motivate students to increase their understanding of the subject through practical immersion and discovery encounter experiences;
- Increase the effectiveness of science instruction;
- Build students' confidence and competence;
- Heighten students' expectations;
- Promote higher overall achievement.

This section is intended to provide teachers at the primary level with a wide range of perspectives and innovative practices for implementing an effective Science Instructional Programme. These strategies comprise:

- Inquiry-based Learning
- Constructivism
- Bloom's Taxonomy
- Process Skills Development
- Use of the Scientific Method
- Cooperative Learning Technique
- Student-centred vs. Teacher-centred Learning
- Multiple Intelligences and Learning Styles
- Assessment Strategies
- Information Technology Linkages
- Science Safety

Inquiry–based Learning

Inquiry–based Learning places emphasis on experiential learning where practical "hands-on" activities are used to motivate students to focus their innate curiosities and inquiring minds on problem solving through the application of scientific principles.

Proponents of the traditional "lecture method" of instruction (i.e. imparting information directly from text books with limited or no opportunity for students to engage exploration, questioning and discovery skills) are rapidly being convincedthat this strategy (with respect to the teaching of science) is very ineffective and when compared with other modern approaches is now obsolete.

Research has shown that frequent use of the lecture method, especially with regardsto the teaching of science, results in diminished student expectation and achievement. Research "shows that people don't learn science by absorbing stuff that has been poured unto them (via lectures) but rather by constructing meaning out of experiences that the teacher provides." *Wendy Saul, Science Education Analyst; University of Maryland, Baltimore County, U.S.A.*

In **Inquiry–based Learning**, opportunities are provided that create an environment that enable students to gain experience as a result of science exploration. Practical experiences are provided and open-ended questions are asked to encourage experimentation that does not necessarily have a known outcome and that will leadto testable questions. During this experimentation, students are encouraged to takerisks and are therefore not afraid to make mistakes. Some of the greatest scientific discoveries come after many failures and disappointments.

Inquiry–based learning goes beyond providing students with opportunities for practical "hands–on" experiences to illustrate established scientific principles (e.g. giving them batteries, bulbs, and wires to show the concept of current electricity). This strategy takes the learning process to a different level (e.g. it may challenge students to use the batteries, bulb, wire and additional materials to develop something useful for a deaf person or something that can assist with a specific chore, homework assignment, etc.).

The inquiry–based approach to the teaching of science is key to effective and meaningful instruction as it encourages students to:

- Critically evaluate situations;
- Frame their own questions;
- Develop diverse strategies for coping with problems in their environment;
- Cultivate organizational and creative skills;
- Assume leadership roles and be self motivated;
- Be accountable for their learning;
- Collaborate and communicate with each other;
- Develop team interaction skills.

Constructivism

Constructivism is closely related to **Inquiry-based Learning**; therefore, effective application of **Inquiry-based Learning** is enhanced by **Constructivism. Constructivism** means generating meaning by connecting what is to be learned with personal knowledge that has been constructed from past experiences. "A Constructivist is one who believes that the learner is responsible for constructing knowledge and, therefore, the responsibility for learning must be returned to the child." *Ebenezer & Conner 1998, Learning to Teach Science, A Model for the 21ST Century.*

Students' understanding of the world is moulded by their experiences. As they think about these experiences and their own views and beliefs, they construct personal meaning and acquire knowledge. Constructivists advocate that students should not be expected to just accept knowledge and skills developed over the years and impartedby the teacher. Instead, they become "active seekers" of knowledge as inquiry is encouraged and they discover and decipher things for themselves.

In using Constructivism, teachers become facilitators that create stimulating environments with a variety of "hands-on" experiences that empower students to explore. The teacher's main role is to provide experiences that help students make connections between what is learned and what they already know or believe. More learning takes place when students become active participants in the learning process and are "allowed to make their own sense out of the world."

Providing students with "hands-on" experiences that reinforce ideas or perceptions that they already have results in them assimilating or absorbing new concepts easily. The knowledge that the students construct from the information that they receive as a result of these "hands-on" activities makes sense and is easier for them to relate to and apply to their everyday livs and environment.

Constructivists probe students' knowledge base and examine and classify their concepts to then provide them with opportunities to share and debate common knowledge. They then convert and expand students' knowledge by asking open-ended questions and presenting problems which cause them to gain new understanding of the concepts being taught. By doing this, they challenge and promote conceptual change.

When using the Constructivism Theory, it should be noted that there are times when knowledge has to be imparted directly by the teacher in a detailed and explicit way. There are many benefits that can be accrued from utilizing the Constructivism Theory, but if it is not used properly, learning may become sporadic and disorganized. Although students should not be stifled in their exploration to acquire knowledge, when using this theory it is important to:

- Set clear precise goals for the knowledge and skills that the students are expected to acquire;
- Communicate these goals to the students and ensure that they are understood;
- Organize assignments in a clearly planned sequence;
- Provide guidance for the students.

Blooms Taxonomy

STEPPING UP TO HIGHER LEVELS OF THINKING

Benjamin Bloom is accredited with identifying a list of behavioural terms that are reflective of various levels of learning. This list is referred to as Bloom's Taxonomy. It enables us to better understand the cognitive level at which students process information. Students who process information at the higher levels develop critical thinking skills and are able to analyse, synthesize, and evaluate. They construct new meanings and become original and creative thinkers. Students who process information at the lower levels may not become independent thinkers and may not be empowered to problem solve. The list of behavioural terms are as shown.

SCIENCE PROCESS

Source: The American Association for the Advancement of Science

BASIC SKILLS

1. **Observing.** Observation is an objective process of gathering data or facts through the use of one or more of the five senses – hearing, sight, touch, taste, and smell. The five senses are used to find out about objects and events, their characteristics, properties, differences, similarities, and changes.

    ✦ *Observations are recorded.*

2. **Classifying.** Classification is the process of sorting or grouping objects on the basis of observable traits. When objects share a common characteristic, they are said to form a set.

    ✦ *Lists, tables, or charts are generated.*

3. **Measuring.** Measuring is the process of expressing the amount of an object in quantitative terms or comparing an object to a standard (metric units, time, student-generated frames of reference).

    ✦ *Measurements are to be recorded in an orderly and systematic fashion with labelled units of measure. Charts, graphs, or tables can be generatedmanually or with a computer.*

4. **Inferring.** Inferring is an inventive process in which an assumption of cause is generated to explain an observed event. Inferring takes place when we arrive at a conclusion or guess based on what we observe or already know.

    ✦ *More than one inference may be presented to explain an observation.*

5. **Predicting.** Predicting deals with projecting events based upon a body of information. It is a belief based on what will occur based upon present knowledge and understandings, observations, and inferences. The nature of the skill of predicting is to be able to identify a trend in a body of data and then to project that trend in a way that can be tested. Predicting takes place when you tell what you think will happen.

    ✦ *A prediction should be followed by a written or oral explanation to clarify ideas and reveal any misconceptions or missing information.*

6. **Interpreting.** Interpreting is arriving at explanations, inferences, or hypotheses from data that has been placed in a data table or graph.

7. **Communication.** This process refers to the systematic reporting of data and may be oral, written or mathematical. It should organize ideas using appropriate vocabulary, graphs, other visual representation and mathematical equations. The purpose of the communication skills is to represent information in such a way that maximum amount of data can be reviewed with an eye toward discovering inherent patters of association.

8. **Hypothesizing.** A hypothesis is a response or potential solution to a specific question or problem.

9. **Experimenting.** This is a systematic approach to problem solving. Usually experimenting is synonymous with the scientific method. The scientific method follows five basic steps:

PROBLEM → **HYPOTHESIS** → **PREDICTIONS** → **TEST OF PREDICTIONS** → **EVALUATION OF HYPOTHESIS**

Science Process Skills		
Process Skills	**Students**	**Scientists**
Observe	use your senses	computers, microscopes, senses
Experiment	change something, watch what happens	manipulate and control variables
Collaborate	others in classroom	other scientists
Record	science journals and notebooks	field notes, data sheets, computer
Measure	thermometers, lab equipment, etc.	scientific instruments
Sort/Classify	colour, size, shape, weight	classification keys, field guides
Compare	Which one is biggest? Which one went the farthest? etc.	change over time change in conditions
Analysis and Sharing	Why did this happen? Tell others…	data analysis tell others

Use of the Scientific Method

*Students need to be taught valuable problem-solving skills in order to react appropriately to the many situations that confront them on a daily basis. The **Scientific Method** sets out a sequence of logical steps that are employed in problem solving. It is applicable to **ALL** areas of life and is not restricted only to the teaching of science.*

The components of the **Scientific Method** and their descriptors are set out below. It is to be noted that students should utilize this format when writing up experiments or laboratory reports.

1. **PURPOSE**	The purpose is the question that is to be answered by doing the experiment. State the reason or reasons why you are doing the experiment. State the purpose as a question needing an answer.
2. **HYPOTHESIS**	A hypothesis is an educated guess on how the experiment/activity will turn out that is based on prior knowledge. Although a good hypothesis is testable, it may not be correct. Experimenting can find out whether or not the hypothesis is correct or not.
3. **MATERIALS**	All materials required for the activity/experiment need to be identified. One must be as accurate as possible in describing the materials. Be sure to give exact amounts and quantities.
4. **PROCEDURE**	The procedure describes everything that will be done during the experiment. The procedure affects the result of the experiment; therefore, care should be taken to explain the procedure as accurately as possible. State the procedure as numbered steps (It would help if they be written beginning with behavioural terms).
5. **OBSERVATION**	The observation describes exactly what happens during an experiment. Report the observations made and the data collected during the experiment. Data is recorded facts or measurements from an experiment. Data should be presented as tables, charts, and graphs, to be easily understood.
6. **CONCLUSION**	The conclusion is a comparison between the results and the hypothesis of an experiment. To draw a conclusion, the data needs to be analysed to see what is meant. Explain observations and describe how the data relates to the problem. The conclusion should state whether or not the data supports the hypothesis. Part of the conclusion may be a statement or a new hypothesis based on findings and suggestions for testing the new hypothesis in a further experiment.

The **Cooperative Learning Technique** allows all students to have a sense of accomplishment. **Cooperative Learning** promotes group work and opportunities for verbal face-to-face interactions, which assist students to acquire and apply concepts.

Cooperative Learning builds interpersonal skills and positive interdependence characterized by specific roles, sharing of knowledge and materials and achievement of mutual goals. It encourages group processing as students analyse how well their groups are functioning and design and employ strategies to ensure that they function effectively.

When using the **Cooperative Learning Technique**, the teacher functions as a facilitator and students are more accountable for their learning and share the responsibility for the learning of others. It is important for the teacher to set and evaluate social and academic goals for the groups and the quantity and qualityof students' learning.

When forming cooperative groups, it is recommended that groups work together for three to six weeks before students are assigned new roles or groups changed. During the year, each student should have an opportunity to function in each role. Once groups are formed, ensure that all members realize that theyare jointly responsible for achieving group goals. They do this by:

- Contributing ideas to the group;
- Listening carefully for ideas from others;
- Helping the group make good decisions;
- Cooperating rather than competing;
- Solving problems in a calm manner.

Reference: Circle of Learning: Cooperative Learning in the Classroom by D. W. Johnson et al, 1986

STUDENTS' ROLES AND FUNCTIONS

Supervisor, Leader or Investigator

Does experiments, manipulates materials.

Assistant, Helper or Organizer

Collects, organizes and distributes materials and makes sure group cleans up any mess.

Manager or Motivator

Assists supervisor, leader or investigator, encourages the group, encourages time on task and adherence togoals and safe practices, and also times activities if necessary.

Writer or Recorder

Records observations, questions, answers, illustrations, etc.

Reporter

Collaborates with Writer or Recorder and shares group's data, results, and conclusion with class.

Student-Centred vs. Teacher-Centred Learning

Student-Centred Learning develops self-directed learners who are confident in doing science, proactive in the learning process and willing to share and acceptresponsibility for their own learning. Student-Centred Learning activities are adaptive and cater to the learning needs of students.

COMPARISON OF STUDENT-CENTRED AND TEACHER- CENTRED LEARNING

STUDENT-CENTRED

- Students' conceptions and experiences are explored.
- Teacher challenges students to question before accepting information.
- Discussion is encouraged between students and teacher.
- Students are allowed to move about in an orderly manner to discuss and problem solve.
- Students share and help each other. They use peer tutoring.
- Students actively participate in decision-making.
- Learning activities cater to multiple intelligences and different learning styles.

TEACHER-CENTRED

- Teacher is the authority figure and has the final say.
- Students must never question the teacher.
- Students only respond when a question is asked.
- Students must remain seated at all times.
- Collaboration between students is discouraged and regarded as cheating.
- Students do not participate in decision-making.
- There is very little variation in learning activities

Multiple Intelligences

HOWARD GARDNER

The theory of Multiple Intelligences is a way of understanding the different facets of the intellect and each person's level of intelligence. The intelligences can work individually or in collaboration with the other intelligences, so a person can be operating in more than one intelligence. As we teach children, we should ensure that appropriate provision is made for individual differences and multiple intelligences.

- **Linguistic Intelligence** is a person's ability to construct and comprehend language. It is the capacity to use language to express feelings and to understand other people. It may be in a person's native language or another language. Poets, writers, orators, speakers, lawyers specialize in linguistic intelligence.

- **Naturalist Intelligence** is the ability to identify and classify patterns in nature. It is the way a person relates to his environment and the recognition of the role that the environment plays in our lives. It is the ability to discriminate among living things like plants and animals and sensitivity to changes in nature (e.g. weather patterns, rock configurations).

- **Spatial Intelligence** is how people comprehend shapes and images in three dimensions. Spatial Intelligence is utilized to perceive and interpret things that we may or may not see. It is the ability to represent the spatial world internally in your mind like the way a sailor navigates the seas with only the stars or airplane pilot navigates aerial space, or the way a chess player or sculptor represents the spatial world. Spatial intelligence can be used in the arts or in the sciences. Persons with this type of Spatial Intelligence are usually painters, sculptors, architects and scientists that deal with anatomy and topology.

- **Musical Intelligence** is the ability to perform and compose music. It is the capacity to think in music, to be able to hear patterns, recognize them, remember them, and perhaps manipulate them. Persons with strong musical intelligence are completely preoccupied with music -- it is always playing in their minds. Persons with musical intelligence use music to face their challenges and to assist them in solving their problems.

- **Bodily - Kinaesthetic Intelligence** is a natural sense of how the body should act and react in demanding situations. These persons have extraordinary control of their movements, balance, agility and grace. They have the capacity to use their whole body or parts of their body to solve a problem, make something, or put on some kind of a production. Bodily - Kinaesthetic Intelligence is evident in athletes and persons in the performing arts, particularly dance or acting.

- **Logical – Mathematical Intelligence** is the ability to mentally process logical problems. People with a highly developed Logical-Mathematical Intelligence can manipulate numbers, operations and quantities, and they have the ability to process logical questions at an unusually fast rate. These persons have the ability to understand the underlying principles of some kind of a causal system, the way a scientist or a logician does.

- **Intrapersonal Intelligence** is a person's cognitive ability to sense and understand him or herself. It refers to a very strong self-concept and strength of character, which gives the

person the ability to solve internal problems. These persons know who they are, what they can do, what they want to do, how they react to things, which things to avoid, and which things to gravitate toward. These persons have a strong sense of purpose and are not easily deterred from that purpose. They know their strengths and their limitations and know where to go if they need help.

- **Interpersonal Intelligence** is understanding and interacting with others and interpreting their behaviour. As social beings, it is an essential ability that we all need; however, people with Interpersonal Intelligence have a greater perception of distinctions between persons and have the ability to judge their moods, temperaments, intentions and motivations. Persons with Interpersonal Intelligence become teachers, clergy, leaders, clinicians, salespersons, or politicians. Anybody who deals with other people has to be skilled in the interpersonal sphere.

Learning Styles

DAVID A. KOLB

People have their unique, individual way of learning. Understanding how students learn and planning activities that cater to various learning styles will enhance their learning and ensure higher achievement.

- **Visual Style**
  Persons who prefer the visual style convert what they hear and read to pictorial images in their brain. When recalling information, they go through a process similar to reviewing pictures in a movie. These students have no problems in obeying conventional classroom rules. They will sit quietly, write neatly and use all materials well. These persons often choose careers in engineering, surgery, design, architecture and positions of leadership that requires visionary thinking.

- **Auditory Style**
  These persons learn best by hearing and listening. They process information through their listening and repeating skills. They are good storytellers and can successfully talk through their problems. These students can easily repeat what they heard just as it was said. They are the most talkative and the most likely to participate in discussion; however, they may experience difficulty in writing. These persons often become psychologists, disc jockeys, great musicians and other occupations that require a great deal of listening.

- **Kinaesthetic Style**
  These persons process and remember information through their bodies and their feelings. Kinaesthetic learners need to touch and feel what they are learning about. They may become restless unless they are actively involved in the learning process.

Assessment Strategies

WHAT IS ASSESSMENT?

- Whenever we interact with other people, we obtain and interpret information about their knowledge and understanding and may well make judgements about their ideas, abilities and attitudes.
- Assessment - whether direct or indirect - is a human encounter and is a central feature of social life.
- Educational assessment includes a wide range of methods for evaluating student performance that describes the nature and extent of learning and how it matches up to the objectives of teaching.

When assessing, there must be alignment between what is in the curriculum, what is actually taught and what is tested.

WHY DO WE ASSESS?

- The main purpose of assessment is to judge the attainment or performance level of students with a view of evaluating or grading them for one purpose or another.
- Purpose might include:
  - Placing students in appropriate teaching sets;
  - Providing extra motivation for learning and an aid to remembering;
  - Informing parents about progress;
  - Informing other teachers who have to make decisions about students (e.g. when students transfer to a new school or new courses which may have been studied);
  - Accumulating records of achievement;
  - Acting as a diagnostic tool (e.g. diagnosing weaknesses so that remedial action may be taken);
  - Making decisions about examination entries involving predictions about future performance;
  - Informing further education institutions or employers about attainment so that suitable placement may be made. In doing this, we are using measured attainment to make predications about likely future performance.

Hence, assessment has primarily been used as a means of judging the attainment and progress of students, providing a reporting system and deciding appropriate action.

FORMS OF ASSESSMENT

Assessment may be:

- Informal
- Formal

- **Informal assessment** takes place during normal learning activities. Much information can be picked up by teachers in their normal interaction with individual students, allowing problems to be overcome at an early stage and progress accelerated. Hence, **informal assessment** is often used **diagnostically.**
- It is often said that **informal assessment** should be unobtrusive if the teacher is to gain reliable insights about students' abilities and the state of development and that it should be for a specific purpose and for private use only.
- With **formative (i.e. informal assessment)** the results are fed back to the learner. Such feedback can be **confirmatory** (a recognition that the particular tasks have been mastered at that particular time) or can be **corrective,** allowing dialogue between teacher and learner to show where the learner wentwrong.
- **Formal assessment** is only aimed at obtaining knowledge about the student. It is obtrusive and may not be able to provide direct instructional function.
- **Formal assessment** becomes **summative** when information is not available for feedback purposes because it is obtained too late in the learner's career to be used in this way.
- **Formal** and **summative assessment** is used largely for public purposes (e.g. BJC, BGCSE and RSA Examinations)
- Even this is changing with the advent of initiatives such as the GLAT where **formal** and **summative assessments** are made with students at grade 3 and 6. The results of formal assessments made at an early stage can be used for the benefit of the learner at the next stage of education.

ASSESSMENT MAY ALSO BE TRADITIONAL OR AUTHENTIC

Traditional Assessment measures what the students were taught and basically assesses their ability to recall information. This type of assessment includes **homework, quizzes, tests** and **book reports.**

Authentic Assessment measures what students have actually learned and can promote further learning. This type of assessment includes **portfolios**, **journal keeping, anecdotal records**, **student conferencing, self and peer assessment** and **projects and reports.**

Although there is no alternative for traditional assessment in certain situations, authentic assessment should be frequently used in the Primary Science Instructional Programme, especially portfolios and the keeping of Science journals.

Contributed by Sheena Williams, Testing and Evaluation Section

The Assessment Process

Assessment is a way of providing feedback to the various stakeholders in the education system and a way of communicating the expectations of that system to all concerned. Data generated through the process of assessment provides the students with feedback on how well they are meeting course expectations and teachers with feedback on how well students are learning. Assessment allows teachers to determine the effectiveness of the instructional strategies employed in the teaching process. Thus, effective assessment practices can drive both instructional strategies employed by the teachers and learning strategies that may be used by students.

National Science Education Standards identified four components of the assessment process: data use, data collection, methods to collect data, and users of data. These components can be combined in numerous ways and should be used to inform decision making and actions taken in science education. National Science Education Standards suggested the following changes in emphasis in assessment:

Less Emphasis on …	***More Emphasis on …***
Assessing what is easily measured	Assessing what is most highly valued
Assessing discrete knowledge	Assessing rich, well-structured knowledge
Assessing scientific knowledge	Assessing scientific understanding and reasoning
Assessing to learn what students do not know	Assessing to learn what students understand
Assessing only achievement	Assessing achievement and opportunity to learn
End-of-term assessment by teachers	Ongoing assessment by students of their work and that of others
Development of external assessment by experts alone	Involvement of teachers in the development of external measurement

Assessing Student Learning

Assessing science through paper-and-pencil tests is akin to assessing a basketball player's skills by giving a written test. We may find out what someone knows about basketball, but we won't know how well that person plays the game.

(Hein and Price, 1994)

Instituting change in the classroom assessment program can be challenging. It is important for the classroom teacher to remember that new assessment strategies should be introduced slowly and carefully, being careful to maintain some traditional testing. A balance of traditional testing and alternative assessments will result in a more complete picture of student progress. In addition to traditional testing, the following assessment strategies have been used effectively in many science classrooms:

- Matched pre- and post-module assessments;
- Embedded assessments Prediction activities;
- Final assessments, such as hands-on assessments, paper-and-pencil tests, and science notebooks;
- Informal assessments;
- Documentation and record keeping.

Matched Pre- and Post-Module Assessments
Pre- and post-module assessments serve two important functions. The first is to track how much students have learned during the unit. The latter enables the teacher to observe how the student's understanding of a subject has grown.

A pre-module assessment might include a teacher asking a question, assign an investigation, brainstorm, draw a picture, or perform a simple experiment at the beginning of the unit to determine how much a student knows about a given subject. As the class progresses through the unit, the teacher might refer to the pre-module assessment to further refine the teaching strategies. The post-module assessment would then be used as a way for the teacher to measure his or her teaching strategies.

Embedded Assessments
Embedded assessments are woven into the instructional sequence in the module. They may be part of the activities that naturally occur in a lesson or a logical extension of the lesson's central activity. Embedded assessment allows the teacher to obtain and record information about student learning.

Prediction Activities
A prediction activity allows the student to predict an outcome based on previous experience and knowledge of a subject. By asking students to make predictions at appropriate times, teachers can assess the science concepts their students have mastered and how well they can apply that knowledge to a new situation.

Final Assessments
Final assessments are used at the end of a science unit or module and can take many forms. Examples of final assessments are described below.

Hands-on Assessments
Hands-on assessments provide opportunities for teachers to observe how well students can perform an experiment similar to one they worked on during the module or unit. Through hands-on assessments, teachers see how students approach a problem, gather data, record results, and draw conclusions form their findings.

Teachers may also use stations to offer a series of tasks for students to complete. Students may work individually or collectively as a group.

Paper-and-Pencil Tests
Paper-and-pencil tests are questions used at the end of the unit to assess student knowledge. The questions can be pictorial or reflective. Pictorial questions evaluate how well a student can think through problems that require both the knowledge and the application of ideas to a new situation. Reflective questions evaluate how well students can express themselves in writing as indicated by the way they respond to problem-solving questions.

Science Notebooks

Students can be asked to prepare individual science notebooks that include all the observations and records generated during a module or unit. The notebooks may include stories and poems, record sheets, charts, tables, and graphs. Drawing also reveals what students have learned. Teachers should assess the level of detail, use of labels, and quality of explanations accompanying the drawing. Notebooks also provide an effective way for students to keep records of what they have done in the module.

Informal Assessments

It is also beneficial to conduct informal assessments of student progress. Informal assessment might include reviewing written materials, observing students at work and simply listening to students talk as you stroll around the classroom. By asking the right questions, teachers can uncover students' reasoning and the steps they used to solve problems. The questions that students ask can also provide valuable information about their understanding. Individual and group presentations also provide insight into student understanding or interpretation of concepts. Finally, questions posed by students following presentations can provide opportunities to gather important information.

Documentation and Record Keeping

One of the hardest parts of incorporating alternative assessments into the science program is developing an accurate record-keeping system. Many teacher's guides include record-keeping charts to help teachers focus on the goals of each assessment instrument.

The record-keeping devices may include observation sheets, student worksheets, student profile charts, and evaluation rubrics. These devices provide a structure for teachers to use as they experiment with new assessment strategies, and they can be adapted to suit the needs and record-keeping styles of different teachers.

Information Technology Linkages/Literacy Skills for the Science Classroom

Our students are known as the **digital** or **the information generation.** As computers are transforming the way students learn and are making a big difference in the way that their brains process information, we must use information technology to cater to the unique needs of this computer-savvy generation. Computer technology can play a pivotal role in the instructional strategies of teachers as they adapt and adjust their modes of teaching to incorporate information technology into their lessons.

As we seek to use information technology to our advantage, we must be forever mindful of the challenges of the information highway and make a comprehensive review of all websites before they are used and recommended to students. Please note that the suggested websites listed below have been reviewed for currency and suitability for students and teachers. As the internet is constantly changing, some websites may become non-functional, outdated or unsuitable.

1. **The Learning Site**
   www.harcourtschool.com
   A world of science resources, expeditions, interactive learning games and activities by Harcourt School Publishers.

2. **NSTA SciLinks**
   www.scilinks.org/harcourt
   Connects students to a variety of innovative science websites.

3. **Teachers**
   www.teacher@hmco.com/act_archive
   Resource of ideas and activities for each month of the year the Houghlin Mifflin Company.

4. **Education World**
   www.educationworld.com
   Lesson plans, resources and assistance for teachers.

5. **Education Place**
   www.eduplace.com/science
   Houghton Mifflin site with science-related resources that include textbook support, professional development, science activities, projects and links, etc.

6. **Science**
   www.npac.syr.edu/textbook/kidsweb/science.html
   Information on the solar system and marine sscience with links to interactive exhibits of science museums around the world by Syracuse University.

7. **Windows to the Universe**
   www.windows.ucar.edu
   Information, fun, games and activities about the solar system and Earth science.

8. **Links for Teachers**
   www.pe.ca/athena/awebtelk.htm
   Links with websites for teachers.

9. **Astronomy for Kids**
   www.kidsastronomy.about.com
   A space site full of fun information, games, maps and links designed for students and their parents.

10. **NASA**
    www.arc.nasa.gov/kids.html
    Information on all aspects of space and the work of the North American Space Agency (NASA).

11. **NASA Kids**
    www.NASAKids.com
    NASA's official fun and comprehensive children's site that includes information about planets, the solar system, space travel and our universe, space news, features, games, questions and answers and homework questions.

12. **The Canadian Space Agency**
    www.space.gc.ca/kidsspace/csasupports
    A children's space site that teaches them about the solar system, space careers and Canada's role in space.

13. **Do Science**
www.doscience.com
Cool science tricks, experiments and activities that can be done anywhere.

14. **Magic School Bus**
www.place.scholastic.com/magicschoolbus/index.htm
Fun-filled interactive site that covers many aspects of science.

15. **Cyber Sleuth**
www.cybersleuth-kids.com
A comprehensive educational search engine directory and homework helper for levels K-12 that also features information about science exhibitions.

16. **MSNBC Network Broadcast**
www.msnbc.com/news/SCIENCE_front.as
Science headlines and information about current and innovative science research.

17. **MSNBC Network for Kids**
www.kids.msn.com/kidz/partnerdiscovery.asp
Fun games and homework help that give focus to animals and space.

18. **Discovery**
www.discovery.com
Uses adventure, fun and games to explore the impressive world of discovery with features on nature, science and technology; also includes homework help.

19. **Discovery Channel**
www.discoverychannel.com
Exciting information about science as featured on the Discovery Channel.

20. **National Geographic for Kids**
www.nationalgeographic.com/kids
Learn amazing Science facts, opportunities to chat with other students about science, write cartoons and try out outrageous experiments; interactive activities, adventure, exploration and maps.

21. **Nickelodeon for Teachers**
www.teachers.nick.com
Features include Bill Nye, The Science Guy, The Big Help and 3-2-1 Contact, a programme that exposes children to all aspects of science. This site has activities, lesson plans, resources, cable connections, etc.

22. **Yahooligans**
www.yahooligans.com/
Science and nature information, experiments, games, activities andlinks to many scientific sites.

23. **Canadian Broadcasting Corporation for Kids**
www.cbc4kids.ca/general/the_lab
Powerhouse of learning and fun in science for students, parents and teachers.

24. **Kids Science**
www.kidscience.about.com
Information, experiments and activities in all areas of science.

25. **The Smithsonian Institution**
www.si.edu/info/education.htm
Details on museum's exhibits and educational resources, including activities and lesson plans for teachers.

26. **Brain Pop**
www.brainpop.com
Features animated activities to learn about cells,tissues, organs and the rest of the body.

27. **Fun Brain**
www.funbrain.com
Fun, games and trivia on science and other subjects.

28. **The Franklin Institute – Brain Drops**
www.fi.edu/braindrops/
"Nuggets" of science to expand students' knowledge of science in their environment.

29. **Neuroscience for Kids**
www.faculty.washington.edu/chudler/neurok. html
Experiments, activities, games and lesson plans to teach students about the senses, the brain and the nervous system by the University of Washington.

30. **Cool Science for Curious Kids**
www.hhmi.org/coolscience/
Explorations in life science by the Howard Hughes Medical Institute.

31. **The Exploratorium**
www.exploratorium.edu
Hands-on internet museum that lets students explore science and art in interactive exhibits and games.

32. **Science Learning Network**
www.sln.org
Experiments, activities and information for students and teachers in all areas of science (Kindergarten- Junior High School).

33. Educational Web Adventure
www.eduweb.com
Exploring science, social studies and art through storytelling and interactive games.

34. **Sandlot Science**
www.sandlotscience.com
A site full of unbelievable optical illusions.

35. **Ontario Science Centre**
www.osc.on.ca
Students learn how their minds and bodies work through experiments and interaction with some of the exhibits at the Ontario Science Centre.

36. **YES Mag – Canadian Science Magazine for Kids**
www.yesmag.bc.ca/
The latest news about science and technology, experiments and activities.

37. **The Lab**
www.abc.net.au.science
Information and interactive activities that cover almost all areas of science featured in this colourful gateway to science by the Australian Broadcasting Corporation.

38. **Canadian Hurricane Centre for Kids**
www.ns.ec.gc.ca/weather/hurricane/ids.html
A comprehensive look at hurricanes including a full glossary and list of hurricane links.

39. **Hurricanes**
www.eduscapes.com/42explore/hurricane/htm
Information, activities and links for hurricanes.

40. **EcoKids Online**
www.ecokids.earthday.ca/
Games, news and stories that teach students about the environment.

41. **EcoKids and Teachers**
www.ecokids.earthday.ca/pub/educators/clamate/frm_set.htm
Information about climate change, global warming, the green house effect and other atmospheric conditions for educators and parents.

42. **SciCentral K-12 Science**
www. scicentral.com/K-12/
Features lesson plans, suggestions for science exhibition projects and links to “Ask a Scientist” service.

43. **Dr. Bob’s Interesting Science Stuff**
www.frontiernet.net/~docbob/
Interesting science and technology facts, articles, bulletin board ideas, science projects, questions and answers and science links.

44. **CyberFair – Science Project Steps**
www.isd77.k12.mn.us/resources/cf/steps.html
See sample projects and get information on how to do projects.

45. **Bonus**
www.bonus.com
Super resource for students that offers activities, interactive games and graphical toys to help them learn to about science and other subjects.

Literacy Skills for the Science Classroom

The following sites features information and strategies for helping students develop the reading and writing skills needed for success in the science classroom.

Sites That Matter

Resources for Science Literacy: Professional Development
The mission of Project 2061, a long-term initiative of the American Association for Advancement of Science, is to advance literacy in science, math, and technology through workshops for teachers, principals, curriculum and materials developers, policy makers and others. There are also self-guided courses and trade book information for teachers. This site also includes a fabulous evaluation tool for comparing Benchmarks for Science Literacy with the benchmarks set by the National Council of the Social Studies, the National Council of Teachers of Mathematics, and the National Research Council.
www.project2061.org/publications/rsl/online

Science and Literacy, by Ellen Stone, National Energy Foundation
This brief article is posted on the Science Site from the Utah Office of Education. The author explains why the science curriculum ought to help students learn to read and write about science. She includes suggestions for how to integrate reading into a science program and lists strategies for helping students comprehend nonfiction.
www.usoe.k12.ut.us/curr/Science/ReadScience/NEF%20Sci%20and%20Lit.html

Reading and Writing in the Science Classroom, by Dr. Patricia Bowers
This article from the Professional Development section of Houghton Mifflin's Science Discovery Works site emphasizes the connection between science and what the author calls "the communication skills of reading and writing". Focusing primarily on the upper and lower elementary grades, the author provides a chart that demonstrates how the process skills of science, reading, and writing are interrelated, and she includes suggestions for how to develop an integrated unit.
www.eduplace.com/science/profdev/articles/bowers.html

MCPS Science Instruction
This section of the Montgomery Country Public Schools web site contains numerous ideas and strategies for integrating reading and writing with science instruction.
www.mcps.k12md.us/curriculum/science/instr/instr.htm

Learning Styles and Writing in Science
This report from England's Department for Education and Skills list numerous strategies for integrating writing into the science curriculum. The strategies are organized into categories based on Howard Gardner's multiple intelligence theory: visual, auditory, kinaesthetic, intrapersonal, and interpersonal.
www.standards.dfes.gov.uk/midbins/keystage3/Learning%20styles%20and%20writing%20in%20science.PDF

Use of Writing in Science Class
This web page from the University of Akron's K-12 Science Education site gives a concise rationale for including literacy instruction in the science class and gives some practicalsuggestions for how to do it.
www.agpa.uakron.edu/k12/best_practices/using_writing_resources.htm

Journals and Logs: Science, Conversation, and Writing
This article from Perspectives in Education and Deafness describes different types of logs and journals and includes ideas for how they can be used in the science classroom.

Laboratory Safety

An integral part of a successful science program is conducting laboratory experiments, activities and investigations. Laboratory experiments, activities and investigations can lead to accidents or injuries. Prevention is the best cure to reduce the possibility of such accidents or injuries. Preparation and planning are the key to laboratory safety.

Safety should be the priority in preparing and planning every experiment, activity and investigation. The teacher should provide an environment where laboratory safety is always considered. While it is not possible to anticipate every accident, a well-planned experiment, activity or investigation will minimize potential. Keys to safety in elementary school science are planning, management and monitoring. Listed below are areas for consideration:

- Teachers should perform an experiment prior to class presentation to determine any inherent safety issues;
- Teachers should model safety procedures at all times;
- Teachers should supervise and monitor student behaviour and enforce safety rules and procedures immediately;
- Teachers must be present during the entire laboratory session;
- Students should understand rules dealing with glassware, electrical equipment, chemicals, fire, sharp instruments and eye safety;
- Safety rules should be prominently posted in the classroom laboratory;
- Appropriate protective equipment should be provided and worn as required (eye, hand, clothing, etc.);
- Teachers should be aware of student allergies;
- Safety equipment should be immediately accessible in laboratory/classroom and in working order (eye station, fire extinguisher, ground-fault interrupters (GFI), first aid kit, etc);
- Laboratory equipment should be cleaned or sanitized, age appropriate and in working order;
- Teachers should understand basic first aid rules in case of injuries;
- Proper storage of materials and equipment is required.

Chemical Safety Hazards

Laboratory chemicals pose a potential hazard in the elementary science classroom. Most elementary school teachers are not formally trained in chemistry, yet chemicals are sometimes used in their science programs. Listed below are chemicals considered too hazardous for use in elementary science classrooms.

a. **Acids:** Acids such as hydrochloric, sulfuric or nitric acid should not be used. Even diluted solutions of these acids can cause skin and eye burns. Two acids generally safe to use are vinegar or a weak citric acid solution. When working with acids, always were chemical splash safety goggles.

b. **Asbestos:** Asbestos should not be used and should be discarded according to school system policy. Some forms of this mineral – commonly used in hear-proofing applications – is known to cause cancer.

c. **Bases:** Sodium hydroxide (lye) or potassium hydroxide is an extremely strong base. Even diluted solutions will irritate the skin, and – if splashed in the eyes – may cause injury before one can begin to wash the eye out. For acid-base (pH) activities, the teacher should consider sodium bicarbonate (baking soda) when making a basic solution. When working with bases, always wear chemical splash safety goggles.

d. **Mercury:** Mercury compounds should not be used in the elementary school classroom. Any thermometers or other instruments containing mercury have no place in the elementary classroom and of which should be properly disposed (mercury thermometers can be identified by their silver-coloured liquid.) When thermometers are needed, use alcohol-filled thermometers).

e. **Smoke Generating Activities:** Smoke of any kind affects the lungs because smoke is composed of particles floating in the air. Any classroom demonstration that produces smoke should be done in a fume hood, near an exhaust fan or outdoors with students upwind.

f. **Other Chemicals:** Teachers should use only those chemicals that are approved for the use in elementary classrooms.

Science Safety

Teachers should communicate the following safety rules to their students and ensure that they are obeyed:

In the Classroom

- Listen to your teacher for special safety directions. If you do not understand something, ask for help.
- Wear safety goggles when your teacher tells you to wear them.
- Tell your teacher if something breaks or spills. Move away from it and wait for the teachers' instructions.
- Be careful around a hot plate, a candle or open flame. Only use these items if instructed to do so by the teacher.
- When heating materials in test tubes, always slant the tubes away from yourself and others.
- Wear safety aprons if you work with anything messy or anything that might spill.
- Read all the directions before doing experiments or using equipment. Make sure you understand them. If you do not, ask your teacher for assistance.
- Carefully read the label on the container of a product before you use it; follow the manufacturer's instructions and pay special attention to health or safety warnings.
- Keep your hair and clothes away from open flames. Tie back long hair and roll up long sleeves.
- Keep your hands dry around electrical equipment.
- Know the location and proper use of the fire extinguisher and first aid kit.
- Never run or play around in the Science Laboratory classroom.
- Never eat, drink or smell unless you are instructed to do so by the teacher.
- Never draw any material into a tube with your mouth.
- Clean up your work area and wash your hands afterwards.
- Store tools and equipment safely the way your teacher tells you to as soon as you finish using them; do not leave them out where they may be stumbled over.
- When using liquids or other potentially messy substances, cover work surfaces with newspaper.

On Field Trips

- Always be accompanied by a trusted adult like your teacher or a parent or guardian.
- Never touch animals or plants without the adult's approval. The animal might bite. The plant might be poisonwood or another dangerous plant.
- Stay with your group and keep within sight of the accompanying adult. report any scrapes, cuts and injuries to your teacher immediately.

Responsibility

- Treat living things, the environment and each other with respect.

Teaching and Learning Strategies

http://www.newhorizons.org/strategies/front_strategies.html

In this area of the website, you will find information on some of the best researched and the most widely implemented methods of helping all students learn more successfully. The information includes a description of how the teaching and learning strategies work, where they have been applied, results and where to find further information from experts in the field, books, websites and other resources. They have been demonstrated to be successful with students of all ages and ability levels, including those with various kinds of disabilities and those who do not learn in traditional ways. Following are links to different teaching and learning strategies, a description of how they work, where they have been applied, results and where to find more information from individuals, books, web sites and other resources.

Accelerated Learning Techniques
Action Research
Applied Learning
Arts in Education
Assessment Alternatives
Character Education
Cognitive Coaching
Cooperative Learning
Democratic Classrooms
Differentiated Instruction
Emotional Intelligence
Environmental Education
Environments for Learning
Graphic Tools
Instrumental Enrichment
Keeping Fit for Learning
Learning Styles
Literacy
Multicultural Education
Multiple Intelligences
Service Learning
Teaching for Understanding
Technology in Education
Thinking Skills

Some Teaching and Learning Strategies that work in Science

I. "OWL STRATEGY"

Credit is given to Ansberry and Morgan 2005 for the creation of the OWL Strategy. This strategy is a three-column chart (OBSERVATIONS, WONDERINGS and LINK TO LIFE/LEARNING) where students record their **observations** about a phenomenon or object, their **wonderings/thoughts** and what they **learned** as it relates to **life**.

II. "READ ALOUD" - SCIENCE LITERATURE/CONCEPTS

This strategy is appropriate for all grade levels. Many researchers contend that this strategy improves reading skills and increases interest in reading and literature and can improve overall academic achievement.

III. "FRAYER MODEL"

The Frayer Model is a tool use to help students develop their vocabulary. Frayer believes that students develop a stronger understanding of concepts when they study them in relational manner. Participants write a word (e.g. ECHINODERMS) in the middle of a box and proceed to list characteristic, examples, non- examples anda definition in other quadrants of the box. They are encouraged to proceed in any order using the examples and characteristics to help them formulate a definition.

IV. "ALPHABOXES"

This strategy could be use as a brainstorming activity to elicit student's prior knowledge and to activate learning, or it could be used at the end of a unit to assess what students learned. Students would be given a blank alphabox (with letters from A to Z – see sample handout). They are given a topic (e.g. MATTER) and are given a time period to write or suggest a word/phrase beginning with each letter of the alphabet associated with the given topic.

V. "PUT RHYTHM TO WORDS"

This strategy could be used to aid students in learning definitions of science words and assessing their knowledge of concepts taught in a lesson/unit.
This strategy provides the opportunity for participants to be creative. In small groups, participants are provided with five definitions each (e.g. "AN ECOSYSTEM IS A PLACE WHERE LIVING AND NONLIVING THINGS AFFECT EACH OTHER."). They are encouraged to read the definitions, identify key words in the definitions, identify the part of speech for selected words in the definitions – (integrating language Arts) discuss meaning and use words in a rhythmic beat so that the definition can easily be remember. To assess definition of words, each word of the definition is placed in squares of firm construction paper and cut out individually (word puzzle.) The words are shuffled, and participants are given a specific time to put word puzzle in correct order.

VI. USING MUSIC

Using music instead of memorization is a technique used to show how science concepts can be taught (e.g. Information on "Bones Found in the Human Body" is provided. In small groups, participants use the tune of familiar nursery rhymes and songs to learn basic content on a topic.

VII. VOCABULARY WHEELS (by Jane Feber)

Participants create a moving wheel that was placed within a folded piece of paper which has a small opening cut on both sides. Through the small openings, students write science words on one side of the wheel and their definitions on the other side of the wheel. This visual tool which participants can make can be used to test vocabulary in science.

VIII. SWAT

This is a fun way to review vocabulary. Teachers are encouraged to select an area in the classroom where science words can be mounted (science wall).
At the end of each unit, the students are grouped into two teams. Each team is provided a light plastic fly swatter. At various intervals two persons (one from each team) stand with fly swatter and back to word wall. Remaining students are given the initiative to give the definition of a word on the word wall. The "GO" Sign then gives permission for the two individuals to turn and SWAT the correct word for the meaning given as quickly as possible. This game reinforces concepts and allow students to have fun while learning.

IX. FOLDABLES (by Denise White)

Foldables are great hands-on instructional strategy and more valuable than worksheets. Students can create various styles of foldables using sheets of coloured paper. They can use the foldables for note taking or written activities.

X. VOCABULARY CHARADE (by Madeline Marcotte)

This strategy can be used with any age group. The purpose of this technique is to review science vocabulary previously studied. The techniques utilize visual/spatial,body/kinaesthetic and interpersonal intelligences.

- Students are given cards with science vocabulary words (one word per card).
- Each student is given the opportunity to choose two persons to work with them.
- A time limit is given for discussion of vocabulary in small groups, and then participants ACT out the WORDS for the class without using oral language.
- The class observe the ACT and then make an effort to identify the WORD. This technique can be used in conjunction with a visualizing activity in which students draw a small picture or symbol next to each word in their notes.

XI. "CONCEPT DEFINITION MAP"

The teacher will choose a word or concept which relates to the topic being studied and write it in the centre of the graphic. Keep in mind a few questions:

1. What is the central word, concept, research question? (e.g. Vertebrates)
2. What are the concepts? The items, descriptive words or telling questions that you can associate with the concept, topic, etc. (e.g. animals with backbones, warm blooded).

The Concept Definition Map could be used during or after reading of a science passage. It can be used with expository and narrative text. (Seewww.forpd.ucf.edu/strategies/samMap.html)

Glossary of Primary Science Curriculum Terminology

TERM	DEFINITION
Adaptation	A body part, a body covering or an action that helps an animal to survive.
Adult	The final stage in the life cycle of an organism
Air	A mixture of gases including oxygen and carbon dioxide.
Air Pollution	Pollutants in the air impact the growth and variety of plants.
Air Pressure	The force of air pressing on Earth.
Alternative Energy	Kinds of energy that do not come from fossil fuels.
Alveoli	Tiny air sacs at the end of bronchioles where the lungs and blood exchange oxygen and carbon dioxide during the process of breathing in and out.
Amphibian	A cold-blooded vertebrate that lives part of its life in water and part on land.
Angiosperm	A plant in which the sex organs are within flowers and the seeds are in a fruit.
Antioxidants	Substances that prevent corrosions (rusting).
Arachnid	A group of arthropods that include spiders, scorpions, mites and tics.
Arthropods	A group of invertebrates with jointed legs, segmented bodies and an exoskeleton.
Asteroid	A small rocky object that orbits the sun.
Astronomer	A scientist who studies objects in space.
Astronomy	The study of objects in space.
A**tmosphere**	The blanket of gases surrounding the earth or another planet.
Attract	To push something. A magnet attracts things made of iron.
Axis	An imaginary line that goes through the North Pole and the South Pole of Earth.
Backbone	The row of bones that run along the centre of the back; also called the spine or vertebrae.
Balance	A tool used to measure mass.
Balance-Diet	A diet of a variety of foods that gives the body all the nutrients it needs.
Barometer	An instrument used to measure air pressure.
Beak	The hard, curved mouth part of a bird.
Bedrock	The solid layer of rock in the Earth's surface found beneath soil, sand or gravel.
Biodegradable	The chemical breakdown of materials by a physiological environment.
Biodiversity	Variety of living things.
Birds	Warm-blooded animals that have feathers and lay eggs.
Black Mangroves	A type of mangrove that has numerous short roots that bend up from the ground called pneumatophores. Black mangrove also excrete salt, which you can see on the back of the leaves.
Bronchial tubes	Tubes that carry air into the lungs.
Bush Medicine	Medicine made from local plants
Buttonwood	A type of mangrove with button-like inflorescences.
Camouflage	A colour or shape that helps an animal blend in with its environment.
Carbon dioxide	A gas found in the air needed by plants to make food. It is also produced by the body when we breathe out.

Glossary of Primary Science Curriculum Terminology (Continued)

Cartilage	The ends of all bones are coated with a layer of rubber-like tissue.
Cell	The basic structural and functional unit of all organisms.
Cephalothorax	The body part of some arthropods where the head and the thorax are in one.
Characteristics	Special quality of a group or thing that makes it different from others; trait.
Chemical property	The property of changing readily from solid or liquid to a vapor.
Chlorophyll	A chemical found in special structures in plant cells.
Chloroplasts	Food producers of the cell.
Cirrus Clouds	Thin, feathery clouds that form high in the sky.
Climate	The general weather conditions in an area in or over a long period.
Climate Change	Studies suggest most plants will have difficulty adapting to the rise in temperature and extreme drought that we will experience because of our changing climate.
Clouds	Tiny drops of condensed water that gather in the atmosphere.
Cold-blooded	An animal whose body temperature changes as the outside temperature changes.
Condensation	The changing of a gas into a liquid.
Cone	A part of a non-flowering plant that bears the seeds.
Cone-bearing Plant	A plant that bears seeds in cones instead of flowers; also called conifers.
Conservation	The wise use and careful management of natural resources.
Conserve	Protect something from harm, destruction, or overuse.
Constellation	A group of stars such as Southern Cross, Great Dipper, Little Dipper, Orion and the twelve signs of the Zodiac.
Core	The layer of the earth beneath the mantle and at the centre of the earth.
Crust	The outer layer of the earth.
Crustaceans	Invertebrates that have two body sections and two pairs of antennae.
Cumulus Clouds	Big fluffy clouds that look like puffs of cotton.
Current	A large stream of water that flows in the ocean.
Degree	A thermometer measures heat on a scale.
Density	How full area is: the concentration of people or things within an area in relation of its size.
Diaphragm	A thick sheet of muscle just below the lungs that does the work of breathing.
Distance	A measure of how far an object moves from one place to another.
Dorsal Fin	A fin found on the backs of fish, whales and dolphins.
Ear	The sense organ of hearing.
Earth	The third planet from the sun.
Ecosystem	A place where living and non-living things interact.
Energy	The power to do work. It is the ability to cause change.
Environment	The surroundings or conditions in which a person, animal or plant lives or operates
Erosion	The movement of weathered rocks and soil from one place to another place.

Glossary of Primary Science Curriculum Terminology (Continued)

Evaporation	The process by which liquid changes into gas.
Exhale	To breathe out.
Exoskeleton	The hard outer covering for the body of many invertebrate animals, mainly arthropods.
Eye	The sense organ of sight.
Feathers	The covering of birds.
Fibre	Helps foods move through the digestive system and prevents some forms of cancer.
Fin	A thin part sticking out from the body of a fish.
Fish	Cold-blooded animals that live in the water and breathes through gills.
Flower	The parts of some plants in which seeds and fruits form.
Flowering Plant	A plant that produces seeds in flowers.
Food chain	The path that energy takes as one living thing eats another.
Food web	A group of food chain that overlap.
Force	A push or pull on an object caused by another object.
Forest	A place where many trees grow.
Fossil Fuels	Natural resources that are burned for energy.
Fossils	The remains or traces of past life found in sedimentary rock.
Fresh Water	Water that has no salt
Fulcrum	A fixed point or a point that does not move on a lever.
Fur	The hairy coat of some mammals.
Gas	A state of matter that does not have a definite shape or a definite volume.
Germination	The beginning of the growth of a plant embryo.
Gills	A body part found in fish and young amphibians that takes in oxygen from the water.
Glacier	A huge sheet of ice.
Graduate Cylinder	A tall cylinder with measuring marks on the side.
Gravitational Force	A force that pulls all objects toward each other.
Greenhouse Effect	The trapping of the sun's warmth in a planet's lower atmosphere.
Habitat Loss	The removal of plants for farms, development and housing.
Habitats	The natural homes or environments of an animal, plant or other organism
Hair	Thin, thread-like strands that grow from the skin of mammals.
Hibernation	A period when an animal goes into a long deep “sleep”.
High Tide	The time at which the water level of the ocean reaches its highest point on land.
Hill	A high place that is smaller than a mountain.
Hurricane	A large tropical storm that is formed in warm water.
Iceberg	A huge chunk of ice that has broken away from a glacier and is floating in the ocean.
Illegal harvesting	Taking resources without permission to do so.

Glossary of Primary Science Curriculum Terminology (Continued)

Inclined Plane	A flat surface with one end higher than the other.
Indigenous plants	Plants that are native to a particular country or area.
Infected	Affected with a disease-causing organism.
Inhale	To breathe in.
Inner planets	The four planets closest to the sun: Mercury, Venus, Earth, and Mars.
Insects	Arthropods that have three body segment (head, thorax, and abdomen) and six legs.
Invasive Species	Alien or non-native species that are brought from other country that grow faster and outcompete the native plants.
Invertebrates	Animals without backbones.
Kinetic Energy	The energy of motion.
Lake	A body of water with land all around it.
Larva	The juvenile or young form of an insect just after hatching.
Leaf	The part of a plant where most of the plant's food is made.
Leaves	The part of a plant that takes in light and air to make food.
Length	The distance from one point to another.
Lever	A simple machine made up of a bar that turns on a fixed point.
Life cycle	The order of the stages in an animal's growth.
Ligaments	Connective tissue.
Liquid	A kind of matter that flows and takes the shape of its container.
Littering	Making an area untidy by leaving items lying around.
Living	Needing food, water and air to grow and change.
Low tide	The time at which the water level of the ocean reaches its lowest point on land.
Lungs	Organs through which air-breathing vertebrates get oxygen from air.
Magnet	An object that will attract things made from iron.
Mammals	Warm-blooded animals that are covered with hair or fur and produce milk to feed their young.
Mangroves	Another name for the wetland ecosystem. The most dominant species of plants that grow in wetlands. Four (4) kinds of mangroves are found in Bahamas and 50 kinds in the world.
Mantle	The layer of the earth just beneath the crust.
Marine Debris	Waste that litters the ocean.
Marine Protected areas	Areas of the ocean that are protected completely or have rules for how people will use the areas.
Marine Resources	Useful assets from the sea.
Mass	A measure of the amount of matter in an object.
Matter	Anything that has mass and takes up space.
Metamorphosis	The changes in form that occur from egg to adult in some animals.
Meteorologist	A scientist who studies weather.
Meteorology	The study of weather.

Glossary of Primary Science Curriculum Terminology (Continued)

Migration	Turtle's instinct on where to go.
Mimicry	An adaptation in which an animal looks like a harmful animal.
Mineral	An object that is solid, is formed in nature and has never been alive.
Mixture	Made of two or more different substances.
Mollusk	An invertebrate that has a soft body.
Moon-Earth	Closet neighbour in space.
Motion	Any change in a position of an object.
Mountain	The highest kind of land with sides that slope towards the top.
Muscles	Found throughout the body and are responsible for movement.
National Parks	A protected area on land or in the sea.
Natural resource	A useful material that is taken from the environment.
Nervous System	A control system made up of the brain, the spinal cord and the nerves.
Newton	The metric unit of force.
Non-Biodegradable	Waste that cannot be broken down by other living organisms.
Nonliving	Not needing food, water and air; not growing.
Non-renewable resource	A finite mass of material which cannot be restored after use such as natural gas. Non-renewable resources may be sustained by recycling.
Non-seed plant	A plant that does not form seeds.
Nose	The sense organ of smell.
Nutrients	Materials needed by living things for growth; materials in food that are used by the body.
Nymph	Young stage of insects that undergo incomplete metamorphosis.
Ocean	A large body of saltwater on Earth.
Ocean Pollution	Unwanted substances that are put in the ocean.
Orbit	The path that an object follows around another space object.
Outer planets	The four planets farthest from sun: Jupiter, Saturn, Uranus and Neptune.
Overexploitation	When too many trees are removed or when they are harvested in a unsustainable manner.
Overfishing	Taking too many fish.
Oxygen	A gas found in the air that is needed to support life.
Paleontologists	Scientists who study fossils.
Parasite	Mushrooms growing on live trees.
Particles	Small bits of matter.
Pathogens	A bacterium, virus or other microorganism that can cause disease.
Phases of the Moon	The different shapes the moon appears to have from Earth over about a month.
Photosynthesis	A process in which plants make their own food.
Physical change	A change of the size, shape or state of matter.
Physical Property	A property of matter that can be observed or measured.

Glossary of Primary Science Curriculum Terminology (Continued)

Planet	A large space object that moves around the sun.
Pollination	The process by which plant pollen is transferred from the male reproductive organs to the female reproductive organs to form seeds.
Pollutant	Waste matter that contaminates the water or air or soil.
Pollution	An unwanted matter that has been added to the air, water or soil.
Population	A group of the same kind of living thing that all live in one place at the same time.
Pore	The outer covering of the sponge's body is covered with tiny holes.
Potential Energy	It is the energy of position or condition. It is stored energy.
Precipitation	Water in the atmosphere that falls to Earth as rain, snow, hail or sleet.
Predator	An animal that feeds on other living animals.
Prey	The animals that predators eat.
Producer	A living thing that makes food by using the sun's energy.
Property	A characteristic that describes matter.
Pupa	The third stage in a complete life cycle in which an insect is inactive and enclosed in a cocoon or case.
Radiant Energy	Energy that comes from the sun.
Rain Gauge	An instrument used to measure rainfall.
Recycle	To use something over again in a new way.
Recycling	The process of converting waste into reusable material.
Red Mangroves	Red mangroves, which are broad-leaved evergreen trees which grow in wetlands. They have above-ground prop roots.
Renewable resource	Any natural resource that can be replenished naturally with the passage of time.
Repel	To push away. Poles that are the same on a magnet repel each other.
Reproduce	To produce offspring or new individuals through sexual process.
Reptiles	Cold-blooded animal with a dry body covered with scales.
Resource	A material that living things use.
Respiratory System	The transport system that brings oxygen into the body.
Revolution	The movement of a planet along its orbit around the sun.
Revolution	The movement of one object around another object.
Richter scale	A scale for measuring earthquakes which uses numbers from 1 -9.
Rock	A hard, non-living thing that comes from the earth.
Root	A part of a plant that anchors the plant in the ground.
Roots	A part of a body that hold it in the soil and take in water and nutrients.
Rotation	The spinning motion of an object.
Salt Water	Water from the sea.
Scales	The body covering of some vertebrates like fish and reptiles.
Season	The seasons are spring, summer, fall and winter.
Seed	The part of a plant from which a new plant can grow.

Glossary of Primary Science Curriculum Terminology (Continued)

Seed plant	A plant that forms new plants from seeds.
Sense organ	A body parts that tells a person about touch, sight, hearing, taste or smell.
Shelter	A place where animals can be safe.
Simple machines	A device with few or no moving parts that changes the size or direction of a force.
Skeleton	The bones that make up an animal's body.
Skin	A natural protective body covering and site of a sense of touch; "your skin is the largest organ of your body".
Solar System	A group of planets in space that moves around the sun.
Solid	A state of matter that takes up a specific amount of space and has a definite shape.
Solute	The substance that does the dissolving.
Solution	When water is added to sugar, a solution is made. It dissolves in another substance.
Solvent	The substance that is dissolved.
Source	A place where something comes from.
Speed	Distance travelled per unit of time.
Spider	Invertebrates that have two body segments (head and abdomen) and eight legs.
Sponge	Sponges are marine animals, invertebrates and filter feeders (they filter tiny particles of food from the water).
Spore	A single cell that can grow into a new organism.
Spring	The season after winter where the weather gets warmer.
Spring scale	A tool that measures forces such as weight.
Star	An object in the sky that gives off its own light.
Stem	A part of a plant that supports the leaves, flowers or cones
Stinging-Cell Animals	Have stinging cells that contain poisonous threads.
Stomata	Tiny opening in the leaves.
Storm	An unusual weather disturbance.
Stratus Clouds	Low-lying, flat clouds that look like dull, grey blankets.
Substance	Something made of only one kind of matter.
Summer	The season after spring that is usually hot. Summer has many hours of daylight.
Sun	The star closest to earth.
Sustainable Development	The careful use and management of resources. Resources can be conserved by designing eco-friendly development projects in harmony with enclosing ecosystems, properly disposing of waste, engaging in practices such as reducing, reusing, composing, turning of appliances when not in use and using alternative forms of energy that do not required burning of fossil fuels.
Temperature	A measure of how hot or cold something is.
Tentacles	A tentacle is an arm-like part that contains the stinging cells.
Thermometer	A tool to measure temperature (heat on a scale).
Thunderstorm	A small local weather disturbance which can be identified by tall clouds, heavy rain and thunder and lightning.
Tides	The alternate rise and fall of the sea level on a daily basis.

Glossary of Primary Science Curriculum Terminology (Continued)

Tongue	A sense organ of taste.
Tornado	A small funnel of quickly spinning air.
Trachea	A soft tube in the respiratory system with rubbery rings around it.
Tree	A figure that branches from a single root.
Troposphere	The layer of the atmosphere closest to Earth.
Vacuole	Sacs in the cytoplasm of a plant cell.
Valley	A low land between mountain or hill.
Vector	An organism that spreads diseases or parasites from one animal or plant to another.
Vertebrates	Animals with backbones.
Vitamins	Vitamins help important chemical reactions take place in your body.
Volcano	A mountain that forms when red-hot melted rock flows through a crack onto the earth's surface.
Volume	The amount of space that matter takes up.
Water Cycle	The movement of water from Earth's surface into the air and back to the surface again.
Water Vapor	Water in the form of a gas.
Waves	The alternate rising and falling of water.
Weather	The condition of the air at a certain time and place.
Weather Forecaster	People who predict future weather.
Weather Instrument	A scientific tool used to measure the elements of weather.
Weathering	The changing of rocks near earth's surface through the actions of natural elements such as a wind, rain, heat, wave action, ice and snow.
White Mangroves	A type of mangrove that has two nodes.
Wind	Moving air.
Wind Vane	A tool used to show the direction in which the wind is moving.
Wings	The part of an animal used for flying.
Winter	The season after fall that is usually cold. Winter has the fewest hours of daylight.
Work	What is done when a force moves on an object.

REFERENCES