ORGANIZATION OF EASTERN CARIBBEAN STATES
EDUCATION SECTOR STRATEGY

OECS PRIMARY GRADES' LEARNING STANDARDS

FOR

SCIENCE AND TECHNOLOGY

GRADES K – 6

Contents

SECTION A

INTRODUCTION
To
THE OECS PRIMARY GRADES' LEARNING STANDARDS
For
SCIENCE AND TECHNOLOGY

BACKGROUND

The Organisation of Eastern Caribbean States (OECS) member countries have made significant strides in increasing access to primary education and secondary education. The Net Primary Enrollment Rate (6-11 year age children) is close to 100%. Gross enrollment rate at the secondary level (11-16 years) are also approaching 100%. However, low-learning outcomes remain the major challenge faced by the education sector in all OECS countries.

In order to address the underlying causes of low learning outcomes, the OECS countries developed a Regional Education Strategy "Every Learner Succeeds" whose focus is ensuring that all children learn and succeed in school. The strategy was developed in a consultative manner and has been endorsed by the OECS Ministerial Forum for implementation. With the aim of enhancing the quality of education, the Education Sector Strategy sets out the education priorities for the period 2012-2021.

The "Every Learner Succeeds" regional education strategy is results based and includes the following imperatives:

(i) improve the quality and accountability of education leadership;
(ii) improve teacher quality, management and motivation;
(iii) improve the quality of teaching and learning using learner-centered approaches;
(iv) improve curriculum and *strategies for assessment to meet the needs of all learners*;
(v) increase access to quality early childhood development services;
(vi) provide opportunities for all learners to develop the knowledge, skills and attitudes to enable them to progress to further education and training and productive employment; and
(vii) increased access to and relevance of tertiary and continuing education.

In order to implement this Regional Education Strategy, the OECS countries have received a Global Partner for Education (GPE)-funded Education Plan Development Grant to provide for technical assistance for finalizing the development of an education quality framework, and to develop an implementation framework and assessment framework for primary grades. The implementation plan encompasses all education sector activities to be implemented as part of the OECS Education Sector Strategy (OESS).

A portion of the grant funding has been used to develop regional learning standards for the primary grades. The purpose of the learning standards is to serve as a regional benchmark for the quality of primary pupils' learning outcomes that are to be achieved in each of the nine member countries of the OECS. The learning standards are built on regional consensus of what pupils need to know and be able to do in Mathematics, Science & Technology, History and Literacy as represented in both the OECS Harmonized Primary Curriculum, and in the Caribbean Primary Exit Assessment (CPEA).

CXC – An Overview

The Caribbean Examinations Council (CXC)® was established in 1972 under Agreement by the Participating Governments in the area to conduct examinations and then award certificates and diplomas on the results of any conducted examinations. The Council is also empowered to regulate the conduct of any such examinations and prescribe the qualification requirements of candidates and the fees payable by them.

It comprises sixteen (16) Participating Territories: Anguilla, Antigua and Barbuda, Barbados, Belize, British Virgin Islands, Cayman Islands, Dominica, Grenada, Guyana, Jamaica, Montserrat, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago and Turks and Caicos Islands.

CXC has over 40 years of experience in developing syllabuses, formulating tests, administering examinations, issuing results and analysing statistics for large-scale examinations. CXC also engages in the provision of orientation and training of teachers to deliver our syllabuses, as well as training in item generation and fundamentals of classroom assessment.

CXC has introduced a comprehensive suite of qualifications to meet the needs of the region: Caribbean Primary Exit Assessment™ (CPEA™); Caribbean Certificate of Secondary Level Competence® (CCSLC®); Caribbean Vocational Qualification (CVQ); Caribbean Secondary Education Certificate® (CSEC®); Caribbean Advanced Proficiency Examination® (CAPE®); and the CXC Associate Degree® (CXC _AD®).

Over the years, the organisation has developed and expanded its repertoire of services in several consultancy areas related to Training and Professional Development, Measurement and Evaluation Services, Examinations Development and Production, Examinations Administration and Security as well as Syllabus and Curriculum Development, to name a few.

In developing the OECS Primary Grades' Learning Standards, CXC has devised a set of standards and descriptors that describe the knowledge, skills and attributes a pupil should attain by the end of Primary Grade 6. The standards describe educational objectives that concisely delineate what pupils are expected to know and be able to do by the end of a grade level. The learning standards are sequenced according to learning progression across grades, where each grade level learning expectations build on previous expectations while preparing the pupils for more challenging concepts and coursework at the higher level.

GENERAL FRAMEWORK OF THE LEARNING STANDARDS

GOAL

To document a set of standards and associated descriptors that describe the skills and attributes a pupil should attain by the end of Primary Grade 6.

The OECS Primary Grades Learning Standards describe the overarching long-term educational goals that pupils should have achieved by the time they complete a specific grade or education level. These learning standards describe the important knowledge, skills and personal attributes that educators should be continuously addressing and cultivating at all stages throughout the pupils' educational journey at the primary level. This must be done to ensure that the pupils are prepared for success at the secondary level and beyond.

OBJECTIVES

The Learning Standards detailed in this document are concise, clearly articulated descriptions of what pupils are expected to know and reliably demonstrate on successful completion of a grade level. It is expected that the Learning Standards will provide benchmarks for relevant educational progress and be utilised in the formulation of policies aimed at improving and enhancing the quality of the teaching-learning transactions. In addition, the Learning Standards can be used as guides in structuring instructional units as well as in determining how content learning should proceed within and across the primary grades in broad sub-related topic areas.

STRUCTURE

The Learning Standards are detailed for four content areas – Language Arts, Mathematics, Science and Technology and Social Studies. The standards have been developed based on international benchmarks drawn from several international education systems including the Caribbean, Australia, Canada, Singapore and the United Kingdom. These content-related standards may be integrated in a system of developing learning indicators at the classroom level that will help determine learning growth in the pupils over time. Consequently, by knowing beforehand the expected standards the pupils are expected to meet by the end of a grade level, teachers can design assignments and assessments to determine whether pupils are moving towards achieving specific learning standards. This system will also inform whether remedial action is required on an individual pupil or group basis.

The Learning Standards also address learning progressions across the grade levels. The progressions establish learning expectations of pupils at a specific level as well as learning needs and abilities at a particular stage of their intellectual, emotional, social and physical development.

These progressions represent clearly articulated learning sequences in that the standards are purposefully designed to prepare pupils to meet the standards of the next grade level.

FORMAT

Each Learning Standard or cluster of related standards is tied to an overarching strand. The strand is sub-divided into sub-strands to ensure adequate coverage of the knowledge, skills and attributes required for achievement across the content area. These sub-strands represent content standards.

- Each standard represents a performance standard and is formatted as follows:

  Each Learning Standard is identified by an alpha numeric descriptor that indicates the content area (subject), the grade level and the strand and sub-strand if applicable, and the standard number.

  E.g.

  Standard Descriptor: **ST.3.TE.NT.3**

  Where,

ST	represents the content area – **Science and Technology**
3	represents the **Grade level**
TE	represents the **Strand – Technology**
NT	represents the **Sub-Strand – Nature of Technology**
3	represents the **Standard Number**

The content area codes are assigned as follows:
Language Arts – **LA**
Mathematics – **MT**
Science and Technology – **ST**
Social Studies – **SS**

Information on the coding for the strands and sub-strands will be given in Section B of this document.

BENEFITS TO BE DERIVED

It is envisaged that the following benefits will be derived by consistent integration of the Learning Standards in the teaching-learning transactions across the OECS grouping:

- **Consistent use of the Learning Standards across the grouping will help guide the planning, implementation and assessment of pupil learning.**
  This contributes to the streamlining of instruction and ensures that teaching practices deliberately focus on agreed learning benchmarks. The Standards will also assist in the planning of focused instruction to meet the specific needs of pupils

- **The Learning Standards will encourage equitable learning experiences.**
  By organizing concepts and skills around the standards identified as those which all pupils should attain at designated points of time, educators will ensure that all pupils at the primary level within the grouping are afforded adequate and equitable opportunities to learn.

- **Consistent use of the Learning Standards will reduce overlap and aid in the scaffolding of the curriculum.**
  The standards are articulated and aligned within and across the grade levels in such a way that the overlap of knowledge and skills is reduced or avoided. In addition, the standards are designed so that content is scaffolded by increasing the depth, breadth and cognitive complexity as pupils move from one grade level to the next.

- **Standardisation of the preparation of all pupils in the OECS for secondary level education.** Adherence to regional standards would be beneficial for an increasingly mobile population that is taking advantage of job opportunities available across the OECS territories. This standardisation would make it easier for pupils to settle into new schools when they move from one territory to another.

It must be noted that Learning Standards found in this document do not dictate the teaching methodologies or curriculum design that should employed in order for pupils to attain the standards associated with any content area and respective grade levels.

BASIC GUIDELINES FOR USING THE LEARNING STANDARDS

The OECS Primary grade Learning Standards may be utilised in the development of learning objectives and learning indicators. In most instances, the learning objectives will be similar to the Learning Standards. However, it is expected that the learning objectives will be more specific and have a narrower focus than the standards.

In utilising the learning standards in their everyday teaching activities, educators are encouraged to use the following approach:

1. When designing a unit/lesson plan, it is beneficial to compare your current curriculum with the standards for the respective grade level in the content area.

2. Check to see how many standards are addressed for the particular unit/lesson by the curriculum. Determine whether additional activities or content will be required in order to ensure that the pupils will achieve the required standard(s).

3. Using the standards as a foundation, ensure that the learning experiences designed support the key learning areas addressed in the standards.

4. Utilise the standards to ensure that teacher expectation and proposed learning experiences are appropriate for the pupils. This can be achieved by focusing on a specific strand within the learning standard.

5. Link the learning standards to daily learning activities by determining which strands and sub-strands will be addressed in a particular lesson and deciding how specific learning experiences will build pupils' learning and support their skill and attribute development. Formative assessment is one tool that should be utilised to identify knowledge and skills that may require specific attention on an individual pupil or whole group basis.

LINKING LEARNING STANDARDS AND LEARNING OBJECTIVES

As stated previously, learning standards are concise, specific, written descriptors of what pupils are expected to know and be able to do at a specific stage of their education. The standards detail long-term educational goals which indicate what pupils should have learned and be able to do by the end of a grade level. It must be noted that learning standards do not describe or prescribe a particular teaching practice, curriculum or assessment method.

On the other hand, learning objectives are brief statements that describe what pupils will be expected to learn by the end of a unit, lesson, project or course. These forms of objectives represent short-term academic goals that are established by teachers for pupils who are working towards meeting a long-term goal or learning standard. The learning objectives also articulate the academic expectations of pupils so that they know what is expected of them.

It must be noted, that the terms standards, learning expectations, learning outcomes and achievement expectations are sometimes used interchangeably. There are two forms of standards that are used in curriculum and assessment literature – content standards and performance standards.

- Content standards are broad statements that describe specific content areas that pupils should learn at each grade level.
- Performance standards incorporate content standards and define the level of work that demonstrates achievement of the content standards.

In the OECS Primary Grades' Learning Standards for Science and Technology Grades K – 6, the content standards are listed for the sub-strands by grade level grouping, while the performance standards are described under the sub-strands in the respective tables.

The learning standards form the foundation of what is taught in the classroom. Therefore, in creating learning objectives from the standards, the teacher determines ***what*** they want pupils to learn and ***how*** the pupils will demonstrate that learning. This allows teachers the flexibility of determining how the standard should be reached and what additional information should be taught. See examples below.

Example 1. Mathematics

Learning Standard Addressed: MT.6.UM.LM.2
Working in small groups, use knowledge of relationship between units of length to convert from a larger unit to a smaller unit (e.g. metres to centimetres) using measures that are equivalent to whole or fractional parts (halves, quarters, and tenths) of the larger unit.

Suggested Learning Objective:

WHAT? Pupils working in groups of three, will compute lengths and areas of the classroom to create a plan or blueprint drawing of the classroom indicating the scale used.

HOW? Groups will then make a presentation to the class on why their plan or blueprint is accurate.

Example 2. Language Arts

Learning Standard Addressed: LA.4.R.UT.3
Ask and answer questions, who, what, when, where, when, why, and how to demonstrate understanding of key details in text.

Suggested Learning Objective:

WHAT? Working in pairs, pupils will read the story entitles “Paco Takes a Bath”. Pupils will then complete the fishbone organiser to help them identify the key details of the story.

HOW? Each pair will then discuss their completed organizer with the whole class.
Each organizer will be assessed using pre-determined criteria.

SECTION B

OECS PRIMARY GRADES' LEARNING STANDARDS
For
SCIENCE AND TECHNOLOGY
by
Grade Level

Science and Technology

INTRODUCTION

The Learning Standards of the Science and Technology Programme are built on three domains[1]:

- Knowledge
- Skills
- Attitudes and Values

KNOWLEDGE

- Understanding of basic concepts in life science, physical science, earth and space science, and technology.
- Understanding and appreciation of the intimate interrelationship between Science and Technology, and how the use/misuse of these may be detrimental to society and the environment.

SKILLS

- Development of skills important to scientific and technological inquiry and the communicating of ideas and concepts to all levels of the society.

ATTITUDES AND VALUES

- Development of critical and appropriate attitudes towards Science and Technology for solving societal challenges, and ability to work in community and country efforts effectively, to the benefit of all.

[1] **OERU CURRICULUM HARMONISATION: Science & Technology Education - Learning Outcomes: Grade K-6 (p.24)**

Organisation of the Learning Standards

The Learning Standards are developmentally appropriate for each grade level. Overall, each level provides the foundation for the next higher level.

The organisation consists of five (5) main broad sets of ideas and concepts (strands):

1. Earth and Space Science (ESS)
2. Life Science (LS)
3. Physical Science (PS)
4. Technology (TE)
5. Science, Technology, Society and the Environment (STSE)

Each broad set of ideas/concepts is further sub-divided into relevant concepts (sub-strands):

1. EARTH AND SPACE SCIENCE (ESS)
    - The Earth's Weather (EW)
    - The Earth's Resources (ER)
    - The Solar System (SS)

2. LIFE SCIENCE (LS)
    - Ecosystems (ECS)
    - Structure and Function (SF)
    - Classification and Diversity (CD)

3. PHYSICAL SCIENCE (PS)
    - Energy (EN)
    - Forces, Motion and Structures (FMS)
    - Matter and materials (MM)

4. TECHNOLOGY (TE)
    - Technological Methods (TM)
    - The Nature of Technology (NT)
    - The Use of Technology (UT)

5. SCIENCE, TECHNOLOGY, SOCIETY AND THE ENVIRONMENT (STSE)
    - Human beings, in an effort to make their lives easier must realise that there are consequences.

Apart from the five (5) broad ideas/concepts on which the Learning Standards are built, there are two threads which permeate them - **Skills and Attitudes.**

SKILLS

Skills appropriate to the particular grade level are skillfully used to make the Standards intimately suitable for pupils of Science and Technology. The skills embedded are, in no hierarchical order:

Observing	Using their senses to gather information safely and effectively.
Measuring	Design and use simple measuring instruments.
Manipulating	Design simple experiments, compare results and make inferences.
Using Tools	Using simple science tools in their investigations, e.g. beakers, thermometers, scales.
Recording	Report results accurately using a variety of methods.
Classifying	Group objects using one (1) or two (2) criteria.
Communicating	Orally share their ideas with others.
Inferring	Identify patterns in everyday events in the environment.
Experimenting	Ask relevant questions and follow up on areas of interest and simple investigation.
Predicting	Use patterns identified to suggest likely changes/ directions for the future.
Problem Solving	Identify likely solutions for simple everyday problems.
Designing	Construct models by following instructions of peers and of teachers.
Interpreting Data	Discuss what they deduce in response to questions.
Hypothesising	Suggest a tentative generalisation of observations that may be used to explain a number of events.

CODES FOR SKILLS ASSOCIATED WITH THE STRANDS AND SUB-STRANDS			
Observing	***Obs.***	Inferring	***Inf.***
Measuring	***Mea.***	Interpreting Data	***Int.D***
Manipulating	***Man.***	Hypothesizing	***Hyp.***
Using Tools	***UT***	Experimenting	***Exp.***
Recording	***Rec.***	Predicting	***Pred.***
Classifying	***Clas.***	Communicating	***Comm.***
Designing	***Des.***	Inferring	***Inf.***
Problem Solving	***PS***		

ATTITUDES

Healthy and critical attitudes are the bedrock of research and development in Science and Technology. These attitudes are also essential in preparing our pupils to cope with the likely impact of Science and Technology on Society and the Environment. Every effort is therefore made to inculcate such important attitudes as: **curiosity, commitment to accuracy and precision, integrity in observation, experimentation and reporting, respect for living things, stewardship of the environment, persistence, inventiveness, cooperation.**

CODES FOR ATTITUDES ASSOCIATED WITH THE STRANDS AND SUB-STRANDS			
Curiosity	***Cur.***	Stewardship of the Environment	***Stew.Env***
Commitment to Accuracy and Precision	***Com.A.P***	Persistence	***Per.***
Integrity in Observation, Experimentation and Reporting	***Int.O.E.R***	Inventiveness	***Inv.***
Respect for Evidence	***Res.Ev***	Cooperation	***Coop.***
Concern for Safety	***Conc.S***	Communicating	***Comm.***
Respect for Living Things	***Res.L.T***		

At the end of each sub-strand, there will be a summary of the main Skills and Attitudes that pupils are expected to demonstrate by the end of the Grade grouping.

SAFETY IN THE SCIENCE LAB AND CLASSROOM

INTRODUCTION

The Introduction to The American Chemical Association's (ACS) 'Safety in the Elementary Science Classroom' suggests that:

> 'Science activities in the elementary classroom are safe provided that you and your pupils are aware of potential hazards and take all necessary and appropriate precautions.'*

The importance of safety in science classrooms is reiterated by the National Science Teachers Association's (NSTA) of the USA, which refers to such safety as 'Duty of Standard of Care', defined as:

> 'An obligation, recognized by law, requiring conformance to a certain standard of conduct to protect others against risk.' (Prosser et al, 1984)

As a science teacher it is critically important that the focus should be on making sure that all pupils are safe and free from harm. It is therefore incumbent on teachers that their aim should be to:

- prevent accidents and injuries
- impress on your pupils the importance of safety in science classrooms
- be aware always of the potential hazards in the classroom, the experiments and activities
- clearly outline and exhibit the safe 'practices that pupils know and follow.[2]

In order to adequately satisfy the duty of care, every teacher must understand the following requirements:[3]

- ✓ Notify pupils of safety practices and procedures;
- ✓ Instruct and model safety;
- ✓ Warn pupils of hazards;
- ✓ Inspect for safety--teachers should inspect equipment before each activity;
- ✓ Enforce safety regulations;
- ✓ Maintain equipment.

[2] ACS Chemistry for Life: Safety in the Elementary Science Classroom, p.3.
[3] Roy, K., (2010) Quoted in NSTA -- Duty of Care, NSTA Safety Advisory Board, April 2014, p.2.

The ACS document outlines this practice which should help teachers to establish and maintain safety:

> ' Always perform activities and experiments before assigning them to pupils.'

This practice should force the teacher to consider the following:

- Identify the materials you will need and how you will distribute them;
- Identify safety issues and plan how you will address these with pupils;
- Consider how you will instruct pupils as they conduct the activity;
- Consider possible emergencies and plan how you will handle them should they occur;
- Ensure that the necessary equipment and emergency supplies are readily available and that you know how to use them;
- Plan how you will collect materials and safely dispose of waste after the activities; and
- Plan to have pupils wash their hands after completing a lesson.

THE LEARNING STANDARDS - GRADES K - 2

CONTENT STANDARDS

STRAND: EARTH AND SPACE SCIENCE (ESS)

Sub-Strand: Earth's Weather (EW)

ST. CS. ESS. 1: Pupils can observe, analyze and report on observations of weather changes, and their effects on human activities.

ST. CS. ESS. 2: Pupils can observe and predict patterns of weather on a daily and designated period basis.

ST. CS. ESS. 3: Pupils can observe, measure and report on environmental factors that affect their daily lives, their clothing, and ways of life.

ST. CS. ESS. 4: Pupils can identify simple devices used to observe and measure environmental conditions, and make their devices.

ST. CS. ESS. 5: Pupils can observe and report how humans can make structures to solve weather and environmental problems.

Sub-Strand: Earth's Resources (ER)

ST. CS. ESS. 6: Pupils can collect and observe common objects in their environment.

ST. CS. ESS. 7: Pupils can observe and describe the features by which objects are grouped.

ST. CS. ESS. 8: Pupils can identify and describe the importance of air and water in their lives, and how these resources may be polluted and cleaned.

ST. CS. ESS 9: Pupils can understand that air surrounds us and is vital to our existence, and should be conserved.

ST. CS. ESS. 10: Pupils can understand that litter in the school environment creates several problems, and each pupils has a responsibility to avoid causing such unwanted materials.

ST. CS. ESS. 11: Pupils can understand that recycling and other treatment of litter should be employed to prevent environmental problems.

Sub-Strand: Solar System (SS)

ST. CS. ESS. 12: pupils can observe and report on daily changes of day and night.

ST. CS. ESS. 13: Pupils can understand that the solar system is made up of several parts, and how these are related.

ST. CS. ESS. 14: Pupils can understand that the earth is a planet in the solar system and the sun is the main source of light in the system.

ST. CS. ESS. 15: Pupils can identify sources of man-made light developed to be used in environmental development and to make lives easier.

STRAND: LIFE SCIENCE (LS)

Sub-Strand: Diversity and Classification (DC)

ST. CS. LS. 1: Pupils can understand that animals (including humans) and plants are living things with specific characteristics such as growth, reproduction etc.

ST. CS. LS. 2: pupils can identify the variety of plants and animals in their environment.

Sub-Strand: Ecosystem (ECS)

ST. CS. LS. 3: Pupils can understand that plants and animals depend on each other in an ecosystem for their survival.

ST. CS. LS. 4: Pupils can identify various plants and animals and match them to their habitats, and describe the conditions necessary for each to survive.

ST. CS. LS. 5: Pupils can recognize the importance of recycling and conservation in maintaining the critical balance in the environment.

ST. CS. LS. 6: Pupils can describe the main factors necessary for maintaining balance in the environment, and explain why each factor is essential.

ST. CS. LS. 7: Pupils can understand that living things gain information from their environment by using their senses.

ST. CS. LS. 8: Pupils can demonstrate how plants and animals (especially pets) may be cared for.

ST. CS. LS. 9: Pupils can investigate and report on the variety of plants and animals in the environment using quadrats.

Sub-Strand: Structure and Function (SF)

ST. CS. LS. 10: Pupils can identify and describe the functions of plants and animals in the environment.

ST. CS. LS. 11: Pupils can understand that plants and animals undergo a variety of changes from early stages to maturity.

ST. CS. LS. 12: Pupils can describe, using a variety of strategies, the main features of each stage.

STRAND: PHYSICAL SCIENCE (PS)

Sub-Strand: Energy (EN)

ST. CS. PS. 1: Pupils can understand that energy has several forms such light, heat, sound, electricity.

ST. CS. PS. 2: Pupils can identify devices that use/ convert/ produce various forms of energy in their daily lives.

ST. CS. PS. 3: Pupils can design and construct devices powered by moving air and water using discarded materials in the environment.

Sub-Strand: Forces, Motion and Structures (FMS)

ST. CS. PS. 4: Pupils can understand push and pull.

ST. CS. PS. 5: Pupils can demonstrate forces at work in everyday situations.

ST. CS. PS. 6: Pupils can describe the effects of forces on motion.

ST. CS. PS. 7: Pupils can design and make models of various structures from materials provided.

ST. CS. PS. 8: Pupils can identify simple mechanical devices in the home, and describe their uses.

Sub-Strand: Matter and Materials (MM)

ST. CS. PS. 9: Pupils can identify materials in the environment, and outline their properties.

ST. CS. PS. 10: Pupils can understand that properties of materials play a vital role in the making of objects.

General Overview – Grade K

Curriculum developers in Science and Technology for Kindergarten generally agree that at this level the focus should be on building on the children's curiosity and desire to find out about what is going on around them. At this level one is always overwhelmed by the children's questions, especially about the how and why.

The learning standards for kindergarten pupils therefore emphasize observing and exploring, and the processes of science rather than on concentrated treatment of scientific and technological knowledge for assessment and testing. In the Overview to 'Exploring My World' the matter is put this way:

'To meet the needs of these inquisitive children, the learning environment must be active, hands-on, child-centred, and inquiry-based. The teacher supports children through the problem-solving process, encouraging them to try something new, persist, and find alternative solutions.'[4]

In short then, we should begin to develop in them the foundation for what is sometimes called 'Working scientifically.'[5]

[4] Specific Curriculum Outcomes for Kindergarten Science. (p. S2), 1997.
[5] Science Programmes of Study: Key stages 1 and 2. National Curriculum of England, 2013

PERFORMANCE STANDARDS - GRADE K

At the completion of Grade K, pupils who demonstrate understanding will:

STRAND: EARTH AND SPACE SCIENCE (ESS)

Sub-Strand: Earth's Weather (EW)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	K	ESS	EW	1	Observe and report on different types of weather in their country e.g. rainy, sunny, cloudy, windy
ST	K	ESS	EW	2	Observe changes in weather patterns over a weekend, and use simple language to describe changes in weather patterns
ST	K	ESS	EW	3	Interpret weather information and predict likely pattern changes
ST	K	ESS	EW	4	Discuss how the various weather patterns affect their activities, the type of clothes they wear, and ways of dealing with various weather types
ST	K	ESS	EW	5	Discuss, design and construct simple instruments to determine wind direction, and measure rainfall
ST	K	ESS	EW	6	Observe and report on changes of temperature in the environment

SKILLS ADDRESSED	***Obs.***	***Rec.***	***Int. D.***	***Comm.***	***Des.***	**ATTITUDES ADDRESSED**	***Com. A.P.***

Sub-Strand: Earth's Resources (ER)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	K	ESS	ER	1	Identify and name some objects found in the home
ST	K	ESS	ER	2	Classify these objects according to shape, colour, texture, size, composition
ST	K	ESS	ER	3	Identify items of litter around the school, organize /participate in a clean-up project
ST	K	ESS	ER	4	State properties of clean air and describe conditions of air e.g. hot, cold sticky
ST	K	ESS	ER	5	State different uses of water and list where water can be found in their country

SKILLS ADDRESSED	*Obs.*	*Class.*	*Comm.*	ATTITUDES ADDRESSED	*Int.O.E.R*

Sub-Strand: Solar System (SS)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	K	ESS	SS	1	Observe and record occurrences of day and night
ST	K	ESS	SS	2	Identify and name the sun, earth and the moon as parts of the solar system

SKILLS ADDRESSED	*Obs.*	*Rec.*	ATTITUDES ADDRESSED	*Com. A.P.*

STRAND: LIFE SCIENCE (LS)

Sub-Strand: Diversity and Classification (DC)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	K	LS	DC	1	Name and describe some living and non-living things in the environment
ST	K	LS	DC	2	Identify and name some characteristics of living things
ST	K	LS	DC	3	Identify by sight or sound, a wide variety of animals
ST	K	LS	DC	4	Define: plants, tree, shrub, vine, herb, and identify some local examples
ST	K	LS	DC	5	Identify and name two types of leaves that are found in plants

SKILLS ADDRESSED	*Obs.*	*Class.*	*Rec.*	ATTITUDES ADDRESSED	*Res.L.T.*	*Com.A.P.*

Sub-Strand: Ecosystems (ECS)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	K	LS	ECS	1	Identify and name some common pets and different food they eat
ST	K	LS	ECS	2	Identify homes / habitats of animals and plants
ST	K	LS	ECS	3	Identify some features of organisms that allow them to survive in their homes / habitats
ST	K	LS	ECS	4	Outline the main features of a plant, and name the main parts
ST	K	LS	ECS	5	Discuss different uses of plants in society e.g. food, decoration, building houses
ST	K	LS	ECS	6	Identify and describe the main features of different animals found in their country
ST	K	LS	ECS	7	Name the five sense organs and discuss the importance of the senses in the function of the human body

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	K	LS	ECS	8	Identify and describe natural defenses that local animals use to help them survive (spines, camouflage)
ST	K	LS	ECS	9	Give a simple definition of drought and outline its effects in their country

SKILLS ADDRESSED	*Obs.*	*Class.*	*Rec.*	ATTITUDES ADDRESSED	*Res.L.T.*	*Cur.*	*Int.O.E.R.*	*Stew.Env*

Sub-Strand: Structure and Function (SF)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	K	LS	SF	1	Name the external parts of local animals and discuss their functions
ST	K	LS	SF	2	Describe the external parts of plants outlining the functions of each part

SKILLS ADDRESSED	*Obs.*	*Class.*	ATTITUDES ADDRESSED	*Int.O.E.R.*

STRAND: PHYSICAL SCIENCE (PS)

Sub-Strand: Energy (EN)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	K	PS	EN	1	Identify a variety of moving objects and list the variety of ways in which they move
ST	K	PS	EN	2	Design and make simple paper objects like planes, windmills
ST	K	PS	EN	3	List some uses of the sun in everyday activities
ST	K	PS	EN	4	List some uses of electricity in the home

SKILLS ADDRESSED	*Obs.*	*Des.*	*UT*	PS	ATTITUDES ADDRESSED	*Inv.*	*Conc.S*

Sub-Strand: Forces, Motion and Structures (FMS)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	K	PS	FMS	1	Identify, demonstrate and give examples of pushes and pulls
ST	K	PS	FMS	2	Identify forces at work in the home situation
ST	K	PS	FMS	3	Identify and name structures in their everyday life (houses, bridges, walls, vehicles etc.

SKILLS ADDRESSED	*Obs.*	*Mea.*	*Rec.*	Comm.	ATTITUDES ADDRESSED	*Int.O.E.R.*

Sub-Strand: Matter and Materials (MM)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	K	PS	MM	1	Identify objects according to properties such as colour, size, shape and texture
ST	K	PS	MM	2	Identify and describe materials that are suitable for constructing kites, windmills and other simple structures giving reasons for their choice
ST	K	PS	MM	3	Recognize that water can exist in both solid and liquid states, and give examples of other solids and liquids

SKILLS ADDRESSED	*Obs.*	*Class.*	*Comm.*	ATTITUDES ADDRESSED	*Int.O.E.R.*

STRAND: TECHNOLOGY (TE)

Sub-Strand: Technological Methods (TM)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	K	TE	TM	1	Discuss and make simple gadgets
ST	K	TE	TM	2	Explain the meaning of science and technology and recognize the interrelationships
ST	K	TE	TM	3	Match various simple gadgets and the use to which they are put
ST	K		TM	4	Explain a problem in their own words and give solutions related to the problem

SKILLS ADDRESSED	*Mea.*	*Comm.*	*Exp.*	*Hyp.*	ATTITUDES ADDRESSED	*Com.A.P.*	*Cur.*	*Conc.S*

Sub-Strand: Nature of Technology (NT)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	K	TE	NT	1	Identify the difference between natural and man-made things, giving examples in the home
ST	K	TE	NT	2	Realize that people use natural things as well as those made by other people for them
ST	K	TE	NT	3	Understand that safety is critical in making and using gadgets

SKILLS ADDRESSED	*Obs.*	*Class.*	*Mea.*	ATTITUDES ADDRESSED	*Conc.S*	*Cur.*	*Res.Ev*

Sub-Strand: Use of Technology (UT)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	K	TE	UT	1	List the uses of man-made gadgets / tools in the home
ST	K	TE	UT	2	State clearly which gadgets are used for what purpose
ST	K	TE	UT	3	Communicate using oral, and / or pictures the technological process and product

SKILLS ADDRESSED	*Obs.*	*Comm.*	ATTITUDES ADDRESSED	*Int.O.E.R.*

SKILLS - A Summary of Skills to be demonstrated by end of Kindergarten

In the development of inquiry, problem identification, design and solution pupils will demonstrate the following.

Observing	Using their senses to gather information safely and effectively.
Measuring	Design and use simple measuring instruments.
Manipulating	Design simple experiments, compare results and make inferences.
Recording	Report results accurately using a variety of methods.
Classifying	Group objects using only one criterion.
Communicating	Orally share their ideas with others.
Inferring	Identify patterns in everyday events in the environment.
Experimenting	Ask relevant questions and follow up on areas of interest and simple investigation.
Predicting	Use patterns identified to suggest likely changes/ directions for the future.
Problem Solving	Identify likely solutions for simple everyday problems.
Designing	Construct models by following instructions of peers and of teachers.

ATTITUDES - Summary of Attitudes to be developed by Kindergarten Pupils

In the activities throughout Kindergarten, pupils are encouraged to use the attitudes so critical for the development of scientific and technological ideas and concepts. At the end of the Grade these are some of the attitudes that should be evident:

Curiosity	Ask questions about objects, events and the results of investigations.
Inventiveness	Identify and use new ways to design and solve problems.
Respect for evidence	Explain their findings and conclusions.
Persistence	Ensure that no matter the obstacles presented activities will be completed accurately.
Respect for living things	Appreciate that all living things should be treated with respect.
Cooperation	Willingness to share ideas and activities with others.
Concerns for safety	Awareness of the dangers involved in using various objects in the environment.

THE LEARNING STANDARDS - GRADE 1

At the completion of Grade 1, pupils who demonstrate understanding will:

STRAND: EARTH AND SPACE SCIENCE (ESS)

Sub-Strand: Earth's Weather (EW)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**1**	**ESS**	**EW**	**1**	Observe and report on different types of weather in their country e.g. rainy, sunny, cloudy, windy
ST	**1**	**ESS**	**EW**	**2**	Observe changes in weather patterns over a week end, and use simple language to illustrate such patterns
ST	**1**	**ESS**	**EW**	**3**	Interpret weather information and predict likely pattern changes.
ST	**1**	**ESS**	**EW**	**4**	Discuss how the various weather patterns affect their activities, the type of clothes they wear, and ways of dealing with various weather types.
ST	**1**	**ESS**	**EW**	**5**	Discuss, design and construct simple instruments to determine wind direction, and measure rainfall.
ST	**1**	**ESS**	**EW**	**6**	Observe and report on changes of temperature in the environment.

SKILLS ADDRESSED	***Obs.***	***Int.D***	***Rep.***	**Comm.**	**Des.**	**UT**	**ATTITUDES ADDRESSED**	***Conc.S***	***Int.O.E.R.***	***Inv.***

Sub-Strand: Earth's Resources (ER)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**1**	**ESS**	**ER**	**1**	Identify and name some objects found in their environment.
ST	**1**	**ESS**	**ER**	**2**	Classify these objects according to shape, colour, texture, size, composition.
ST	**1**	**ESS**	**ER**	**3**	Identify items of litter around the school, organise/participate in a cleanup project.
ST	**1**	**ESS**	**ER**	**4**	State properties of clean air and describe conditions of air e.g. hot, cold, sticky.
ST	**1**	**ESS**	**ER**	**5**	State different uses of water and list where water can be found in their country.

SKILLS ADDRESSED	***Obs.***	***Class.***	***Comm.***	**ATTITUDES ADDRESSED**	***Stew.Env***

Sub-Strand: Solar System (SS)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**1**	**ESS**	**SS**	**1**	Observe and record materials occurrences of day and night.
ST	**1**	**ESS**	**SS**	**2**	Identify and name the sun, earth and the moon as parts of the solar system.

SKILLS ADDRESSED	***Obs.***	***Rec.***	***Comm.***	**ATTITUDES ADDRESSED**	***Com.A.P.***

STRAND: LIFE SCIENCE (LS)

Sub-Strand: Diversity and Classification (DC)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**1**	**LS**	**DC**	**1**	Name and describe some living and non-living things in the environment.
ST	**1**	**LS**	**DC**	**2**	Identify and name some characteristics of living things.
ST	**1**	**LS**	**DC**	**3**	Identify items of litter around the school, organize/participate in a cleanup project.
ST	**1**	**LS**	**DC**	**4**	Define: plants, tree, shrub, vine, herb, and identify some local examples.
ST	**1**	**LS**	**DC**	**5**	Identify and name two types of leaves that are found in plants.

SKILLS ADDRESSED	***Obs.***	***Class.***	***Comm.***	**ATTITUDES ADDRESSED**	***Res.LT.***	***Com.A.P.***

Sub-Strand: Ecosystems (ECS)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**1**	**LS**	**ECS**	**1**	Name and identify some common pets and different foods that they eat.
ST	**1**	**LS**	**ECS**	**2**	Identify homes/habitats of animals and plants.
ST	**1**	**LS**	**ECS**	**3**	Compare human vs animal homes, using local examples.
ST	**1**	**LS**	**ECS**	**4**	Identify some features of organisms that allow them to survive in their homes/ habitat.
ST	**1**	**LS**	**ECS**	**5**	Outline the main features of a plant, and name the main parts.
ST	**1**	**LS**	**ECS**	**6**	Classify plants according to certain features such as: size, shape of leaves, flowering and non-flowering.
ST	**1**	**LS**	**ECS**	**7**	Discuss different uses of plants in society.
ST	**1**	**LS**	**ECS**	**8**	Identify, giving examples, plants used for food, decoration, or for providing shelter.
ST	**1**	**LS**	**ECS**	**9**	Identify and describe the main features of different animals found in their country.

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**1**	**LS**	**ECS**	**10**	Name the five senses organs and discuss the importance of the senses in the proper function of the human body.
ST	**1**	**LS**	**ECS**	**11**	Construct and use simple musical instruments to identify different sounds in the environment.
ST	**1**	**LS**	**ECS**	**12**	Identify and describe natural defenses that local animals use to help them survive (spines, camouflage etc.)
ST	**1**	**LS**	**ECS**	**13**	Give a simple definition of drought and outline its effects in their country.

SKILLS ADDRESSED	***Obs.***	***Class.***	***UT***	**Comm.**	**Des.**	**ATTITUDES ADDRESSED**	***Conc.S***	***Int.O.E.R.***	***Stew.Env***	***Res.L.T***

Sub-Strand: Structure and Function (SF)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**1**	**LS**	**SF**	**1**	Name the external parts of local animals and discuss their functions.
ST	**1**	**LS**	**SF**	**2**	Describe the external parts of plants, and outline the function of each part.

SKILLS ADDRESSED	***Obs.***	***Comm.***	**ATTITUDES ADDRESSED**	***Res.L.T.***	***Stew.Env.***

STRAND: PHYSICAL SCIENCE (PS)

Sub-Strand: Energy (EN)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**1**	**PS**	**EN**	**1**	Identify a variety of moving objects and list the variety of ways in which they move.
ST	**1**	**PS**	**EN**	**2**	Design and make simple paper objects like planes, windmills.
ST	**1**	**PS**	**EN**	**3**	List some uses of the sun in everyday activities.
ST	**1**	**PS**	**EN**	**4**	Identify and name devices in the home that use electricity, outlining what type of environment would exist without this energy source.

SKILLS ADDRESSED	***Obs.***	***Rec.***	***Des.***	**PS**	**UT**	**ATTITUDES ADDRESSED**	***Conc.S***	***Inv.***

Sub-Strand: Forces, Motion and Structures (FMS)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**1**	**PS**	**FMS**	**1**	Identify, demonstrate and give examples of pushes and pulls.
ST	**1**	**PS**	**FMS**	**2**	Identify forces at work in the home situation.
ST	**1**	**PS**	**FMS**	**3**	Identify and name structures in their everyday life (houses, bridges, walls, vehicles etc.)

SKILLS ADDRESSED	***Obs.***	***Comm.***	**ATTITUDES ADDRESSED**	***Cur.***

Sub-Strand: Matter and Materials (MM)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**1**	**PS**	**MM**	**1**	Identify, describe and classify objects according to properties such as colour, size, shape and texture.
ST	**1**	**PS**	**MM**	**2**	Identify and describe materials that are suitable for constructing kites, windmills, and other simple structures, giving reasons for their choice.
ST	**1**	**PS**	**MM**	**3**	Recognize that water can exist in both solid and liquid states, and give examples of other solids and liquids.

SKILLS ADDRESSED	***Obs.***	***Comm.***	***Exp.***	**Class.**	**ATTITUDES ADDRESSED**	***Com.A.P.***

STRAND: TECHNOLOGY (TE)

Sub-Strand: Technological Methods (TM)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**1**	**TE**	**TM**	**1**	Discuss and make simple gadgets.
ST	**1**	**TE**	**TM**	**2**	Develop simple technological designs in keeping with particular challenges in their environment.
ST	**1**	**TE**	**TM**	**3**	Explain the meaning of science and technology and recognize the interrelationships.
ST	**1**	**TE**	**TM**	**4**	Match various simple gadgets and the use to which they are put.
ST	**1**	**TE**	**TM**	**5**	Explain a problem in their own words and solutions related to the problem.

SKILLS ADDRESSED	***Obs.***	***Int.D***	***Mea.***	**PS**	**ATTITUDES ADDRESSED**	***Conc.S***	***Com.AP.***

Sub-Strand: Use of Technology (UT)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**1**	**TE**	**UT**	**1**	Understand and appreciate the use of man-made gadgets /tools in the home.
ST	**1**	**TE**	**UT**	**2**	Identify clearly which gadgets are used for what purpose.
ST	**1**	**TE**	**UT**	**3**	Communicate using oral, written and/or pictures the technological process and product.

SKILLS ADDRESSED	***Obs.***	***Class.***	**ATTITUDES ADDRESSED**	***Conc.S***

STRAND: SCIENCE, TECHNOLOGY, SOCIETY AND THE ENVIRONMENT (STSE)

In this strand pupils will begin to develop the understanding that:

Subject	Grade	Strand	Standard #	Performance Standards
ST	**1**	**STSE**	**1**	The quest by humans to explore and exploit the world's resources affect human life, the society and the environment.
ST	**1**	**STSE**	**2**	Resources must be used wisely to ensure their sustainability and to avert potential disastrous consequences to the environment.
ST	**1**	**STSE**	**3**	Impact of Science and Technology on human life may be desirable or undesirable.
ST	**1**	**STSE**	**4**	Unplanned scientific and technological activities may impact humans and the environment in such a way that there is little to leave behind for succeeding generations.
ST	**1**	**STSE**	**5**	Human values, beliefs and attitudes directly influence scientific and technological activity and use.

SKILLS - A Summary of Skills to be demonstrated by end of Grade 1

In the development of inquiry, problem identification and design pupils will demonstrate the following:

Observing	Using their senses to gather information safely and effectively.
Measuring	Design and use simple measuring instruments.
Manipulating	Design simple experiments, compare results and make inferences.
Recording	Report results accurately using a variety of methods.
Classifying	Group objects using only one criterion.
Communicating	Orally share their ideas with others.
Inferring	Identify patterns in everyday events in the environment.
Experimenting	Ask relevant questions and follow up on areas of interest and simple investigation.
Predicting	Use patterns identified to suggest likely changes/ directions for the future.
Problem Solving	Identify likely solutions for simple everyday problems.
Designing	Construct models by following instructions of peers of teachers.

ATTITUDES - Summary of Attitudes to be developed by Grade 1 Pupils

In the activities throughout Grade 1, pupils are encouraged to develop the attitudes critical for positively interacting with scientific and technological ideas and concepts. At the end of the Grade these are some of the attitudes that should be evident:

Curiosity	Ask questions about objects, events and the results of investigations.
Inventiveness	Identify and use new ways to design and solve problems.
Respect for evidence	Explain their findings and conclusions.
Persistence	Ensure that no matter the obstacles presented activities will be completed accurately.
Respect for living things	Appreciate that all living things should be treated with respect.
Cooperation	Willingness to share ideas and activities with others.
Concerns for safety	Awareness of the dangers involved in using various objects in the environment.

THE LEARNING STANDARDS - GRADE 2

At the completion of Grade 2, pupils who demonstrate understanding will:

STRAND: EARTH AND SPACE SCIENCE (ESS)

Sub-Strand: Earth's Weather (EW)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**2**	**ESS**	**EW**	**1**	Observe different types of weather --rainy, sunny, cloudy windy.
ST	**2**	**ESS**	**EW**	**2**	Make weather charts using drawings or pictures, graphs to illustrate daily weather changes.
ST	**2**	**ESS**	**EW**	**3**	Interpret data resulting from #2 above.
ST	**2**	**ESS**	**EW**	**4**	Predict weather patterns.
ST	**2**	**ESS**	**EW**	**5**	Design, draw and label a simple diagram to indicate the water cycle.
ST	**2**	**ESS**	**EW**	**6**	Record wind direction at specified times of the day, using self-designed and constructed wind vane.
ST	**2**	**ESS**	**EW**	**7**	Collect and compare measurements of rainfall, temperature, wind direction and wind speed during a specified period eg. a weekend.

SKILLS ADDRESSED	***Obs.***	***Rec.***	***Comm.***	**Hyp.**	**Des.**	**UT**	**Pred.**	**ATTITUDES ADDRESSED**	***Com.A.P.***	***Int.O.E.R.***	***Inv.***

Sub-Strand: Earth's Resources (ER)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**2**	**ESS**	**ER**	**1**	Classify objects in their environment according to living and non-living, natural and human-made.
ST	**2**	**ESS**	**ER**	**2**	Record data using bar or line graphs.
ST	**2**	**ESS**	**ER**	**3**	Group litter in their school according to size, colour, what it is made of, recyclable and non-recyclable.
ST	**2**	**ESS**	**ER**	**4**	Explain the dangers of litter in the school and organize a clean-up project.
ST	**2**	**ESS**	**ER**	**5**	Design and make a toy/ gadget using discarded materials.
ST	**2**	**ESS**	**ER**	**6**	Infer that air is all around us and describe conditions of air at different times.
ST	**2**	**ESS**	**ER**	**7**	Identify and name at least two (2) air pollutants in a named environment.
ST	**2**	**ESS**	**ER**	**8**	Describe how pollutants affect people's activities and their health.
ST	**2**	**ESS**	**ER**	**9**	Design and construct a device for trapping dust particles from air.
ST	**2**	**ESS**	**ER**	**10**	Collect data and compare the amount of particles in named areas using their constructed air trap.
ST	**2**	**ESS**	**ER**	**11**	State at least three (3) properties of water.
ST	**2**	**ESS**	**ER**	**12**	Identify and list at least three (3) uses of water.

SKILLS ADDRESSED	***Rec.***	***Comm.***	***Class.***	***Inf.***	***Mea.***	***Int.D***	***PS***	**ATTITUDES ADDRESSED**	***Conc.S***	***Res.L.T***	***Stew.Env***	***Per***	***Int.O.E.R***

Sub-Strand: Solar System (SS)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**2**	**ESS**	**SS**	**1**	Infer that day and night occur in regular cycles.
ST	**2**	**ESS**	**SS**	**2**	Distinguish between natural and human-made sources of light.
ST	**2**	**ESS**	**SS**	**3**	Infer that the position of the sun changes at different times during the day.
ST	**2**	**ESS**	**SS**	**4**	Identify the phases of the moon and explain how they affect weather patterns.

SKILLS ADDRESSED	***Obs.***	***Inf.***	***Exp.***	**ATTITUDES ADDRESSED**	***Com.A.P.***	***Int.OE.R***

STRAND: LIFE SCIENCE (LS)

Sub-Strand: Diversity and Classification (DC)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**2**	**LS**	**DC**	**1**	Classify, giving examples, living and non-living things.
ST	**2**	**LS**	**DC**	**2**	Classify animals according to their size, body coverings, and the food they eat.
ST	**2**	**LS**	**DC**	**3**	Prepare and present a display of living and non-living things for their class.
ST	**2**	**LS**	**DC**	**4**	Identify and name at least three (3) characteristics of living things.
ST	**2**	**LS**	**DC**	**5**	Role play the behaviour or habits of some local animals.
ST	**2**	**LS**	**DC**	**6**	Define the following: plant, tree, shrub, vine, herb.
ST	**2**	**LS**	**DC**	**7**	Identify and name different kinds of plants.
ST	**2**	**LS**	**DC**	**8**	List different uses of leaves in everyday life.

SKILLS ADDRESSED	***Obs.***	***Class.***	***Comm.***	**Des.**	**ATTITUDES ADDRESSED**	***Res.L.T.***	***Com.A.P.***

Sub-Strand: Ecosystem (ECS)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**2**	**LS**	**ECS**	**1**	Describe and demonstrate appropriate ways of feeding and caring for pets.
ST	**2**	**LS**	**ECS**	**2**	Identify and describe precautionary strategies that would ensure to self and others, the environment and the pets as well.
ST	**2**	**LS**	**ECS**	**3**	Observe homes / habitats of different animals, indicating how each habitat satisfies the various needs of the animals.
ST	**2**	**LS**	**ECS**	**4**	Identify and appreciate the importance of caring for plants and animals and their environment.
ST	**2**	**LS**	**ECS**	**5**	Explain how some features of organisms enable their survival in their habitats.
ST	**2**	**LS**	**ECS**	**6**	Distinguish between activities that harm and those that preserve habitat/ the environment.

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**2**	**LS**	**ECS**	**7**	Outline and explain the process of germination.
ST	**2**	**LS**	**ECS**	**8**	Identify and name the main conditions necessary for seed growth.
ST	**2**	**LS**	**ECS**	**9**	Identify plants that are found in their country and classify them into ornamentals, decorative, shelter etc.
ST	**2**	**LS**	**ECS**	**10**	Identify and describe how plants and their parts can be processed into valuable food for all.
ST	**2**	**LS**	**ECS**	**11**	Classify animals as domesticated, wild, useful.
ST	**2**	**LS**	**ECS**	**12**	Explain, with examples, what are endangered species.
ST	**2**	**LS**	**ECS**	**13**	Identify and describe ways of protecting endangered species eg. laws, change of human's attitudes to life and the environment.
ST	**2**	**LS**	**ECS**	**14**	Outline what stimulates each of the five senses.
ST	**2**	**LS**	**ECS**	**15**	Name the organ that is stimulated by sounds, and classify sounds by pitch and loudness.
ST	**2**	**LS**	**ECS**	**16**	Design, construct and use simple musical instruments.
ST	**2**	**LS**	**ECS**	**17**	Identify, with examples, ways in which plants and animals depend on each other (feeding, shelter, protection, beauty).
ST	**2**	**LS**	**ECS**	**18**	Compare the feeding habits of named organisms (those which eat plants, meat, both of these).
ST	**2**	**LS**	**ECS**	**19**	Investigate and report on predator/prey relationships.
ST	**2**	**LS**	**ECS**	**20**	Construct and label simple food chains to depict feeding interrelationships among animals and plants.
ST	**2**	**LS**	**ECS**	**21**	Identify and discuss ways in which water may be polluted and ways in which it may be conserved.
ST	**2**	**LS**	**ECS**	**22**	Trace the movement of garbage from household pick up to final destination.
ST	**2**	**LS**	**ECS**	**23**	Define the term solid waste, identifying methods of managing this waste in home/school/community (recycling, composting etc.).
ST	**2**	**LS**	**ECS**	**24**	Define the term environmental destruction and investigate the factors that cause and prevent this destruction.

SKILLS ADDRESSED	***Obs.***	***Comm.***	***Class.***	***Rec.***	***Des.***	***UT***	**Exp/Hyp**	**ATTITUDES ADDRESSED**	***Conc.S***	***Com.A.P.***	***Res.L.T***	***Int.O.E.R.***	***Stew.Env***

Sub-Strand: Structure and Function (SF)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**2**	**LS**	**SF**	**1**	Name, draw and label the main external parts of a plant.
ST	**2**	**LS**	**SF**	**2**	Identify the role of each part of a flower and compare the external parts of different flowers (colour, shape, size, texture).
ST	**2**	**LS**	**SF**	**3**	Identify and name different stages in the development of animals in their environment.

SKILLS ADDRESSED	***Obs.***	***Comm.***	**ATTITUDES ADDRESSED**	***Int.O.E.R***

STRAND: PHYSICAL SCIENCE (PS)

Sub-Strand: Energy (EN)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**2**	**PS**	**EN**	**1**	Identify the conditions needed for objects to move in a given situation.
ST	**2**	**PS**	**EN**	**2**	Identify, with examples, food as a source of energy for all living things.
ST	**2**	**PS**	**EN**	**3**	Operate a simple device or system and identify the input and output (flashlight, lamp, toy).
ST	**2**	**PS**	**EN**	**4**	Identify devices that use moving air and moving water as energy sources (windmills, water wheels, wave wheels).
ST	**2**	**PS**	**EN**	**5**	Demonstrate how and describe how sounds can be made; design and construct musical instruments - guitars, drums, bottle organ, steel pan.
ST	**2**	**PS**	**EN**	**6**	Investigate the effect of manipulating variables on sounds produced.
ST	**2**	**PS**	**EN**	**7**	Identify and explain ways in which technology related especially to energy use has enhanced the lives of people past and present, imaging how lives would change without electricity.
ST	**2**	**PS**	**EN**	**8**	Describe safety measures while using electrical device.

SKILLS ADDRESSED	***Obs.***	***Exp.***	***Mea.***	**Des.**	***UT***	***Man.***	**ATTITUDES ADDRESSED**	***Conc.S***

Sub-Strand: Forces, Motion and Structure (FMS)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**2**	**PS**	**FMS**	**1**	Demonstrate ways in which motion can be changed (start movement, increase or decrease speed).
ST	**2**	**PS**	**FMS**	**2**	Construct models of structures from materials provided.
ST	**2**	**PS**	**FMS**	**3**	Classify structures in different ways.
ST	**2**	**PS**	**FMS**	**4**	Identify and describe simple mechanical devices (hinges, screw, screw drivers).

SKILLS ADDRESSED	***Exp.***	***UT***	***Des.***	**ATTITUDES ADDRESSED**	***Conc.S***

Sub-Strand: Matter and Materials (MM)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**2**	**PS**	**MM**	**1**	Distinguish between objects and the materials from which they are made.
ST	**2**	**PS**	**MM**	**2**	Identity different materials such as wood, rubber, metal, plastic, and list objects made from each.
ST	**2**	**PS**	**MM**	**3**	Investigate the properties of various materials and match the properties to their use.
ST	**2**	**PS**	**MM**	**4**	Design and construct a simple object using chosen materials.
ST	**2**	**PS**	**MM**	**5**	Describe, giving examples, the properties of solids and liquids.
ST	**2**	**PS**	**MM**	**6**	Identify examples of at least two (2) solids and two (2) liquids.
ST	**2**	**PS**	**MM**	**7**	State that water can change from solid to liquid and from liquid to solid.
ST	**2**	**PS**	**MM**	**8**	Describe the conditions that cause the changes in 7 above.

SKILLS ADDRESSED	***Comm.***	***Class.***	***Int.D***	**ATTITUDES ADDRESSED**	***Com.A.P.***	***Res.Ev***

STRAND: TECHNOLOGY (TE)

Sub-Strand: Technological Methods (TM)

At the completion of Grade 2, pupils who demonstrate understanding will:

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**2**	**TE**	**TM**	**1**	Given problems, be able to design and construct simple gadgets.
ST	**2**	**TE**	**TM**	**2**	Match simple gadgets to the use to which they are put.
ST	**2**	**TE**	**TM**	**3**	Explain in their own words, the interrelationships between Science and Technology.
ST	**2**	**TE**	**TM**	**4**	Evaluate two different gadgets using named criteria.

SKILLS ADDRESSED	***PS***	***Class.***	***Exp./Des***	***Int.D***	***Hyp***	**ATTITUDES ADDRESSED**	***Conc.S***	***Int.O.E.R.***

Sub-Strand: Nature of Technology (NT)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**2**	**TE**	**NT**	**1**	Realise that some things are natural and some are human-made.
ST	**2**	**TE**	**NT**	**2**	Share information with peers on the nature of technology.
ST	**2**	**TE**	**NT**	**3**	Realise the critical importance of safety in handling tools and making gadgets.

SKILLS ADDRESSED	***Comm.***	**ATTITUDES ADDRESSED**	***Conc.S***

Sub-Strand: Use of Technology (UT)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**2**	**TE**	**UT**	**1**	Appreciate the advantages and disadvantages of using devices, tools and structures made by humans.
ST	**2**	**TE**	**UT**	**2**	Acknowledge that human-made things hold the potential to pollute the atmosphere and disrupt the environment.

SKILLS ADDRESSED	***Rec.***	***Comm.***	***Int.D***	**ATTITUDES ADDRESSED**	***Stew.Env***

STRAND: SCIENCE, TECHNOLOGY, SOCIETY AND THE ENVIRONMENT (STSE)

In this area pupils will begin to develop the understanding that:

Subject	Grade	Strand	Standard #	Performance Standards
ST	**2**	**STSE**	**1**	Humans must realise that in their attempts to understand the world and exploit the environment to fulfill their needs there are consequences.
ST	**2**	**STSE**	**2**	Unplanned and excessive Science and Technological activities may destroy the earth as we know it, resulting in untold disasters. (fracking, oil exploration, global warming etc).
ST	**2**	**STSE**	**3**	Natural resources are not likely to last forever so judicious use and looking for renewable sources like solar alternatives is advisable.
ST	**2**	**STSE**	**4**	Scientific and technological activities are usually influenced by the values and beliefs of humans and their societies.

SKILLS - A Summary of Skills to be demonstrated by end of Grade 2

In the development of skills of inquiry, problem identification, design and solution pupils should demonstrate the following:

Observing	Identify similarities and differences between objects and events
Measuring	Use simple measuring instruments supplied to investigate objects and events.
Manipulating	Set simple instruments and manipulate simple equipment.
Recording	Use pictures and charts to report results as well as simple tables.
Classifying	Group objects according to two (2) criteria.
Communicating	Use appropriate vocabulary, demonstrations, role play to report results.
Inferring	Notice and describe patterns in simple measurements and events.
Interpreting Data	Discuss what they deduce in response to questions.
Experimenting	Give suggestions as to the procedure to investigate to find answers to questions.
Predicting	Use information other than patterns to attempt predictions.
Problem Solving	Evaluate two different suggestions for solving every-day problems.
Designing	Select appropriate materials to construct models and gadgets.

ATTITUDES - Summary of Attitudes to be developed by Grade 2 pupils

In the activities throughout the Grade 2, pupils are encouraged to develop attitudes required for positively interacting with scientific and technological ideas and concepts. At the end of the Grade these are some of the attitudes that should be evident:

Curiosity	Find out information about objects, events and investigations on their own.
Inventiveness	Suggest new and innovative ways of approaching investigations.
Respect for evidence	Listen attentively to other pupils' presentations, results and explanations.
Persistence	Persist at tasks even though expected results are not materializing.
Respect for living things	Appreciate that all living things are important in their own way, and should be protected and respected.
Cooperation	Work alone and with others.
Concern for safety	Identify and observe safety instructions.

THE LEARNING STANDARDS – GRADES 3 – 4

CONTENT STANDARDS

STRAND: EARTH AND SPACE SCIENCE (ESS)

Sub-Strand: Earth's Weather (EW)

ST. CS. ESS. 1: Pupils can identify and name elements of the weather.

ST. CS. ESS. 2: Pupils can understand and explain the water cycle and its effects.

ST. CS. ESS. 3: Pupils can design and construct devices to measure elements of the weather.

ST. CS. ESS. 4: Pupils can accurately collect and interpret records of weather.

Sub-Strand: Earth's resources (ER)

ST. CS. ESS. 5: Pupils can understand the concept of resources using soils, air and water in the environment.

ST. CS. ESS. 6: Pupils can investigate the physical properties of soil, air and water.

ST. CS. ESS. 7: Pupils can apply knowledge of weather, rain and the water cycle.

Sub-Strand: Solar System (SS)

ST. CS. ESS. 8: Pupils can explain the relationship between the sun, earth and moon.

ST. CS. ESS. 9: Pupils can define terms related to the way the various planets move.

ST. CS. ESS. 10: Pupils can name the planets of the solar system and arrange them in their relative positions to one another.

STRAND: LIFE SCIENCE (LS)

Sub-Strand: Diversity and Classification (DC)

ST. CS. LS. 1: Pupils can understand the term propagation.

ST. CS.LS. 2: Pupils can describe the different ways in which plants are propagated.

ST. CS. LS. 3: Pupils can classify plants into flowering and non-flowering.

ST. CS. LS. 4: Pupils can classify local plants according to their method of reproduction, and animals as vertebrates or invertebrates.

ST. CS. LS. 5: Pupils can understand that plants are very valuable to the society eg. economic, aesthetic, cultural and so on.

Sub-Strand: Ecosystem (ECS)

ST. CS. LS. 6: Pupils can understand that plants and animals depend on each other for survival.

ST. CS. LS. 7: Pupils can outline and describe the feeding relationships among animals.

ST. CS. LS. 8: Pupils can understand and practice conservation of the resources of the environment.

ST. CS. LS. 9: Pupils can define and explain the concept of ecosystem.

ST. CS. LS. 10: Pupils can accurately investigate and report on a local ecosystem.

ST. CS. LS. 11: Pupils can understand the ways in which natural disasters (hurricanes, earthquakes, and volcanic activities) and the activities of humans can influence the balance in the environment.

Sub-_ Strand: Structure and Function (SF*)*

ST. CS. LS. 12: Pupils can describe different methods of reproduction among plants in the environment.

ST. CS. LS. 13: Pupils can understand the importance of development and reproduction in plants and animals.

Sub-Strand: Structure and Function (SF) (Cont'd)

ST. CS. LS. 14: Pupils can identify parts of plants and animals and relate them to their function(s).

ST. CS. LS. 15: Pupils can understand how technology may be utilized to promote plant growth and propagation (grafting, budding etc.)

STRAND: PHYSICAL SCIENCE (PS)

Sub-Strand: Energy (EN)

ST. CS. PS. 1: Pupils can understand the importance of energy such as heat and light in our everyday lives.

ST. CS. PS. 2: Pupils can understand that the sun is the main source of heat and light in the solar system, but other man-made sources also exist.

ST. CS. PS. 3: Pupils can describe how energy is transferred from place to place in different forms.

Sub-Strand: Forces, Motion and Structures (FMS)

ST. CS. PS. 4: Pupils can understand that objects can exert forces, such as magnetic force and gravity, on other objects from a distance.

ST. CS. PS. 5: Pupils can understand that forces affect structures.

ST. CS.PS. 6: Pupils can describe how to minimize effects of forces which may alter the shape and strength of structures.

Sub-Strand: Matter and Materials (MM)

ST. CS. PS. 7: Pupils can understand that the amount of matter and the space it occupies can be measured.

ST. CS. PS. 8: Pupils can understand that materials may interact differently with other materials and objects.

PERFORMANCE STANDARDS - GRADE 3

At the completion of Grade 3, pupils who demonstrate understanding will:

STRAND: EARTH AND SPACE SCIENCE (ESS)

Sub-Strand: Earth's Weather (EW)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**3**	**ESS**	**EW**	**1**	Explain, what is weather.
ST	**3**	**ESS**	**EW**	**2**	Identify and name the elements of weather (air/wind, clouds, water vapour, precipitation, temperature).
ST	**3**	**ESS**	**EW**	**3**	Describe and demonstrate how clouds are formed.
ST	**3**	**ESS**	**EW**	**4**	Explain in their own words, how the effects of the wind may be useful and harmful.
ST	**3**	**ESS**	**EW**	**5**	Design, construct and use an anemometer to measure wind speed.
ST	**3**	**ESS**	**EW**	**6**	Observe the evaporation and condensation of water.
ST	**3**	**ESS**	**EW**	**7**	Identify the heat source that powers nature's water cycle, and explain the process.
ST	**3**	**ESS**	**EW**	**8**	Describe how temperature affects weather.
ST	**3**	**ESS**	**EW**	**9**	Use a thermometer to measure temperature, explaining how the device works.
ST	**3**	**ESS**	**EW**	**10**	Identify types of weather conditions by examining weather charts.

SKILLS ADDRESSED	***PS***	***Obs***	***Comm***	***Int.D***	***Des***	***UT***	***Rec***	**ATTITUDES ADDRESSED**	***Conc.S***	***Res.Ev***	***Int.O.E.R.***

Sub-Strand: Earth's Resources (ER)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**3**	**ESS**	**ER**	**1**	Identify and describe some of the earth's resources.
ST	**3**	**ESS**	**ER**	**2**	Classify using stated criteria, resources as renewable and non-renewable.
ST	**3**	**ESS**	**ER**	**3**	Outline how soils are made from a variety of rocks.
ST	**3**	**ESS**	**ER**	**4**	Describe some ways in which rocks are used in their environment.
ST	**3**	**ESS**	**ER**	**5**	Design and make simple ornaments from locally available rocks, following procedures that are safe.
ST	**3**	**ESS**	**ER**	**6**	Classify soils as sand, clay, loam.
ST	**3**	**ESS**	**ER**	**7**	Identify the properties of air, and discuss the importance of air to people.
ST	**3**	**ESS**	**ER**	**8**	Observe and describe the force exerted by air and infer that the force exerted can cause movement of objects.
ST	**3**	**ESS**	**ER**	**9**	Plan, design and construct an object to show how air affects the rate of falling objects.
ST	**3**	**ESS**	**ER**	**10**	Draw and describe the water cycle, outlining its importance to human beings (transportation, recreation).
ST	**3**	**ESS**	**ER**	**11**	Classify samples of water as hard or soft by their ability to form lather with soap, explain the advantages and disadvantages of both types of water.
ST	**3**	**ESS**	**ER**	**12**	Outline the use of water as a solvent in everyday life, including activities in the human body.

SKILLS ADDRESSED	***Obs***	***Class.***	***Des***	***Int.D***	***Comm***	***Exp***	***UT***	**ATTITUDES ADDRESSED**	***Conc.S***	***Stew.Env***	***Int.O.E.R.***	***Res.Ev***

Sub-Strand: Solar System (SS)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**3**	**ESS**	**SS**	**1**	Outline the relationship between the earth, moon and sun, especially how the relationship affects humans.
ST	**3**	**ESS**	**SS**	**2**	Define the terms: rotate, revolve, planet, star, satellite.
ST	**3**	**ESS**	**SS**	**3**	Identify the components of the solar system (sun, planets, and natural satellites).

SKILLS ADDRESSED	***Inf***	***Comm***	***Hyp***	**ATTITUDES ADDRESSED**	***N/A***

STRAND: LIFE SCIENCE (LS)

Sub-Strand: Diversity and Classification (DC)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**3**	**LS**	**DC**	**1**	Classify, giving examples, plants into flowering and non-flowering; monocotyledons and dicotyledons.
ST	**3**	**LS**	**DC**	**2**	Define propagation, seed.
ST	**3**	**LS**	**DC**	**3**	Describe the main differences between monocots and dicots.
ST	**3**	**LS**	**DC**	**4**	Outline two natural methods of propagation in flowering plants, giving local examples.
ST	**3**	**LS**	**DC**	**5**	Describe and explain methods of vegetative propagation.
ST	**3**	**LS**	**DC**	**6**	Identify and describe the use of seeds as a means of reproducing different plants, evaluating the advantages and disadvantages of reproduction by this method.
ST	**3**	**LS**	**DC**	**7**	Describe the process of germination in plants, outlining the factors that are necessary for the process to occur.
ST	**3**	**LS**	**DC**	**8**	Define the terms: vertebrates and invertebrates and list the five (5) classes of vertebrates.

SKILLS ADDRESSED	***Comm***	***Class.***	**ATTITUDES ADDRESSED**	***Int.O.E.R.***

Sub-Strand: Ecosystem (ECS)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**3**	**LS**	**ECS**	**1**	Construct and label simple food webs to show feeding linkages among animals in a given area (e.g. pond, a section of the school yard).
ST	**3**	**LS**	**ECS**	**2**	Infer how food webs help to maintain nature's balance, and identify the factors that may disrupt this balance.
ST	**3**	**LS**	**ECS**	**3**	Explain with examples, the ways in which the structure of the land influences the types of ecosystems.
ST	**3**	**LS**	**ECS**	**4**	Identify and name the different types of ecosystems in their country indicating their location on a map.
ST	**3**	**LS**	**ECS**	**5**	Reiterate the meaning of the concept of balance in the environment.
ST	**3**	**LS**	**ECS**	**6**	Identify the role of recycling and other named conservation methods in the maintenance of a balanced environment.
ST	**3**	**LS**	**ECS**	**7**	Explain to their classmates the need for environmental conservation in their country, outlining possible scenarios if such protection is neglected.

SKILLS ADDRESSED	***Obs***	***Inf***	***Int.D***	**ATTITUDES ADDRESSED**	***Stew.Env***	***Res.L.T.***

Sub-Strand: Structure and Function (SF)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**3**	**LS**	**SF**	**1**	Describe the physical features of the parts of a plant, relating these features to their functions.
ST	**3**	**LS**	**SF**	**2**	Describe the external features of animals relating these structures to their functions in the animals.

SKILLS ADDRESSED	***Obs***	***Class.***	***Comm***	**ATTITUDES ADDRESSED**	***Res.L.T.***

STRAND: PHYSICAL SCIENCE (PS)

Sub-Strand: Energy (EN)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**3**	**PS**	**EN**	**1**	Identify and name natural and human-made objects that emit light (sun, candle, fire, lamps).
ST	**3**	**PS**	**EN**	**2**	Explain the role of the sun as the main provider of heat and light on the earth.
ST	**3**	**PS**	**EN**	**3**	Describe, with examples, the ways in which heat and light are used by humans in everyday activities.
ST	**3**	**PS**	**EN**	**4**	List examples of fuels used in their country in the home, transportation and production of materials.
ST	**3**	**PS**	**EN**	**5**	Identify and discuss some of the unintended consequences of using fuels for transport and production of materials for commerce. (e.g. pollution).
ST	**3**	**PS**	**EN**	**6**	Describe the ways in which solar energy is used in the home (heat, electricity, air conditioning).
ST	**3**	**PS**	**EN**	**7**	Trace the flow and exchange of energy in an ecosystem.
ST	**3**	**PS**	**EN**	**8**	Discuss simple examples of energy transformation.

SKILLS ADDRESSED	***Rec***	***Comm***	***Int.D***	**ATTITUDES ADDRESSED**	***Res.L.T.***	***Res.Ev***	***Stew.Env***

Sub-Strand: Forces, Motion and Structure (FMS)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**3**	**PS**	**FMS**	**1**	Describe and demonstrate the forces of push and pull.
ST	**3**	**PS**	**FMS**	**2**	Identify, with examples, forces at work in everyday situations in the home and community.
ST	**3**	**PS**	**FMS**	**3**	Observe and demonstrate the effects of magnets on the motion of different materials (e.g. iron filings, non-metallic materials).
ST	**3**	**PS**	**FMS**	**4**	Observe and describe how human-made structures are strengthened.
ST	**3**	**PS**	**FMS**	**5**	Inspect and report on observations of the cross-section of a tree.
ST	**3**	**PS**	**FMS**	**6**	Investigate and classify animals with exo- and endo-skeletons.

SKILLS ADDRESSED	***Obs***	***Class.***	***Exp***	***Rec***	***Comm***	**ATTITUDES ADDRESSED**	***Conc.S***	***Res.Ev.***

Sub-Strand: Matter and Materials (MM)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**3**	**PS**	**MM**	**1**	List some physical properties of matter.
ST	**3**	**PS**	**MM**	**2**	Identify, with examples, physical change in everyday living.
ST	**3**	**PS**	**MM**	**3**	Describe the use of magnets in the home and community, suggesting other novel ways in which magnets may be used.
ST	**3**	**PS**	**MM**	**4**	Match, with relevant examples, properties of materials which make them useful for certain specific purposes.

SKILLS ADDRESSED	***Obs***	***Comm***	**ATTITUDES ADDRESSED**	***Com.P.A.***

STRAND: TECHNOLOGY (TE)

Sub-Strand: Technological Methods (TM)

At the end of Grade 3 activities pupils should:

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standard
ST	**3**	**TE**	**TM**	**1**	Formulate problems and do research in development of technological devices (e.g. construct models and gadgets).

SKILLS ADDRESSED	*Des*	*UT*	*PS*	ATTITUDES ADDRESSED	*Conc.S*	*Com.A.P.*

Sub-Strand: Nature of Technology (NT)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**3**	**TE**	**NT**	**1**	Examine past inventions in their historical context, with a view to understanding the various positives and negatives of the research.
ST	**3**	**TE**	**NT**	**2**	Understand the importance of precision and safety in using technology for developing new products.
ST	**3**	**TE**	**NT**	**3**	Understand that countries progress if the people are involved in innovative and creative activities.

SKILLS ADDRESSED	*Obs*	*Comm*	*Inf*	*Rec*	ATTITUDES ADDRESSED	*Conc.S*	*Com.A.P.*	*Res.Ev*

Sub-Strand: Use of Technology (UT)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**3**	**TE**	**UT**	**1**	Identify and appreciate that the gadgets, tools and structures used in their homes and community are made by humans.
ST	**3**	**TE**	**UT**	**2**	Realise, that with all good intentions, technology may be abused and misused.

SKILLS ADDRESSED	***Man***	***Class.***	***Inf***	**ATTITUDES ADDRESSED**	***Stew.Env***

STRAND: SCIENCE, TECHNOLOGY, SOCIETY AND THE ENVIRONMENT (STSE)

In this area pupils will begin to develop the understanding that:

Subject	Grade	Strand	Standard #	Performance Standards
ST	**3**	**STSE**	**1**	Sustainable use of resources would help to minimize pollution and destruction of the environment.
ST	**3**	**STSE**	**2**	Impact of Science and Technology may be positive or negative.
ST	**3**	**STSE**	**3**	Humankind values, beliefs and overall attitudes can influence technological activities and use.

SKILLS: Summary of Skills to be developed by Grade 3 pupils

In the development of inquiry, problem identification, design and solution pupils will demonstrate the following:

Observing	Identify differences and similarities between objects and events.
Measuring	Use simple measuring models of measuring instruments.
Manipulating	Manipulate simple equipment and gadgets.
Recording	Fill out correctly tables to report findings from investigations.
Classifying	Group objects according to several different criteria.
Communicating	Talk freely about their activities and ideas they have, using a variety of methods of reporting.
Inferring	Discern patterns and relationships in simple measurements and events.
Interpreting Data	Compare their findings with their predictions.
Experimenting	Suggest a set of ideas about how they could find out answers to questions.
Predicting	Attempt to use evidence to make a series of predictions.
Hypothesising	Suggest how an event may have happened.
Problem Solving	Suggest at least two (2) solutions to a simple problem.
Designing	Select appropriate material to make models and gadgets, giving reasons for choice.

ATTITUDES - Summary of Attitudes to be developed by Grade 3 pupils

In the activities throughout the Grade 3, pupils are encouraged to develop attitudes required for positively interacting with scientific and technological ideas and concepts. At the end of the Grade these are some of the attitudes that should be evident:

Curiosity	Ask questions about objects, events and matters not necessarily part of the class activity.
Inventiveness	Suggest new ways to do old investigations.
Respect for Evidence	Support their explanations and conclusions using evidence.
Persistence	Complete activities in spite of challenges.
Respect for living things	Appreciate that all living things deserve respect and protection.
Cooperation	Share and work together with others.
Concern for Safety	Realize that safety instructions should be heeded.

PERFORMANCE STANDARDS - GRADE 4

STRAND: EARTH AND SPACE SCIENCE (ESS)

Sub-Strand: Earth's Weather (EW)

At the completion of Grade 4, pupils who demonstrate understanding will:

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**4**	**ESS**	**EW**	**1**	Classify cloud types as stratus, cumulus, and cirrus, and relate the cloud types to weather conditions.
ST	**4**	**ESS**	**EW**	**2**	Use a compass to determine wind direction.
ST	**4**	**ESS**	**EW**	**3**	Design and construct a wind vane to observe wind direction.
ST	**4**	**ESS**	**EW**	**4**	List the two (2) main sources of water in the water cycle (ground and surface water).
ST	**4**	**ESS**	**EW**	**5**	Design, construct and explain a model to represent the water cycle.
ST	**4**	**ESS**	**EW**	**6**	Use a thermometer, explaining how it works.
ST	**4**	**ESS**	**EW**	**7**	Investigate and report from data collected about the weather over a period, using simple graphs.

SKILLS ADDRESSED	***Obs***	***UT.***	***Exp./Des***	***Int.D***	***Rec***	***Class***	***Mea***

ATTITUDES ADDRESSED	***Conc.S***	***Com.A.P.***	***Res.Ev***	***Int.O.E.R.***	***Inv***

Sub-Strand: Earth's Resources (ER)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**4**	**ESS**	**ER**	**1**	Collect and classify rocks in their country.
ST	**4**	**ESS**	**ER**	**2**	Describe with examples, how people use rocks for different purposes (extraction of minerals, building etc.)
ST	**4**	**ESS**	**ER**	**3**	Distinguish between various soils on the basis of physical properties (colour, texture, structure, components etc.)
ST	**4**	**ESS**	**ER**	**4**	Investigate which soil retains water or drains quickest. (simple experiments)
ST	**4**	**ESS**	**ER**	**5**	Infer that air exerts a force which can bring about movement of objects.
ST	**4**	**ESS**	**ER**	**6**	Observe and demonstrate the effects of air on falling objects.
ST	**4**	**ESS**	**ER**	**7**	Compare the rate of evaporation of water under specified conditions.
ST	**3**	**ESS**	**ER**	**8**	Conduct a simple experiment to find out if the weather affects evaporation in natural settings.
ST	**4**	**ESS**	**ER**	**9**	Classify substances as soluble or insoluble by their ability to dissolve in water.
ST	**4**	**ESS**	**ER**	**10**	Describe with examples, the use of water as a solvent in everyday life.

SKILLS ADDRESSED	***Obs***	***Exp***	***Des***	***Mea***	***Man***	**Rec**	**Int.D**	***Inf***	***Class***	***Pred***

ATTITUDES ADDRESSED	***Com.A.P.***	***Int.O.E.R***	***Conc.S***	***Res.Ev***	***Stew.Ev***	**Per**

Sub-Strand: Solar System (SS)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**4**	**ESS**	**SS**	**1**	Identify the earth as a planet in space with the moon as earth's satellite.
ST	**4**	**ESS**	**SS**	**2**	Research using books/ internet, the place of the sun in the universe.
ST	**4**	**ESS**	**SS**	**3**	Infer that the sun is the main source of light in the solar system.

SKILLS ADDRESSED	***Obs***	***Inf***	**ATTITUDES ADDRESSED**	***Cur***	***Int.O.E.R.***	***Res.Ev***

STRAND: LIFE SCIENCE (LS)

Sub-Strand: Diversity and Classification (DC)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**4**	**LS**	**DC**	**1**	Define the terms propagation, seed, vegetative propagation.
ST	**4**	**LS**	**DC**	**2**	Demonstrate respect for plants and animals.
ST	**4**	**LS**	**DC**	**3**	Suggest and describe methods of propagation for (i) obtaining diversity and (ii) keeping the same characteristics in plants.
ST	**4**	**LS**	**DC**	**4**	Describe what is involved in the use of artificial plant propagation.
ST	**4**	**LS**	**DC**	**5**	Define sexual reproduction, linking the seed as the means of sexual reproduction in plants.
ST	**4**	**LS**	**DC**	**6**	Compare the rate of germination in both monocotyledons and dicotyledons.
ST	**4**	**LS**	**DC**	**7**	Describe the main features of each class of vertebrates.
ST	**4**	**LS**	**DC**	**8**	Design and make a model of any vertebrate from discarded materials.

SKILLS ADDRESSED	***Obs***	***Des***	***UT***	***Exp***	***Comm***	**ATTITUDES ADDRESSED**	***Conc.S***	***Stew.Env***	***Res.Ev***	***Int.O.E.R.***	***Per***

Sub-Strand: Ecosystem (ECS)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**4**	**LS**	**ECS**	**1**	Interpret simple food webs, referring to the need of nature's balance.
ST	**4**	**LS**	**ECS**	**2**	Investigate the characteristics of mangrove, swamps, rainforests, ponds and explain the importance of these habitats.
ST	**4**	**LS**	**ECS**	**3**	Design and construct a model of a habitat.
ST	**4**	**LS**	**ECS**	**4**	Discuss how ecosystems contribute to the social and economic development of their countries.
ST	**4**	**LS**	**ECS**	**5**	Name the main types of Caribbean ecosystems, and investigate the characteristics and importance of each.
ST	**4**	**LS**	**ECS**	**6**	Explain how ecosystems provide useful resources.

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**4**	**LS**	**ECS**	**7**	Define conservation and the concept of balance in the environment.
ST	**4**	**LS**	**ECS**	**8**	Identify and explain the importance of other resources that need to be conserved.
ST	**4**	**LS**	**ECS**	**9**	Name and describe methods of conservation which keep balance in the environment.
ST	**4**	**LS**	**ECS**	**10**	Investigate the effects of wave action on the environment.

SKILLS ADDRESSED	***obsPS***	***Exp***	***Des***	***Int.D***	***Inf***	***Conc.S***	***Int.O.E.R.***

ATTITUDES ADDRESSED	**Stew.Env**	***Res.Ev***	***Com.A.P.***	***Int.O.E.R.***	***Res.L.T.***	***Cur***	**Inv**

Sub-Strand: Structure and Function (SF)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**4**	**LS**	**SF**	**1**	Identify and describe the uses of plants by humans.
ST	**4**	**LS**	**SF**	**2**	Discuss the importance of growth, development and reproduction in plants and animals.
ST	**4**	**LS**	**SF**	**3**	Reiterate the ways in which technology is utilized in plant growth and propagation.

SKILLS ADDRESSED	***Obs***	**ATTITUDES ADDRESSED**	***Stew.Env***	***Com.A.P.***

STRAND: PHYSICAL SCIENCE (PS)

Sub-Strand: Energy (EN)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**4**	**PS**	**EN**	**1**	Appreciate the role of human-made devices that provide heat and light in our daily lives.
ST	**4**	**PS**	**EN**	**2**	Investigate the effects of heat on matter and light on materials.
ST	**4**	**PS**	**EN**	**3**	Design and draw a time line to show how technology for particular purposes has changed over time.
ST	**4**	**PS**	**EN**	**4**	Compare at least two (2) devices used to provide heat and light using selected criteria.

SKILLS ADDRESSED	***Obs***	***Exp***	***Class***	***Des***	**ATTITUDES ADDRESSED**	***Conc.S***

Sub-Strand: Forces, Motion and Structure (FMS)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**4**	**PS**	**FMS**	**1**	Investigate the ways in which different forces can change the speed and direction of a moving object (e.g. magnetism, static electricity).
ST	**4**	**PS**	**FMS**	**2**	Classify different kinds of motion according to what causes the motion (e.g. gravity, magnets)
ST	**4**	**PS**	**FMS**	**3**	Formulate questions from observed phenomena.
ST	**4**	**PS**	**FMS**	**4**	Describe the visible effects of push and pull on a variety of everyday objects.
ST	**4**	**PS**	**FMS**	**5**	Suggest novel and innovative ways of using a magnet in the home.
ST	**4**	**PS**	**FMS**	**6**	Infer that the strength and stability of an object depends on its shape.
ST	**4**	**PS**	**FMS**	**7**	Identify and explain the ways in which strengthening mechanisms are used to resist stress in structures under load (eg. struts to resist compression, ties to resist tension)
ST	**4**	**PS**	**FMS**	**8**	Identify and describe how forces can alter shapes of objects (eg. bending, stretching, pulling, twisting).

SKILLS ADDRESSED	***Class***	***Hyp***	***Pred***	***Exp***	***Inf***	**ATTITUDES ADDRESSED**	***Conc.S***	***Com.A.P.***	***Int.O.E.R.***	***Res.Ev***

Sub-Strand: Matter and Materials (MM)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**4**	**PS**	**MM**	**1**	Measure volume and mass of materials.
ST	**4**	**PS**	**MM**	**2**	Investigate using a variety of ways and measurements to compare physical properties of certain materials.
ST	**4**	**PS**	**MM**	**3**	Demonstrate giving examples, that some materials reflect, transmit, or absorb light.
ST	**4**	**PS**	**MM**	**4**	Use the results from *ST 4 PS-MM 3* above, relating these properties to how the materials may be used in the home and the community.
ST	**4**	**PS**	**MM**	**5**	Describe, with examples, materials that are transparent, translucent and opaque.

SKILLS ADDRESSED	***Obs***	***Mea***	***Exp***	***Comm***	***Int.D***	***Pred***	**ATTITUDES ADDRESSED**	***Conc.S***	***Inv***

STRAND: TECHNOLOGY (TE)

Sub-Strand: Technological Methods (TM)

At the end of Grade 4 activities pupils should:

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standard
ST	**4**	**TE**	**TM**	**1**	Plan and execute appropriate research using technological methodology, to solve environmental challenges.

SKILLS ADDRESSED	***Exp***	***Int.D***	***Comm***	**ATTITUDES ADDRESSED**	***Conc.S***	***Int.O.E.R.***	***Com.A.P.***	***Stew.Env***

Sub-Strand: Nature of Technology (NT)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standard
ST	**4**	**TE**	**NT**	**1**	Plan and execute appropriate research using technological methodology, to solve environmental challenges.

SKILLS ADDRESSED	***Obs***	***Mea***	**ATTITUDES ADDRESSED**	***Conc.S***	***Com.A.P.***

Sub-Strand: Use of Technology (UT)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**4**	**TE**	**UT**	**1**	Investigate the possible advantages and disadvantages of a plan before making the final decision on use.

SKILLS ADDRESSED	***Obs***	**ATTITUDES ADDRESSED**	***Res.Ev***

STRAND: SCIENCE, TECHNOLOGY, SOCIETY AND THE ENVIRONMENT (STSE)

In this area pupils will begin to develop the understanding that:

Subject	Grade	Strand	Standard #	Performance Standards
ST	**4**	**STSE**	**1**	Knowledge acquired and products developed in the search for solutions to human problems and challenges affect everyday life, the society and the environment.
ST	**4**	**STSE**	**2**	The real impact of scientific and technological activities may take years to be seen.
ST	**4**	**STSE**	**3**	Every effort must be made to study carefully how science and technology activities are conducted and the resulting products used.

SKILLS: Summary of Skills to be demonstrated by Grade 4 pupils

In the development of inquiry; problem identification, design and solution; pupils will demonstrate the following:

Observing	Use as many senses as are appropriate to safely and accurately acquire knowledge.
Measuring	Use simple devices to collect reliable information.
Manipulating	Set up and use simple experiments to establish patterns.
Recording	Use a variety of methods to effectively report activities and results.
Classifying	Use named criteria to group objects and events.
Communicating	Use all sources of information to procure knowledge and information.
Inferring	Set up and use strategies to search for patterns in measurements and events.
Interpreting Data	Identifying likely changes when one or more variable is manipulated.
Experimenting	Identify methods that may be used to gather knowledge and information.
Predicting	Use simple ideas and methods to develop ways to make predictions.
Hypothesizing	Make informed 'guesses' about what is likely to occur in an investigation.
Problem Solving	Give a variety of possible solutions to problems.
Designing	Select appropriate methods and materials to make models and gadgets.

ATTITUDES - Summary of Attitudes to be developed by Grade 4 pupils

In the activities throughout the Grade 4, pupils are encouraged to develop attitudes required for positively interacting with scientific and technological ideas and concepts. At the end of the Grade these are some of the attitudes that should be evident:

Curiosity	Ask valuable questions about things trending in their society which relate to science and technology
Inventiveness	Produce innovative ideas about how to accomplish a task or investigation.
Respect for Evidence	Reach conclusions by insistence on verifiable evidence.
Persistence	Move relentlessly towards a conclusion in an investigation against all odds.
Respect for living things	Treat all living things with concern and respect - no cruelty to living animals especially.
Cooperation	Work effectively in groups, accepting responsibility for their part of the task.
Respect for safety	Accept safety instructions and responsibility for self-safety.

THE LEARNING STANDARDS - GRADE 5 - 6

CONTENT STANDARDS

STRAND: EARTH AND SPACE SCIENCE (ESS)

Sub-Strand: Earth's Weather (EW)

ST. CS. ESS. 1: Pupils can explain the differences between climate and weather.

ST. CS. ESS. 2: Pupils can understand how various factors impact the weather.

Sub-Strand: Earth's Resources (ER)

ST. CS. ESS. 3: Pupils can describe the ways in which humans cause pollution of the environment.

ST. CS. ESS. 4: Pupils can define the term soil erosion and outline its causes.

ST. CS. ESS. 5: Pupils can investigate pollution of water and air in the environment.

ST. CS. ESS. 6: Pupils can develop strategies for personal or group activities for reducing air and water pollution.

Sub-Strand: Solar System (SS)

ST. CS. ESS. 7: Pupils can describe the conditions necessary for support of life on the planets.

ST. CS. ESS. 8: Pupils can identify technological inventions used in the study of the solar system and space exploration.

STRAND: LIFE SCIENCE (LS)

Sub-Strand: Diversity and Classification (DC)

ST. CS. LS. 1: Pupils can explain how different organisms develop and reproduce and compare their life cycles.

Sub-Strand: Ecosystems (ECS)

ST. CS. LS. 2: Pupils can outline and describe the complex feeding relationships among animals and plants.

ST.CS. LS. 3: Pupils can predict the effects of disruption in an ecosystem on all life.

ST. CS. LS. 4: Pupils can develop a personal responsibility for protection of the environment.

ST. CS. LS. 5: Pupils can understand and explain the impact of natural and man-made disasters on the balance in the environment.

Sub-Strand: Structure and Function (SF)

ST. CS. LS. 6: Pupils can identify the structure and function of the major systems of plants and animals.

ST. CS. LS. 7: Pupils can describe how each major structure functions in plants and animals.

ST. CS. LS. 8: Pupils can appreciate the importance of technology in the functioning of the major systems in plants and human beings.

STRAND: PHYSICAL SCIENCE (PS)

Sub-Strand: Energy (EN)

ST. CS. LS. 1: Pupils can understand that electrical energy is transferred in circuits.

ST. CS. PS. 2: Pupils can understand that energy may be transformed from one form to another e.g. electricity to light; electricity to sound.

ST. CS. PS. 3: Pupils can design and make a simple circuit.

ST. CS. PS. 4: Pupils can understand how to practise safety measures when using electrical devices.

Sub-Strand: Forces, Motion and Structures (FMS)

ST. CS. PS. 5: Pupils can describe how the effects of forces vary with the size of the force.

ST. CS. PS. 6: Pupils can understand that simple machines used in everyday life do transfer forces.

ST. CS. PS. 7: Pupils can investigate factors that affect the stability of structures.

ST. CS. PS. 8: Pupils can identify a number of common levers and describe how they work.

ST. CS. PS. 9: Pupils can identify simple levers in simple devices in the home and playground.

Sub-Strand: Matter and Materials (MM)

ST. CS. PS. 10: Pupils can investigate changes in materials and matter.

ST. Cs. PS. 11: Pupils can distinguish between reversible and irreversible changes.

ST. CS. PS. 12: Pupils can understand and appreciate that humans make changes in materials to satisfy their peculiar needs.

PERFORMANCE STANDARDS - GRADE 5

At the completion of Grade 5, pupils who demonstrate understanding will:

STRAND: EARTH AND SPACE SCIENCE (ESS)

Sub-Strand: Earth's Weather (EW)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**5**	**ESS**	**EW**	**1**	Explain the difference between weather and climate.

SKILLS ADDRESSED	*Obs*	*Comm*	ATTITUDES ADDRESSED	*Res.Ev*

Sub-Strand: Earth's Resources (ER)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**5**	**ESS**	**ER**	**1**	Define the term soil erosion, listing the types of soil erosion, and ways and means of preventing it.
ST	**5**	**ESS**	**ER**	**2**	Name and describe methods of soil conservation.
ST	**5**	**ESS**	**ER**	**3**	Describe correct methods of garbage disposal.
ST	**5**	**ESS**	**ER**	**4**	Classify litter as recyclable and non-recyclable.
ST	**5**	**ESS**	**ER**	**5**	Plan and participate in clean-up drive in their school.
ST	**5**	**ESS**	**ER**	**6**	Design, construct and use discarded materials to make useful items.
ST	**5**	**ESS**	**ER**	**7**	Identify that air is needed for burning, and describe how the process works.
ST	**5**	**ESS**	**ER**	**8**	Compare devices that burn different fuels from the amount of pollution they cause.
ST	**5**	**ESS**	**ER**	**9**	Compare the amount of air pollution in two named areas.
ST	**5**	**ESS**	**ER**	**10**	Hypothesize as to the reasons for the differences exhibited in *ST 5 ESS-ER 9* above.

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**5**	**ESS**	**ER**	**11**	Explain the importance of 'clean' air in their country.
ST	**5**	**ESS**	**ER**	**12**	Identify and name natural sources of water.
ST	**5**	**ESS**	**ER**	**13**	Describe, with examples, the effects of water shortage in the environment and human activity.
ST	**5**	**ESS**	**ER**	**14**	Identify and describe how water may be polluted, and how human activities help in this situation.

SKILLS ADDRESSED	***Class***	***Obs***	***Des***	***Exp***	***Int.D***	**Hyp**	**Rec**

ATTITUDES ADDRESSED	***Stew.Env***	***Coop***	***Conc.S***	***Inv***	***Res.Ev***	***Com.A.P.***	***Int.O.E.R.***

<u>Sub-Strand: Solar System (SS)</u>

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**5**	**ESS**	**SS**	**1**	Identify conditions needed for life to exist on planets.
ST	**5**	**ESS**	**SS**	**2**	Research and use pictures to illustrate the different vehicles used in space exploration.

SKILLS ADDRESSED	***Obs***	***Rec***	***Inf***	**ATTITUDES ADDRESSED**	***Int.O.E.R.***	***Res.Ev***

STRAND: LIFE SCIENCE (LS)

Sub-Strand: Diversity and Classification (DC)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**5**	**LS**	**DC**	**1**	Identify different animals and describe the method by which they reproduce.
ST	**5**	**LS**	**DC**	**2**	Describe the life cycle of an animal where the young is born resembling the adult, and one in which the young the young is born and does not resemble the adult.
ST	**5**	**LS**	**DC**	**3**	Describe, with examples, the role of insects in nature.
ST	**5**	**LS**	**DC**	**4**	Define pollination, cross pollination and self-pollination citing local examples.
ST	**5**	**LS**	**DC**	**5**	Identify and describe the various agents of pollination - wind, water, animals etc.
ST	**5**	**LS**	**DC**	**6**	Define fertilization as the fusion of male and female gametes.
ST	**5**	**LS**	**DC**	**7**	Explain the significance of pollination and fertilization in plants.

SKILLS ADDRESSED	***Obs***	***Rec***	***Hyp***	***Inf***	***Comm***	**Exp**	**Int.D**	***Class***	***Des***	***Mea***

ATTITUDES ADDRESSED	***Com.A.P.***	***Int.O.E.R.***	***Stew.Env***

Sub-Strand: Ecosystem (ECS)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**5**	**LS**	**ECS**	**1**	Identify, with examples, the interactions amongst biotic factors in an ecosystem (biotic is relating to, or resulting from living things).
ST	**5**	**LS**	**ECS**	**2**	Explain that living things compete for food and space in the environment and describe how breaking the flow or supply of food can have serious consequences.
ST	**5**	**LS**	**ECS**	**3**	Identify and describe food chains and food webs in a named environment.
ST	**5**	**LS**	**ECS**	**4**	Define, with examples, species, population, under- and over-population, quadrat, birth rate, death rate.
ST	**5**	**LS**	**ECS**	**5**	Identify and describe the impact of under- and over- population of organisms in their habitat.
ST	**5**	**LS**	**ECS**	**6**	Collect, using quadrats, data on the number of specific organisms within a habitat.
ST	**5**	**LS**	**ECS**	**7**	Identify and name marine pollutants, explaining how each damages the environment.
ST	**5**	**LS**	**ECS**	**8**	Describe how human activities may result in air and water pollution.
ST	**5**	**LS**	**ECS**	**9**	Define surface tension and suggest ways in which it can be broken.
ST	**5**	**LS**	**ECS**	**10**	Describe ways to reduce air and water pollution.
ST	**5**	**LS**	**ECS**	**11**	Design and prepare brochures and posters on conservation of air and water.
ST	**5**	**LS**	**ECS**	**12**	Identify ways in which an ecosystem can change, and describe factors that may cause the change.
ST	**5**	**LS**	**ECS**	**13**	Recognize that humans impact ecosystems both positively and negatively.
ST	**5**	**LS**	**ECS**	**14**	Plan and execute an investigation on the main ways in which humans impact the ecosystem.
ST	**5**	**LS**	**ECS**	**15**	Describe an earthquake as a natural occurrence and explain what causes it.
ST	**5**	**LS**	**ECS**	**16**	Identify volcanic activity as a natural process and explain how volcanoes are formed, as well as the likely impact on the environment.

SKILLS ADDRESSED	***Obs***	***Rec***	***Comm***	***Int.D***	***Inf***	***Des***	***Class***	***Exp***

ATTITUDES ADDRESSED	***Stew.Env***	***Com.A.P.***	***Int.O.E.R***	***Inv***	***Coop***	**Res.Ev**	***Per***	***Conc.S***

Sub-Strand: Structure and Function (SF)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**5**	**LS**	**SF**	**1**	Identify the major systems in animals and describe the functions of each system (e.g. digestive, transport, reproductive, excretory, respiratory, nervous and endocrine).
ST	**5**	**LS**	**SF**	**2**	Design and construct models of the various systems in humans.
ST	**5**	**LS**	**SF**	**3**	Identify that the transport system is major system in plants, and describe the function of each of its parts.
ST	**5**	**LS**	**SF**	**4**	Identify technology utilized in the various human systems.

SKILLS ADDRESSED	***Obs***	***Des***	***Exp***	***UT***	***Rec***	**Man**	***Class***

ATTITUDES ADDRESSED	***Conc.S***	***Res.Ev***	***Int.O.E.R***	***Res.L***

STRAND: PHYSICAL SCIENCE (PS)

Sub-Strand: Energy (EN)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**5**	**PS**	**EN**	**1**	Identify and name the parts of a simple electrical circuit, and demonstrate by setting up one.
ST	**5**	**PS**	**EN**	**2**	Distinguish, giving examples, the differences between conductors and insulators.
ST	**5**	**PS**	**EN**	**3**	Practise and demonstrate safety measures in using electrical devices.

SKILLS ADDRESSED	***Obs***	***Class.***	***Comm***	***Des***	**ATTITUDES ADDRESSED**	***Conc.S***

Sub-Strand: Forces, Motion and Structure (FMS)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**5**	**PS**	**FMS**	**1**	Name the instrument used to measure force and the unit in which it is measured.
ST	**5**	**PS**	**FMS**	**2**	Having measured force acting on an object using a spring balance, design and use a simple device used to measure force.
ST	**5**	**PS**	**FMS**	**3**	Identify a number of common levers, describe how they operate to make work easier.
ST	**5**	**PS**	**FMS**	**4**	Name the different points of a lever, giving some common examples.
ST	**5**	**PS**	**FMS**	**5**	Identify the main parts of a wheel and an axle giving examples and describing how the objects function.
ST	**5**	**PS**	**FMS**	**6**	Define a simple machine, giving examples, and explaining how they make work easier.
ST	**5**	**PS**	**FMS**	**7**	Investigate the strength of a variety of common materials and recommend ways of strengthening materials to make them more force resistant.
ST	**5**	**PS**	**FMS**	**8**	Infer that an incline plane decreases the force required to lift an object.

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	5	PS	FMS	9	Define the term wedge and list examples of its use, explaining how they work.

SKILLS ADDRESSED	*Obs*	*Rec*	*Comm*	*Des*	*Exp*	Inf	*Int.D*	*Pred*

ATTITUDES ADDRESSED	*Conc.S*	*Com.A.P.*	*Int.O.E.R.*

Sub-Strand: Matter and Materials (MM)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	5	PS	MM	1	Identify and explain different ways by which materials can be changed.
ST	5	PS	MM	2	Understand that melting, freezing, evaporation and condensation are changes of state that can be reversed.
ST	5	PS	MM	3	Investigate the principle that burning, rusting and decaying are changes that are not reversible.
ST	5	PS	MM	4	Understand that human production processes make goods and products which may impact the environment.

SKILLS ADDRESSED	*Obs*	*Des*	*Exp*	*Comm*	*Rec*	Pred	ATTITUDES ADDRESSED	*Conc.S*	*Stew.Ev.*

STRAND: TECHNOLOGY (TE)

Sub-Strand: Technological Methods (TM)

At the end of Grade 4 activities pupils should:

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**5**	**TE**	**TM**	**1**	Use problem solving, technological processes and resources to find solutions to human wants and needs.
ST	**5**	**TE**	**TM**	**2**	Design and construct objects to satisfy human needs and to make life easier.

SKILLS ADDRESSED	***Des***	***Exp***	***Int.D***	***PS***	**ATTITUDES ADDRESSED**	***Conc.S***	***Res.Ev***	***Inv***

Sub-Strand: Nature of Technology (NT)

Subject	Grade	Strand	Sub-Strand	Standard #	Standard
ST	**5**	**TE**	**NT**	**1**	Understand that technological processes include manufacturing and constructing that may have an impact on their lives.
ST	**5**	**TE**	**NT**	**2**	Recognize that individuals can participate in technological activity and this involves the use of resources.

SKILLS ADDRESSED	***Class***	***Rec***	***Comm***	**ATTITUDES ADDRESSED**	***Conc.S***	***Stew.Ev***	***Res.Ev***

Sub-Strand: Use of Technology (UT)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**5**	**TE**	**UT**	**1**	Understand that humans desire to acquire understanding and to produce materials for their needs, and there may be consequences not anticipated.
ST	**5**	**TE**	**UT**	**2**	Recognize that resources should be used wisely since many of them are non-renewable.
ST	**5**	**TE**	**UT**	**3**	Appreciate that human values, beliefs, attitudes and sometimes the desire to dominate others may influence the type and scope of technological activity and use.
ST	**5**	**TE**	**UT**	**4**	Recognize that the impact of science and technology activities may be planned or unplanned.

SKILLS ADDRESSED	***Obs***	***Class.***	***Rec***	***Comm***	***PS***	**ATTITUDES ADDRESSED**	***Stew.Ev***	***Res.L.T***	***Int.O.E.R.***	***Com.A.P***

SKILLS: Summary of Skills to be demonstrated by Grade 5 Pupils

In the development of inquiry; problem identification, design and solution pupils will demonstrate the following:

Observing	Identify differences and similarities between objects and events.
Measuring	Use simple measuring instruments to identify sequence in events.
Manipulating	Handle simple equipment skillfully and effectively to investigate objects and to find solutions to environmental challenges.
Recording	Use pictures, charts and graphs to report results of investigations.
Classifying	Sort objects into groups or classes using a variety of criteria.
Communicating	Use appropriate vocabulary to describe the procedure for and results from investigations.
Inferring	Provide explanations or interpretations that follow from observation.
Interpreting data	Discuss what they find out in experiments in response to questions from their peers.
Experimenting	Formulate problems to be investigated and discuss them freely.
Predicting	From a set of events, predict future events.
Hypothesizing	Suggesting an idea or 'theory' even before an investigation.
Problem Solving	Suggest several solutions to simple problems.
Designing	Construct models or gadgets either by following given instructions or by using self-made designs.

ATTITUDES - Summary of Attitudes to be developed by Grade 5 pupils

In the activities throughout the Grade 5, pupils are encouraged to develop attitudes required for positively interacting with scientific and technological ideas and concepts. At the end of the Grade these are some of the attitudes that should be evident:

Curiosity	Ask questions about objects, events and likely investigations.
Inventiveness	Suggest new (or maybe strange) ways of doing things.
Respect for Evidence	Listen for evidence in other children's results and explanations.
Persistence	Persist at tasks even though challenges or even failure loom.
Respect for Living Things	Demonstrate to others some of the ways in which living things must be treated and respected.
Cooperation	Work individually and with others on a task.
Respect for Safety	Insistence on following safety instructions, and encourage others so to do.

PERFORMANCE STANDARDS - GRADE 6

At the completion of Grade6, pupils who demonstrate understanding will:

STRAND: EARTH AND SPACE SCIENCE (ESS)

Sub-Strand: Earth's Weather (EW)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standard
ST	**6**	**ESS**	**EW**	**1**	Define the term humidity and describe how humidity influences patterns of weather.

SKILLS ADDRESSED	*Obs*	*Class.*	ATTITUDES ADDRESSED	*Res.Ev*	*Int.O.E.R.*

Sub-Strand: Earth's Resources (ER)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**6**	**ESS**	**ER**	**1**	Describe different methods of disposing of solid waste materials, and demonstrate most appropriate methods of disposal.
ST	**6**	**ESS**	**ER**	**2**	Classify litter, using actual examples, as recyclable and non-recyclable.
ST	**6**	**ESS**	**ER**	**3**	Plan, design and construct useful items from discarded objects and materials.
ST	**6**	**ESS**	**ER**	**4**	Describe and discuss how burning can cause air pollution.
ST	**6**	**ESS**	**ER**	**5**	Design and construct a device to detect air pollution.
ST	**6**	**ESS**	**ER**	**6**	Investigate the amount of air pollution found in two distinctly different areas and suggest a 'theory' to account for the reasons for the differences.
ST	**6**	**ESS**	**ER**	**7**	Infer that cold air occupies less space than warm air.

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**6**	**ESS**	**ER**	**8**	List and explain which activities of humans may affect the water supply and pollute our scarce resources.
ST	**6**	**ESS**	**ER**	**9**	Discuss ways of preventing and reducing water pollution.
ST	**6**	**ESS**	**ER**	**10**	Design, construct and demonstrate the use of a device to determine the turbidity of water.
ST	**6**	**ESS**	**ER**	**11**	Investigate ways in which polluted water can be made clean.

SKILLS ADDRESSED	***Obs***	***Class.***	***Rec***	***Des***	***PS***	**Comm**	***UT***	***Hyp***

ATTITUDES ADDRESSED	***Stew.Ev***	***Conc.S***	***Res.Ev***	***Com.A.P***	***Inv***	***Int.O.E.R.***

Sub-Strand: Solar System (SS)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**6**	**ESS**	**SS**	**1**	State the conditions which are likely needed to support existence of life on planets.
ST	**6**	**ESS**	**SS**	**2**	Infer why life can only exist on earth, and predict what is necessary for life on other named planets.
ST	**6**	**ESS**	**SS**	**3**	Identify and describe instruments used to observe and investigate the solar system.
ST	**6**	**ESS**	**SS**	**4**	Distinguish between manned and unmanned space exploration.
ST	**6**	**ESS**	**SS**	**5**	Research and review vehicles used in space exploration, and discuss the benefits of space exploration.

SKILLS ADDRESSED	***Obs***	***Rec***	***Comm***	***Des***	***Inf***	**Int.D**	**ATTITUDES ADDRESSED**	***Com.A.P.***	***Int.O.E.R.***

STRAND: LIFE SCIENCE (LS)

Sub-Strand: Diversity and Classification (DC)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**6**	**LS**	**DC**	**1**	Explain the need for reproduction in living things, and explain the concept of life cycle of an animal.
ST	**6**	**LS**	**DC**	**2**	Describe the life cycle of an animal where the young is born resembling the adult, and one in which the young does not resemble the adult at birth.
ST	**6**	**LS**	**DC**	**3**	Classify, with examples, insects according to their type of life cycle.
ST	**6**	**LS**	**DC**	**4**	Compare the human life cycle to that of another animal.
ST	**6**	**LS**	**DC**	**5**	Describe the process of self-pollination and cross-pollination.
ST	**6**	**LS**	**DC**	**6**	Classify, using appropriate examples, flowering plants according to pollination type.
ST	**6**	**LS**	**DC**	**7**	Identify pollen grains (male) and ovules (female) as the reproductive cells/ gametes in a flower.
ST	**6**	**LS**	**DC**	**8**	Explain how fertilization occurs in flowers.
ST	**6**	**LS**	**DC**	**9**	Appreciate the significance of pollination and fertilization in plants, as a means of obtaining seeds.
ST	**6**	**LS**	**DC**	**10**	Define the term dispersal, and list the agents of seed dispersal, giving examples of seeds dispersed by all methods.
ST	**6**	**LS**	**DC**	**11**	Explain the importance of seed dispersal.

SKILLS ADDRESSED	***Obs***	***Class.***	***Comm***	**ATTITUDES ADDRESSED**	***Res.L.T.***

Sub-Strand: Ecosystem (ECS)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**6**	**LS**	**ECS**	**1**	Identify, giving examples, species, in a food web as herbivores, carnivores, producers and consumers.

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**6**	**LS**	**ECS**	**2**	Explain competition amongst living organisms in an environment.
ST	**6**	**LS**	**ECS**	**3**	Identify and describe the impact of under- and over-population of organisms in an environment.
ST	**6**	**LS**	**ECS**	**4**	List some factors that can affect population growth.
ST	**6**	**LS**	**ECS**	**5**	Estimate the population number of a given organism in a small habitat.
ST	**6**	**LS**	**ECS**	**6**	Suggest and name ways of preventing/ reducing marine pollution.
ST	**6**	**LS**	**ECS**	**7**	Research two different areas to find out the degree of air pollution, and use their findings to hypothesize about the reasons for any differences.
ST	**6**	**LS**	**ECS**	**8**	Use the findings in *ST 6 LS-ECS 7* above to determine the main causes of air pollution in the two areas.
ST	**6**	**LS**	**ECS**	**9**	Design and construct a device to detect air pollution, discussing the importance of clean air.
ST	**6**	**LS**	**ECS**	**10**	Cite ways of making hard water soft and soft water hard, identifying situations where hard or soft water is required.
ST	**6**	**LS**	**ECS**	**11**	Identify and describe the effects of soap on the movement of water through cloth and paper.
ST	**6**	**LS**	**ECS**	**12**	Design and prepare materials like brochures, posters etc. to advertise the need for conservation of air and water.
ST	**6**	**LS**	**ECS**	**13**	Examine and report on a local ecosystem that has experienced change.
ST	**6**	**LS**	**ECS**	**14**	Plan and demonstrate their involvement in environmental protection.
ST	**6**	**LS**	**ECS**	**15**	Appreciate that their ecosystems are very fragile and easy to be disrupted therefore protection and conservation are absolutely critical for sustainable development.
ST	**6**	**LS**	**ECS**	**16**	Identify ways in which earthquakes impact the environment.
ST	**6**	**LS**	**ECS**	**17**	Describe the safety measures to be put in practice during an earthquake, explaining the need for each measure.
ST	**6**	**LS**	**ECS**	**18**	Explain how volcanoes are formed and discuss the impact that these eruptions cause.
ST	**6**	**LS**	**ECS**	**19**	Outline useful and harmful effects of the presence of a volcano in their environment.

SKILLS ADDRESSED	***Obs***	***Exp***	***Comm***	***Rec***	***Des***	**PS**

ATTITUDES ADDRESSED	*Stew.Env*	*Res.L.T.*	*Com.A.P.*	*Int.O.E.R*	*Conc.S*	Per

Sub-Strand: Structure and Function (SF)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**6**	**LS**	**SF**	**1**	Describe the function of each part of the main systems in human (e.g. digestive, circulatory, reproductive, skeletal)
ST	**6**	**LS**	**SF**	**2**	Construct and use models of the various systems in humans.
ST	**6**	**LS**	**SF**	**3**	Identify the main parts of the transport system in plants, describing the function(s) of the main parts.
ST	**6**	**LS**	**SF**	**4**	Design and make models of technological devices that are used in the various systems in humans.

SKILLS ADDRESSED	*Obs*	*Rec*	*Comm*	*Des*	ATTITUDES ADDRESSED	*Conc.S*	*Com.A.P*	*Inv*	*Int.O.E.R.*

STRAND: PHYSICAL SCIENCE (PS)

Sub-Strand: Energy (EN)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**6**	**PS**	**EN**	**1**	Design and make devices that demonstrate energy transformation.
ST	**6**	**PS**	**EN**	**2**	Practise and recommend safety measures in using electrical devices.

SKILLS ADDRESSED	*Obs*	*Rec*	*Des*	*Exp*	*Comm*	ATTITUDES ADDRESSED	*Conc.S*

Sub-Strand: Forces, Motion and Structure (FMS)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**6**	**PS**	**FMS**	**1**	Predict the position of forces in balancing a non-uniform object.
ST	**6**	**PS**	**FMS**	**2**	Having measured forces acting on an object using a spring balance, design and use a simple device used to measure force.
ST	**6**	**PS**	**FMS**	**3**	Measure the mass of an object using a simple lever.
ST	**6**	**PS**	**FMS**	**4**	Predict the force that will balance a lever with an off-centre fulcrum.
ST	**6**	**PS**	**FMS**	**5**	Research the use of wheels in a variety of situations, citing their impact.
ST	**6**	**PS**	**FMS**	**6**	Examine the use of simple machines in simple devices in the home and community (eg. openers, egg beaters, seesaws).
ST	**6**	**PS**	**FMS**	**7**	Determine experimentally that varying the mass of an object, and height from which it is dropped will vary the force exerted by the object.
ST	**6**	**PS**	**FMS**	**8**	Design and construct a device to prevent an egg from breaking on impact after being released from a raised platform.
ST	**6**	**PS**	**FMS**	**9**	Research the following problem: the surface area of a free-falling object affects the time for free-fall.

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**6**	**PS**	**FMS**	**10**	Suggest several ways of strengthening materials in order to make them more force resistant.
ST	**6**	**PS**	**FMS**	**11**	Explain how a wedge functions, listing some examples of wedges in everyday use.

SKILLS ADDRESSED	***Pred***	***Mea***	***Des***	***Exp***	***Hyp***	***PS***

ATTITUDES ADDRESSED	***Com.A.P***	***Inv***	***Per***	***Res.Ev***	***Conc.S***	***Int.O.E.R.***

Sub-Strand: Matter and Materials (MM)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**6**	**PS**	**MM**	**1**	Understand that the mass of water remains constant when water changes from solid to liquid.
ST	**6**	**PS**	**MM**	**2**	Describe a production process in the home, and draw a diagram to illustrate the stages in the process.

SKILLS ADDRESSED	***Obs***	***Rec***	***Comm***	***Int.D***	***Hyp***	**ATTITUDES ADDRESSED**	***Res.Ev***	***Com.A.P***	***Int.O.E.R.***

STRAND: TECHNOLOGY (TE)

Sub-Strand: Technological Methods (TM)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**6**	**TE**	**TM**	**1**	Identify people's needs, formulate problems and mount research to find answers.
ST	**6**	**TE**	**TM**	**2**	Understand that constructing and testing instruments and gadgets are critical in technological methods.

SKILLS ADDRESSED	*Obs*	*Pred*	*Hyp*	*Comm*	ATTITUDES ADDRESSED	*Com.A.P*	*Int.O.E.R.*

Sub-Strand: Nature of Technology (NT)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**6**	**TE**	**NT**	**1**	Understand that people use processes involving living things (biotechnology) and materials (production technology) to satisfy their needs.
ST	**6**	**TE**	**NT**	**2**	Understand that scientific knowledge benefits technology while the latter produces the tools and devices that help in the development of new scientific knowledge.

SKILLS ADDRESSED	*Obs*	*Rec*	*Comm*	ATTITUDES ADDRESSED	*Res.L.T.*

Sub-Strand: Use of Technology (UT)

Subject	Grade	Strand	Sub-Strand	Standard #	Performance Standards
ST	**6**	**TE**	**UT**	**1**	Understand that technology is neither good nor bad but the use to which its tools are put may affect their lives positively or negatively.
ST	**6**	**TE**	**UT**	**2**	Appreciate that using technology involves a person making a decision which contains aspects of ethical consideration.
ST	**6**	**TE**	**UT**	**3**	Identify that use of technology may have unanticipated side effects.

SKILLS ADDRESSED	***Obs***	***Rec***	***Pred***	***Int.D***	***Comm***	**ATTITUDES ADDRESSED**	***Conc.S***	***Res.Ev***	***Stew.Env***

STRAND: SCIENCE, TECHNOLOGY, SOCIETY AND THE ENVIRONMENT (STSE)

In this area, pupils will begin to develop the understanding that:

Subject	Grade	Strand	Standard #	Performance Standards
ST	**6**	**STSE**	**1**	Care must be taken to avoid uninformed and hasty decisions about use of science and technology, since impacts may not be in their best interests.
ST	**6**	**STSE**	**2**	Abuse and overuse of non-renewable resources lead to depletion, and should indicate to policy makers that the urgent search for and use of renewable resources is critical.
ST	**6**	**STSE**	**3**	Science and technology research and activities must take into account their impact on society and the environment. Therefore, not everything that is possible ought not to be done.

SKILLS: Summary of Skills to be demonstrated by Grade 6 pupils

In the development of inquiry, problem identification, design and solution pupils will demonstrate the following:

Observing	Note the properties of objects and situations using the five senses.
Measuring	Expressing the amount of an object or substance in quantitative terms e.g. litres, metres, grams, feet.
Manipulating	Plan and set up simple experiments to compare results of investigations.
Recording	Fill out simple tables and plot relevant graphs to report investigation results.
Classifying	Relate objects and events to their properties in order to group them.
Communicating	Use bar graphs, pictures, charts and tables to report results and findings of investigations.
Inferring	Give an explanation or interpretation for a particular object or event.
Interpreting Data	Arrive at explanations, inferences or hypotheses from the data that have been presented in a table or graph.
Experimenting	Testing an idea or hypothesis through manipulation of variables.
Predicting	Give a possible but not yet proved explanation for something.
Hypothesizing	Suggest a tentative generalization of observations that may be used to explain a larger number of events.
Problem Solving	Identify problems, formulate research questions, design and conduct solutions to the problem.
Designing	Evaluate their own designs and research questions, as well as those of the class, using named criteria.

ATTITUDES - Summary of Attitudes to be developed by Grade 6 pupils

In the activities throughout the Grade 6, pupils are encouraged to develop attitudes required for positively interacting with scientific and technological ideas and concepts. At the end of the Grade these are some of the attitudes that should be evident:

Curiosity	Consistently ask questions and clarifications during investigations including questions that exhibit the desire to do follow up activities.
Inventiveness	Suggest novel ways to use equipment during investigations.
Respect for Evidence	Show a willingness to review and replace procedures and constantly evaluate their work and the work of others.
Persistence	Repeat experiments despite previous failed attempts -- succeed in the end.
Respect for Living Things	Understand that all animals play a part in the community and should be treated with care, attention and respect.
Cooperation	Work effectively in groups, accepting responsibility for their part in the task -- its success or failures
Respect for Safety	Accept and obey safety precaution warnings, and help to explain to others why such warnings are important.