REPUBLIC OF TRINIDAD AND TOBAGO

MINISTRY OF EDUCATION

PRIMARY SCHOOL CURRICULUM

CURRICULUM GUIDES

SCIENCE

INFANTS 1 – STANDARD 5

Curriculum Planning and Development Division
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Foreword of the Minister of Education

The Ministry of Education sees that education is the key to preparing our country to have a knowledge-driven economy that can be competitive in the region and across the world. It is fundamental to the development of Trinidad and Tobago. We are committed to making human development the central focus of education through the creation of mechanisms for skills-building, life-long learning and institutional strengthening.

Additionally, in this world in which innovation is essential, fostering creativity and higher-order thinking skills in our citizens is an imperative. We recognise too that Literacy and Numeracy are core skills which need to be developed, since these constitute the main areas on which the performance in education of our country is measured.

Within my tenure as Minister of Education, sixteen priority areas have been identified for significant change in the educational landscape of our nation. Our primary sector has been an area of concern, with many of our students not attaining the knowledge and skills necessary for secondary education nor for functioning as young citizens of our nation. The priority areas targeted for intervention at the primary level are: Curriculum Reform, Literacy and Numeracy, Integration of ICTs in Education, a Continuous Assessment Programme and Improving Infrastructure in Schools. Also significant are the movement of the SEA examination, teacher training and other measures geared toward improving academic performance. All these initiatives work together to bring our primary sector to a quality that will support the requirements for a world-class education for each of our children. Within this context, the primary curriculum has been rewritten in order to prepare our children for successful living in the 21st century. The principles underlying this project were:

- The belief that curriculum reform must address the needs of 21st century development and the labour market needs of the society, as well as build the foundation for responsible citizenship and ensure the optimisation of multiple talents, including the arts and sports.
- The creation of a learning system that accommodates all types of learners, not limited to the academically gifted.
- The strengthening and enhancement of the cognitive, social and psycho-motor skills learnt at the primary level for a seamless transition to the secondary level.

The new primary curriculum has been carefully designed and developed in accordance with international best practice and in accordance with these requirements. This curriculum will meet the needs of our country's development through the achievement of the full potential of each child**.**

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PROJECT LEADERSHIP

Ingrid Kemchand	Project Lead – Reform Primary Curriculum
Farishazad Nagir	Co-ordinator – Logistical Matters
Gillian Pilgrim	Co-ordinator – Technical Matters
John Roopchan	Director- Curriculum Development Division
Gaynelle Holdip	Former Director (Ag.) Curriculum Development Division
Indira Roopnarine	Management Support Team
Gregory Sarkar	Management Support Team – PPPMU

CURRICULUM WRITING TEAM

Agricultural Science

Subject Leads:

Khalel Mohoyodeen	Curriculum Co-ordinator
Karen Nandaram	Curriculum Officer

Writers:

Marcia Griffith	Mucurapo Boys RC
Rajdai Danielle Ganga	Edinburgh Government

Shazaad Mohammed	Montrose Government
Venessa Sooknanan	Williamsville Secondary
Zaida Mohammed	Charlieville ASJA Primary

English Language Arts

Subject Lead:

Soren Bijaram	Curriculum Officer

Support Team:

Mala Morton-Gittens	Curriculum Co-ordinator
Lawrence Jaggassar	Curriculum Officer
Amia Kimoy Conrad-Christopher	Curriculum Officer
Zandra Kailah-Deonarine	Curriculum Officer
Dayah Dookie-Ramkelawan	Curriculum Officer

Writers:

Anderlene Mohan-Ragbir	Siparia West Secondary
Dixon Ghouralal	Piparo Presbyterian
Elizabeth Bernis-Boodoo	Curepe Presbyterian
Joan Elizabeth Noel	Marabella Government School
Margaret Toni Babwah	Princes Town R C
Marion Trim	St Joseph Government
Richard Morealy	Carapichaima Roman Catholic
Richard Wade Chaitram	Bonne Aventure Presbyterian

Mathematics

Subject Leads:

Karen Mitchell	Curriculum Officer
Jacqueline Pariag	Curriculum Officer

Support Team:

Shereen Khan	Curriculum Co-ordinator (retired)
Indrawatie Nanlal-Dass	Curriculum Co-ordinator (retired)
Nicole Harris-Knudsen	Curriculum Officer
Andra Salandy	Curriculum Officer

Writers:

Cheryl Bradshaw	La Horquetta South Government Primary School
Egan McCallister	Tunapuna Boys' R.C. School
Hazra Baksh	Barrackpore A.S.J.A. Primary School
Mohan Sadal	Iere Government Primary School

Physical Education

Subject Leads:

Caroline Forde	Physical Education and Sport Officer II
Veronica Dolan-Samuel	Physical Education and Sport Officer I

Writers:

Dave Phillips	St. Margaret Boys' Anglican
Evelyn Ferreira-Larrier	St. Mary's Children's Home Anglican

Janelle Edwards	Parletuvier Anglican (Tobago)
Janice Celestine	Point Fortin West Secondary

Science

Subject Leads

Hollis Sankar	Curriculum Coordinator
Anna Singh	Curriculum Officer

Writers:

Carlene Hayes- Simmons	San Fernando Boys' R.C. School
Clayton Manick	La Horquetta North Government Primary School
David Ragoonanan	Las Lomas R.C. School
Eathra Stephen	Edingburgh Gov't Primary School
Ryan Mongroo	Curepe Presbyterian School

Social Studies

Subject Leads:

Vashtie Ramnarine	Curriculum Coordinator
Yeon Glasgow	Curriculum Officer

Writers:

Dianne Baksh	Cunjal Government Primary
Donna Mungal-Pulwarty	Chandernagore Presbyterian Primary
Mohan Ramsewak	Tulsa Trace Hindu
Nargis Patricia Ratiram	Macaulay Government Primary
Trisha Des Vignes	Tunapuna Anglican Primary

Spanish

Subject Leads:

Elicia Gordon	Curriculum Coordinator (Ag.)
Gail Barnard	Curriculum Officer

Writers:

Beverly Cooper Gordon	Patna/River Estate Government Primary
Cyd Wilson-Smith	St. Paul's Anglican School
Glenrose Joseph	St. David's R.C
Jennifer Seemungal	Queen's Royal College
Maltee Sinanan	Reform Hindu School

Technology Education Support

Officers:

Indira Roopnarine	Curriculum Officer
Peter Fraser	Curriculum Officer
Simone Haynes-Noel	Curriculum Officer

Visual and Performing Arts (VAPA)

Subject Leads:

Victor Edwards	Curriculum Co-ordinator
Allison Seepaul (Dance)	Curriculum Officer
Iezora Edwards (Drama)	Curriculum Officer
Marceline Peters (Music)	Curriculum Officer
Reynold Ramlogan (Visual Arts)	Curriculum Officer

Writers:

Ancil Rooplal (Visual Arts)	San Fernando East Secondary
Anderson La Barrie (Drama)	Preysal Secondary
Christopher Nunes (Visual Arts)	Carapachaima West Secondary
Jo-ann Clement (Drama)	Mayaro Secondary
Joanna Francis (Dance)	Barataria South Secondary School
Kathy-Ann Serrieaux (Music)	Manzanilla/Nariva Government Primary
Yolande Nicholas-Joseph (Music)	Diamond Vale Government Primary
Joyce Kirton (Dance)	Les Enfants Dance Company
Ursuline Nelson- Williams (Dance)	Les Enfants Dance Company
Joanna Charles-Francis (Dance)	Barataria South Secondary School

Values Character and Citizenship Education (VCCE)

Subject Leads:

Cheryl Huggins-Neptune	Curriculum Co-ordinator (Ag)
Theresa Neblett-Skinner	Curriculum Co-ordinator (Ag)

Writers:

Avenelle Fortuné-Johnson	St Theresa Girls' R.C. School
Cheryl Parks	Santa Rosa Government Primary School
Claudia Vialva-Brumant	Santa Cruz R.C. School
Indra Rattan	Freeport Presbyterian School
Nigel Clarke	Holy Saviour (Curepe) Anglican School

EDUNOVA- Consultants

The National Curriculum Framework

INTRODUCTION

This curriculum framework is intended to outline the nature and purpose of the curriculum as well as the parameters for consistent curriculum implementation throughout primary education in Trinidad and Tobago. The document sets out the principles that govern and guide teaching and learning. The term `curriculum' is used in this document to describe the sum total of the planned experiences which occur within that environment, and which were designed to foster children's learning and development. These include activities, and events, with either direct or indirect impact upon the child.

A clear understanding of the nature, role and function of the national curriculum for Trinidad and Tobago is a critical part of the whole positive transformation of education to provide a seamless pathway for all students through the system of teaching and learning. This framework provides the basis for the new primary integrated curriculum, which includes specification of subject-areas selected to maximize twenty-first century learning in a student-centred innovative education system in Trinidad and Tobago. The components which are fundamental to transformation of primary education at this point in time form the underlying concepts which guided the development of the curriculum and give direction to teaching and learning. They are of particular importance to the development of our students and of our nation because they establish common understandings about teaching and learning. These understandings inform how all schools are expected to focus on the achievement of the goals laid out by the Ministry of Education for a future-oriented inclusive education for all. For Trinidad and Tobago, the National Curriculum Framework becomes the basis for all education and curriculum decision-making, including the design, development and implementation strategies for a new system of teaching and learning covering those critical seven years of education. The statement of outcomes for students are a key part of this education framework and forms the basis for all subsequent decisions about teaching and learning, content, pedagogy and assessment. These must work towards fulfilling the vision for successful students and future citizens of our nation.

In order to establish common ground and ensure that the curriculum can be implemented as designed, a set of foundational principles needs to be established. This National Curriculum Framework establishes a consistent foundation for learning that is undergirded by the vision, mission and the five value outcomes for all children as detailed by the Ministry of Education. Given that this is the agency with ultimate responsibility for the education, care and well-being of every learner in the country, the National Curriculum Framework and the curriculum

that devolves from it essentially provide the basis for all teaching and learning activity.

Part of that foundation is the recognition that a curriculum is both product and process, and that any new curriculum materials needs to reflect those notions in the design. Furthermore all curriculum design, development and implementation must be guided by the existing vision, mission and five value outcomes for education in the country. Finally, the foundation must ensure that all curriculum activity, including implementation at the classroom level, functions within the guiding principles of education established by the Ministry of Education. It must also be stated that the guiding principles of the Ministry of Education were developed after extensive stakeholder dialogue and sound analysis of the current societal and national requirements.

For an effective and relevant twenty-first century process of teaching and learning, these guiding principles are an indicator that the Ministry of Education seeks to place education in Trinidad and Tobago alongside, if not ahead of international best practices. The Ministry of Education has established an ***Education Sector Strategic Plan 2011-2015*** to achieve the goals of quality, innovative, challenging, flexible education for all, and has begun an investment in human and material resources to achieve this outcome in a purposeful and timely fashion.

BACKGROUND

In order to effectively administer the formal education sector, and ensure that every child has the best opportunity to learn, the Ministry of Education provides direction and guidance based upon sound educational theory and practices together with a considerations from extensive stakeholder consultations. In 2011 the Ministry of Education conducted two national consultations on the primary education curriculum, along with 7 district consultations and one in Tobago. Information received from these stakeholder consultations informed the direction and decisions of the Ministry of Education to better meet the requirements of education at the primary level. Alongside this, a detailed, critical examination of current practice, both within and outside the country was conducted to identify elements that contribute to a quality education.

A detailed and comprehensive plan to revise and update all components of the teaching learning system to new internationally accepted standards emerged. Part of this transformation involved reviewing and assessing current curriculum documentation and practices. A professional review and assessment of the previous curriculum documents was completed, and recommendations were presented to guide the development of the new curriculum framework. A new standard for teaching and learning, which is evident in international best practice, shows that at lower grade level, children learn best when presented with knowledge, skills and values that are integrated and thematically organized. The integration of subject matter and skills or cross-subject connections is an important feature of the design, development, and implementation of the new curriculum.

Integration does not mean that the subject areas disappear. In fact, the subject areas have become pillars and supports for innovative and transformative learning experiences covering these critical seven years of formal education. This new twenty-first century curriculum for Trinidad and Tobago provides every opportunity for the child to learn, master new important skills, and develop character and values that are critical to their role as productive, caring and responsible citizens, locally, regionally and internationally. This new integrated, innovative, flexible curriculum provides learners with a journey of inquiry and discovery. This integrated thematic curriculum will place Trinidad and Tobago`s education system on par with international leaders in the education arena.

DEFINITION

The term 'curriculum' has several meanings, depending on the context and the perspective of curriculum theory that is applied to the definition. Most theories concur that there are four fundamental components within definitions of curriculum:

- Curriculum as the transmission of a body of knowledge.
- Curriculum as product - defined by the ends or achievements expected.
- Curriculum as process.
- Curriculum as praxis

There is little advantage to debating the differences embedded in these views of curriculum. It is however very useful to agree on a basic perspective that guides the process of developing an effective education system that has a well-designed and developed curriculum. It is useful, for example, to see the new curriculum as part of a clearly delineated guide for all learning which is planned and organized by the education system, whether it is carried out in groups, individually, within or outside the school.

By suggesting that a curriculum provides a detailed learning plan and guide, we are also stating that the curriculum specifies precisely what outcomes we anticipate that all learners will achieve as well as how they will achieve those outcomes. The new curriculum articulates a series of sequenced general learning outcomes which are elaborated through subject outcome statements. Abundant guidance is provided in planning units of work, individual teaching learning activities and includes samples of activities developed to ensure that a measure of fidelity in the implementation of the curriculum is maintained. In this respect, the Ministry of Education has established a body of learning outcomes which collectively define the vision of what knowledge, skills and dispositions a twenty-first century learner at the Primary level in Trinidad and Tobago should possess. These outcomes are the key guiding principles underpinning the new infant and primary curriculum and thus underpin the whole education system, ultimately guiding what happens in schools and classrooms.

FOUNDATION OF THE NATIONAL CURRICULUM

Vision

The Ministry is leading a quality education system that responds to the diverse needs and requirements of 21st century learners, promotes inclusivity, seamlessness, equity and equality and contributes to human capital and sustainable development.

Table 1: Vision of the Ministry of Education

Effective curriculum requires a very clear direction. In Trinidad and Tobago the Ministry of Education has articulated it`s view of education which establishes the mandate for education. In the establishment of policy and principles for education on a national level all decisions are informed by the vision and mission for the system. All curriculum development, from the design of a new set of learning guides to implementation at the classroom level is therefore guided by the principles and policies of the Ministry of Education.

The regulatory and guiding principles for education provide the overarching national framework for education. The Ministry of Education, ***Education Sector Strategic Plan: 2011-2015,*** and other policy documents, establish the design framework for all components of the new curriculum. Principal among these are the vision, mission and the five (5) value outcomes established at the national level for all students, which further guides the formulation of the desired and intended learning experiences for the classroom in the curriculum guide.

In Trinidad and Tobago, the current focus is on the design and development of primary curriculum, which, as noted above is governed by the principles established in this Curriculum Framework.

One of the key elements of this foundation is the Vision for learning which clearly articulates the commitment of the Ministry to meet the needs of learners. A forward-looking perspective on what all schools should be facilitating in terms of student achievement is guided by the national curriculum. There is equal clarity regarding a twenty-first century education system functioning to provide the highest standard of education.

Devolving from the Vision, in the Mission statement, the Ministry of Education establishes the mechanism for the realization of the Vision and of what the end product of the anticipated learning experiences

Mission

To educate and develop children who are able to fulfill their full potential; healthy and growing normally; academically balanced; well-adjusted socially and culturally; and emotionally mature and happy.

*Government of Trinidad and Tobago, Ministry of Education, Education Sector Strategic Plan: 2011-*2015

Table 2: Mission of the Ministry of Education

will be. The curriculum has elaborated on the stated outcomes for all children with further outcomes both at a general level and more specifically for all subject areas.

The principles by which the Ministry administers the education system to effectively and efficiently achieve the vision, mission and outcomes have been clearly articulated. These guiding principles are essential statements that must govern curriculum design and development, teaching and learning, and the administration of schools if the goals of education are to be achieved. The critical area of focus is on student learning and fidelity to the curriculum which seeks to transform classroom practices to the benefit of each child.

The guiding principles, listed below, are important components in the new curriculum. The principles informed the curriculum design and development process; they will guide teaching and learning at the implementation phase of the curriculum. As we evaluate the curriculum, they will provide reference points to ensure that the desired attributes of education that are important for the nation are being achieved. The new curriculum materials are not static products, but will remain a flexible roadmap designed to effect high quality, relevant learning for all young people well into the future.

Principle	*Elaboration*
Student Centred	The student is at the centre of everything we do.
Engaged Communities	We engage parents and families as the heart of students' lives and we support and acknowledge them as the primary guides and decision-makers for students. We engage members of local, regional and global communities as active contributors to student learning
Inclusive	We expect all students will learn in a welcoming environment regardless of place, culture, or learning needs.
Proactive	We plan for a desired future, preventing problems instead of reacting to them.
Shared Responsibility	We acknowledge that education is everybody's business and therefore expect teachers, the school and education leaders to collaborate with other government and community organizations to foster student learning
Innovative	We explore new learning opportunities through research, innovation and professional development to ensure continuous improvement of student learning.
Flexible	We enable meaningful and relevant learning through a range of opportunities appropriate to each student's development stage.
Equitable	We ensure that every student will have the benefit of high-quality learning opportunities.

Principle	*Elaboration*
Accountable	We explain to the citizens of Trinidad and Tobago the outcomes of our students and our use of funding.
Transformative Leadership	We believe that people with vision and passion can achieve great things. We therefore empower and inspire out staff and stakeholders to create positive and lasting changes in the education system.
Quality	We are committed to meeting our won quality standards that are driven by the requirements of our customers. Each of us takes charge to ensure that these standards are implemented in our individual areas of authority.
Teacher Empowerment	We create the environment for excellence in teaching practice that improves the learning of all students, deepens educators content knowledge, provides them with research-based instructional strategies to assist students in meeting rigorous academic standards, and prepares them to use various types of classroom assessments appropriately.

Table 3: Guiding Principles of the Ministry of Education

THE NEW PRIMARY CURRICULUM

The new Primary curriculum envisages preparing our children with the knowledge, skills and dispositions to optimize their own development and ultimately to constitute a caring, respectful and socially conscious citizenry which will competently lead our country onto the world stage. The Curriculum focuses on nine (9) subject areas: Mathematics, English Language Arts, Science, Social Studies, Visual and Performing Arts, Physical Education, Agricultural Science, Spanish and Values, Character and Citizenship Education. Health and Family Life Education outcomes are distributed and supported by all subjects.

By crafting a new national primary curriculum and addressing the learning needs of all young people through a new approach to teaching and learning, Trinidad and Tobago has established a strong foundation for the desired educational outcomes for our students. The Vision and Mission of the Ministry of Education which seeks to recognize, value and nurture individual abilities and talents requires an integrated, appropriate and relevant twenty-first century set of learning experiences at the heart of the curriculum. This overarching vision and mission remain central to all curriculum design, development and implementation initiatives, and will guide pre-service and in-service

teacher education and training activities that are an essential part of the whole education development, innovation and transformation process.

The world is rapidly changing and knowledge, skills, and values are being demanded of citizens, even while the education struggles to catch up with yesterday's requirements. In the vision, mission and principles statements it is very clear that the Ministry of Education wants to develop an education for the twenty-first century, charting the way for education and the nation to keep pace and move to the front of the international arena. Following on this understanding, the new curriculum has been developed as a flexible tool that focuses on the development of twenty first century skills in learners. The curriculum itself, while providing abundant and detailed guidance to teachers, can be adapted and shaped to individual contexts. Curriculum adaptation is an essential aspect of curriculum implementation that is required to meet the rapidly changing and diverse needs of all learners, so enabling teaching and learning to continue to be relevant and current.

The new primary curriculum is characterised by the following:

- An integrated, thematic approach to teaching and learning in which learning from different subjects is skilfully melded into thematic units and learning/lesson plans. There is a focus on core content, building critical skills and cultivating desirable dispositions in students, rather than rote learning of content and regurgitation on paper and pencil tests. This facilitates for a smooth transition from ECCE into Infants and makes for a pleasurable learning experience for the child, and more effective delivery and retention of content.
- Literacy and Numeracy, significant foundational areas, are built in in all subject areas
- Continuous Assessment is promoted with conscious attention to Assessment for Learning which uses a wide range of classroom assessments to provide feedback and improve student performance
- Differentiated Instruction is supported to enable teachers to use a variety of teaching methods and cater to the learning needs of a range of students
- Infusion and use of Information and Communication Technologies, an indispensable twenty-first competence for students, is built in to all areas
- Focused teaching of Visual and Performing Arts and Physical Education ensures that all children's talents and sensibilities are awakened and developed.
- The introduction of foreign language awareness in a Spanish programme which follows a Foreign Language Exploratory model is present. This focuses largely on oral Spanish, its attendant cultures and exploration of other language experiences in the child's immediate environment.
- A focus on Values, Character and Citizenship is a vital component towards building a strong, tolerant and conscientious citizenry.

As noted, the designed learning experiences outlined in the new curriculum are student-centred, inclusive and capable of guiding implementation of a high quality, engaging, innovative teaching and learning process that satisfies the learning needs of all twenty-first century young citizens of Trinidad and Tobago, the Caribbean region and the globally interdependent and connected world.

A significant part of the mandate required that the curriculum capture current, relevant, interesting and fun teaching and learning experiences. The general and specific outcomes focus on the development of concepts, skills and dispositions in students, including higher-order skills suitably targeted to the developmental level of our young learners. While the design of the new curriculum is new to our education system, it is grounded in sound educational theory and principles. Inherent in the subject matter are carefully considered concepts, skill sand dispositions which are relevant to the development of students and the needs of our society as espoused by our many stakeholders and educators.

The seven years of the primary experience have been broken down into three key levels each of which has a broad area of focus as to the general outcomes desired for the child at that level and are specified as a general level of student achievement.

Organizational Structure of the Achievement Levels		
Level	Title	Grades
Achievement Level One	Love of Learning	Infant One Infant Two
Achievement Level Two	Inquiry and Discovery	Standard One Standard Two Standard Three
Achievement Level Three	Taking Flight	Standard Four Standard Five

Table 4: Levels of the Primary system

The titles of each of the designated levels clearly denote the overarching goal for student learning at each stage. The subject specific outcomes for the various year levels evolve from these. The learning experiences throughout the three levels have been designed to articulate a smooth journey of growth, development, and learning, culminating in a well-rounded, independent learner, ready to embrace secondary education. There are a total of twenty six themes designed to organize all learning experiences through the three achievement levels. The curriculum begins in the Infant year levels with a very strong integrated, thematic approach to learning, and progressively introduces subject areas as discrete organizers of that learning by Standards Four and Five. While the higher primary year levels have more subject area learning they are not without thematic organization. At those levels, the themes become broader, more complex and challenging, while the nine core subject areas emerge in prominence. This design decision was made to facilitate a smooth and seamless transition from primary into secondary education.

The targeted achievements for all students at the end of each of these three levels are succinctly summarized in Table 5. These attributes are the foundation for all learning interactions in and out of the classroom.

Table 5: Learning Level Achievements

Level 1: Love of Learning ***Infants 1- Infant 2***	**Level 2: Enquiry & Discovery** ***Standard 1- Standard 3***	**Level 3: Taking Flight** ***Standard 4- Standard 5***
At the end of this level, students will:	At the end of this level, students will:	At the end of this level, students will:
Be able to communicate needs, ideas, and emotions.	Be able to engage in reflection before communicating needs, ideas and emotions.	Apply healthy interpersonal communication skills to enhance learning, and general interaction.
Make choices to solve simple, personal problems.	To develop thoughtful solutions to problems that occur in interaction with others.	Demonstrate some capacity to pose, as well as solve problems.
Engage learning imaginatively.	Produce imaginative responses to learning problems.	Demonstrate both sequential and connective thinking when encountering problems.
Work with others co-operatively.	Create new meanings through teamwork and	Exhibit some leadership qualities in both

Level 1: Love of Learning ***Infants 1- Infant 2***	**Level 2: Enquiry & Discovery** ***Standard 1- Standard 3***	**Level 3: Taking Flight** ***Standard 4- Standard 5***
At the end of this level, students will:	At the end of this level, students will:	At the end of this level, students will:
	collaboration.	learning and social contexts.
Begin to consider the importance of diet, exercise and hygiene.	Practise healthy lifestyle habits	Demonstrate sufficient knowledge of the human body to make healthy lifestyle choices consistently.
Demonstrate basic courtesy in relationship to others.	Observe positive social norms and behaviours.	Achieve a well-rounded sense of self and how to contribute productively to a group.
Recognise that working and playing safely protects everyone.	Demonstrate the ability to temper personal behaviour, in order to contribute to a safe environment for all.	Demonstrate some ability to foresee potentially unsafe behaviours in self and others.
Demonstrate joy in learning.	Demonstrate curiosity and a sense of adventure in conducting simple investigations.	Exhibit the satisfaction that accrues from engagement in learning.
Show sufficient self-confidence to engage in learning and social activities	Through growing self-esteem and initiative, begin to develop their own voice and demonstrate a sense of empowerment	Display self-reliance when working independently.
Behave respectfully toward the environment under supervision.	Understand that individual actions contribute to the environmental health of both local and national communities.	Recognise the symbiotic relationship between self and environment and acknowledge in behaviour that every action has a consequence.
Gather information	Gather, organise and present information	Process information.
Use technologies under supervision.	Explore technology purposefully and safely.	Find and employ technology for particular ends.
Understand the concept of past, present and future.	Explore the past and make connections with the present.	Imagine the future.
Demonstrate fair and equitable play habits.	Understand that social interaction requires giving as well as taking.	Become actively involved in issues involving social justice.

Clearly, students will experience a curriculum that engages and challenges them in a variety of ways that are particularly relevant to their social, political, and economic growth and development in the information age of the twenty-first century. This primary curriculum seeks to expose and fulfill the potential of each child and to affirm the unique identity and character of the citizenry of Trinidad and Tobago.

COMPONENTS OF THE PRIMARY CURRICULUM

The new primary curriculum comprises three documents that are intended to provide necessary information and support to our public.

Curriculum Guides in 9 subject areas are provided. These specify what is to be learnt by students in an ordered, developmentally appropriate sequence in the form of learning outcomes. Learning outcomes are further categorized as related to the acquisition of Content, or the development of Skills or Dispositions. Further guidance is provided in an Elaboration statement to specify the breadth and depth of what is to be taught and assessed, so that there is a standardized approach to teaching and assessment across the country.

For Teachers' use, a **Teacher's Guide** has been developed. This document provides an overview of the pedagogical practices embraced by the new curriculum, summary descriptions of the themes selected as the vehicle for the teaching and learning material as well as the 5 considerations that are infused throughout the curriculum- Literacy, Numeracy, Assessment for Learning, Differentiated Instruction and Infusion of Information and Communication Technologies (ICTs).

For further support of teachers, an **Instructional Toolkit** has been developed. Within this document, detailed plans of work, samples of activities and rubrics for implementation by teachers are provided. Thematic Unit plans which bring to outcomes from several subjects as well as Learning or Lesson Plans, together with sample activities and rubrics are provided. Learning plans that suggest interesting methods for teachers to address core subject-specifics concepts and skills are also included. At the initial stages of implementation of this curriculum that seeks to transform teaching and learning, abundant samples are provided for teachers. These may be implemented directly or may serve as guides for teachers' development of their own thematic units and lessons. As implementation takes place, opportunities will be provided for teachers to provide their own creative and original approaches to these themes and topics within the toolkit.

TIMETABLE

Within the framework of the new primary curriculum, there are some important notions about the new primary timetable which ought to be specified. These are that:

- 9 subject areas are represented (Mathematics, English Language Arts, Science, Social Studies, Visual and Performing Arts; Physical Education, Agricultural Science, Values, Character and Citizenship Education and Spanish). HFLE and ICT are infused throughout the subjects.
- 50% of the time is dedicated to ELA and Mathematics, which include Literacy and Numeracy components and are considered to be priority at the lower primary. The other 50 % of the time is to be dedicated to the other 7 subjects. The curriculum documents reflect that balance, so that as outcomes specified for each year level are covered, the balance of time for subjects is maintained.
- A combination of Thematic Units which combine several subject areas and subject specific core skills are to be taught (as in the Instructional Toolkit). Core skills may be done in preparation for a theme, during a theme or following a theme.
- The timetable is flexible and will be detailed on a weekly basis as teacher's plan for the week is developed. The teacher selects which core skill lessons and which thematic lessons are to be taught each week and presents this in the weekly forecast and evaluation plan.
- In any given week, core skills for any or all subject areas may be taught. One possible illustration of what this may look like is given below:

MON	TUE	WED	THURS	FRI
THEME	CORE SKILLS (MATH)	CORE SKILLS (SOCIAL STUDIES)	THEME	THEME
	THEME	THEME	CORE SKILLS (SPANISH)	CORE SKILLS (AGRI.SCI)
CORE SKILLS (SOCIAL STUDIES)	THEME	THEME	THEME	THEME
CORE SKILLS (VAPA)		CORE SKILLS (ELA)	CORE SKILLS (PHYS. ED)	

Table 6: Sample Timetable

Subject Rationale

What Is Science About?

Science is a distinct form of human activity, which involves a dynamic way of exploring ourselves, the world in which we live, and beyond. Scientific progress comes from rational, systematic work and from creative insights, built on a foundation of respect for evidence. Scientific knowledge is not fixed and it is this on-going quest that makes science a valuable knowledge system. The Science curriculum is driven by creative energies and a spirit of enquiry. Through problem-based approaches, students construct their understanding of science by taking an active role in learning and applying them to real world situations.

Why Study Science

Science engages students in making informed decisions, developing creative solutions, and exploring innovative alternatives. Students gather evidence to inform next steps, communicate understandings from information analysed, as well as develop novel and/or feasible strategies, tools, and products. They also develop appropriate personal qualities and attitudes for successfully negotiating a variety of situations in our dynamic and technological society. Many of the major challenges and opportunities that confront our world can be approached from a scientific perspective, tempered by social and ethical considerations.

How Is Science Teaching Structured?

This approach to the teaching of Science will shape students' understanding of their world, and reinforce the importance of scientists to the development of society. These outcomes are realised through an emphasis on the following:

Skills:

1. **Planning and designing**: Identifying the problem, hypothesising, selecting a workable method, and evaluating products or solutions.
2. **Conducting experiment**s: Observing, measuring, and classifying.
3. **Communicating:** Presenting findings, interpreting data, making inferences, and drawing conclusions.

Concepts:

1. **Individuals and groups**:

   Students engage in grouping things to appreciate their unique characteristics as well as variations that may exist among them.

2. **Forms and functions of structures and mechanisms:**

   Students relate the usability of everyday structures and mechanisms to the properties or features that inform their design and construction.

3. **Systems and Interactions among them:**

   The connections that exist among components of the various systems of living and non-living things are explored. Students develop a greater understanding of the environment as they evaluate the effectiveness of the systems studied.

4. **Conservation and sustainability of natural resources:**

   Students consider the impact of human actions in order to appreciate the delicate balance that exists between human needs and those of the environment.

Primary School Curriculum

Science

Infants 1

SCIENCE: INFANTS 1				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
Individuals and Groups: 1.1.1 Assess the importance of the observable parts of the body (Universal Children's Day, Nov. 20th)	1.2.1 Group parts using one or more observed properties.	1.3.1 Display respect for themselves and each other.	1a. Demonstrate an understanding of the position of the observable body parts and their significance. 1b. Appreciate that certain characteristic are common to human beings	• Write the names of observable body parts on a drawing showing: parts of the face (eyes, ears, mouth, nose, and head), arms, elbows, hands, fingers, legs, knees, feet, toes. (1.1.1, 1.2.1, 2.2.1, 1.3.1, 2.3.1) • Explain the function of the observable body parts. (1.1.1, 2.2.1, 1.3.1, 2.3.1) • Group observable body parts according to given criteria. (1.1.1, 1.2.1, 2.2.1, 1.3.1, 2.3.1)

SCIENCE: INFANTS 1				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
2.1.1 Understand the need for food as a source of energy for survival 3.1.1 Value the need for personal hygiene as a means of achieving/maintaining good health.	2.2.1 Convey information by means of oral or written descriptions or pictures 3.2.1 Demonstrate correct procedures to maintain personal hygiene.		2a. Recognize that food is important to sustain life. 2b. Appreciate that not all food may be healthy for our bodies 3. Understand the importance of personal hygiene.	• Explain the consequences of not eating. (2.1.1, 2.2.1, 2.3.1,1.3.1) • Choose nutritious meals from a variety of pictures displaying healthy and unhealthy options. (2.1.1, 2.2.1, 2.3.1) • Explain proper procedures to keep their bodies clean: o bathe at regular intervals using soap and clean water; o wash all external body parts; o brush teeth; and o wash hands. (3.1.1, 2.2.1, 2.3.1)

SCIENCE: INFANTS 1				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
				• Explain why it is necessary to bathe in order to remain healthy. (3.1.1, 2.2.1, 2.3.1) • Demonstrate the proper procedure to: o wash hands and o brush teeth. (3.2.1, 1.3.1, 2.3.1)
Form and Function: 4.1.1 Examine the functions of everyday structures.	4.2.1 Construct information about functions of structures from what has been observed.	2.3.1 Consider safety when using everyday objects or devices.	4. Recognize that everyday structures perform various functions.	• Select the structures that are best suited for a given purpose: o stand on a structure that is stable and strong to support the intended mass; o the suitability of a vessel to hold its

SCIENCE: INFANTS 1				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
5.1.1 Discriminate among objects, those that can be used as simple machines	5.2.1 Group objects as machines using one or more observed properties		5. Understand the use of some simple machines	contents e.g. spoon, bowl, bird nest, etc.). (4.1.1, 4.2.1, 2.3.1) • Explain that simple machines make work easier. (5.1.1, 2.2.1, 2.3.1) • Justify their choice of which simple machine to use for a given task in terms of: o reducing effort; o increasing speed; or o changing direction of the force. (5.1.1, 5.2.1, 2.2.1, 2.3.1)

SCIENCE: INFANTS 1				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
Systems and Interactions: 6.1.1 Categorise habitats based on their components. (World Habitat Day, October 1st)	6.2.1 Observe their environment using the senses – seeing, touching, hearing and smelling.	3.3.1 Exercise care to promote the well-being of themselves, others and environment when making observations. 4.3.1 Understand the consequences of their actions.	6. Understand the difference between terrestrial and aquatic habitats.	• Name three characteristics of a terrestrial habitat. (6.1.1, 6.2.1, 2.2.1, 1.3.1, 2.3.1) • Name three characteristics of an aquatic habitat. (6.1.1, 6.2.1, 2.2.1, 1.3.1, 2.3.1) • Compare and contrast habitats according to their characteristics. (6.1.1, 6.2.1, 2.2.1, 1.3.1, 2.3.1)
7.1.1 Distinguish between types of forces as either push	7.2.1 Describe in advance the outcome of		7. Differentiate between a push and a pull.	• Describe simple objects in terms of their ○ Shape,

SCIENCE: INFANTS 1				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
or pull.	applying different types of forces from previous experience. 7.2.2 Via observation, describe objects in terms of their shape, motion, position or location. 7.2.3 Design a simple investigation into the effect of either a push or a pull.			○ Motion, ○ Position, or ○ Location. (7.1.1, 7.2.2, 4.3.1) • Classify forces in situations as either a push or pull. (7.1.1, 7.2.1, 4.3.1) • Devise a simple experiment to demonstrate the effects of pushes and pulls and hypothesize the effect of the forces. (7.1.1, 7.2.1, 7.2.3, 4.3.1)

SCIENCE: INFANTS 1				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
Conservation and Sustainability: 8.1.1 Assess the importance of energy as light, sound or heat for domestic purposes. 9.1.1 Differentiate amongst types of litter as plastic, paper, cans, and	8.2.1 Group domestic household devices according to type of energy utilized. 9.2.1 Construct information about categories of litter from what has	5.3.1 Demonstrate conservation habits. 6.3.1 Be accountable for disposal of litter	8. Understand that energy exists in various forms. 9. Appreciate the need to reduce the amount of litter they contribute to the environment.	• Distinguish amongst different forms of energy as light, sound or heat. (8.1.1, 2.2.1) • Associate common domestic appliances/devices with the type of energy they produce. (8.1.1, 8.2.1, 6.2.1, 2.2.1) • Explain the need to switch off appliances/devices that are not in use. (8.1.1, 5.3.1, 2.2.1) • Categorise litter into plastic, paper, cans or glass. (9.1.1, 9.2.1, 6.3.1)

SCIENCE: INFANTS 1				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
glass.	been observed.	6.3.2 Confidently dispose litter in the appropriate bin.		• Propose disposal methods for plastic, paper, cans and glass. (9.1.1, 1.3.1, 2.3.1, 6.3.1)

Primary School Curriculum

Science

Infants 2

SCIENCE: INFANTS 2				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
Individual and Groups: 1.1.1 Distinguish between living and non-living things. 2.1.1 Differentiate among animals according to observable characteristics.	1.2.1 Construct information about differences between living and non-living things based on what has been observed.	1.3.1 Demonstrate a sense of responsibility when interacting with living or non-living things.	1. Appreciate differences between living and non-living things. 2. Demonstrate an understanding that animals are similar and different.	• Identify at least three attributes of living things as : o growing (growth), o reproducing (reproduction), o sensitive to environment, o moving (locomotion), o eating (nutrition), o producing waste (excretion), and o breathing (respiration). (1.1.1, 1.2.1, 1.3.1, 2.2.1) • Justify why something is classified as living or non-living. (1.1.1, 1.2.1, 1.3.1, 2.2.1)

SCIENCE: INFANTS 2				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
3.1.1 Record the changes in growth of a seedling.	2.2.1 Communicating information by means of written descriptions or pictures in tabulated format. 3.2.1 Chart the growth of a seedling using an arbitrary measure.	2.3.1 Display honesty in recording information.	3. Understand the changes that take place when seedlings grow.	• Classify animals according to observable characteristics: o limbs 2, 4 or 6 legs, wings; o head, thorax, abdomen; and o external covering etc. (2.1.1, 2.2.1, 1.3.1) • Measure the height of a seedling as it grows, using strips/ arbitrary measure. • Construct a chart to illustrate the growth of a seedling. (3.1.1, 3.2.1, 3.3.1) • Draw diagrams to show the development of a seedling at different stages. (3.1.1, 3.2.1, 3.3.1)

SCIENCE: INFANTS 2				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
4.1.1 Distinguish healthy foods from non-healthy foods based on Caribbean Food Groups. (World Food Day - Oct.16th) 4.1.2 Discuss consequences of eating unhealthy foods.	4.2.1 Construct information about healthy foods from what has been surveyed. 4.2.2 Convey information orally or by drawing about these consequences.	3.3.1 Exhibit confidence in making responsible eating choices. 4.3.1 Show concern for/sensitivity to others who make unhealthy eating choices.	4. Recognize that not all items prepared for eating are healthy.	• Justify making healthy choices of food. (4.1.1,4.2.1,4.3.1) • Group basic foods using the Caribbean Food Groups. (4.1.1, 4.2.1, 3.3.1) • Explain that a healthy meal consists of food from the six food groups. (4.1.1, 4.2.1, 3.3.1,4.3.1) • Explain some of the consequences of eating unhealthy foods. (4.1.1,4.2.1,4.3.1)

SCIENCE: INFANTS 2				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
Form and Function: 5.1.1 Distinguish among solids based on physical properties.	5.2.1 Construct an operational definition of physical properties from what has been observed.	5.3.1 Be on task during activities. 5.3.2 Construct a simple table for recording observations	5. Differentiate among solids based on physical properties.	• Categorise solids based on physical properties. ○ colour ○ shape ○ size ○ texture (5.1.1, 5.2.1, 5.3.1, 5.3.2)
Systems and Interaction: 6.1.1 Demonstrate the effects of forces that cause objects to: move, come to rest, move faster, change direction.	6.2.1 Describe procedures in a sequential order. 6.2.2 Deduce from recorded information, the effects of application of pushes or pulls.	6.3.1 Display curiosity when manipulating objects.	6. Understand the effects of forces; push and pull.	• Apply forces to objects to alter speed and/or direction. (6.1.1, 6.2.1, 6.3.1) • Interpret from recorded information the effects of the application of a push/pull. (6.1.1, 6.2.2, 6.3.1)

SCIENCE: INFANTS 2				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
7.1.1 Compare aquatic and terrestrial habitats based on their components. (World Water Day, March 22nd; Earth Day, April 22nd; World Environment Day, June 5th).	7.2.1Construct a table of characteristic features of a particular habitat.	7.3.1 Be objective when collecting data.	7. Differentiate between aquatic and terrestrial habitats.	• Construct a table of characteristic features of aquatic and terrestrial habitats. (7.1.1, 7.2.1, 7.3.1) • Create a model or picture of an aquatic and terrestrial habitat. (7.1.1) • Classify habitats as aquatic or terrestrial from their characteristics. (7.1.1, 7.2.1, 7.3.1)
Conservation and Sustainability: 8.1.1Explain that energy is conserved and	8.2.1Construct information using	8.3.1Show concern for energy conservation.	8. Understand that energy is converted from one	• Identify the forms of energy before and after conversion

SCIENCE: INFANTS 2				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
converted into other form(s) in devices.	simple flow charts about the conversion of energy in devices.		form to another for use.	in given devices/ appliances. (8.1.1) • Draw flow diagrams to illustrate the energy changes that take place in household devices/appliances. (8.1.1, 8.2.1, 8.3.1) • Explain the need to switch off toys, appliances and lights when not in use. (8.1.1,8.3.1) • Articulate that energy is neither created nor destroyed; it changes form. (8.1.1)

SCIENCE: INFANTS 2				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
9.1.1 Justify the importance of scientists. (World Science Day-March)	9.2.1 Convey information orally or pictures about scientific advancements. 9.2.2 Participate in science popularization activities.	9.3.1 Demonstrate appreciation for the contribution of scientists.	9. Justify the importance of scientists.	• Discuss the contribution of named scientists. (9.1.1, 9.2.1,9.3.1) • Make/ display posters to show the work of local scientists. (9.2.2,9.3.1)

Primary School Curriculum

Science

Standard 1

SCIENCE: STANDARD 1				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
Individual and Groups: 1.1.1 Distinguish between vertebrates and invertebrates. 2.1.1 Discuss the importance of the work of local scientists.	1.2.1 Sort models or pictures of animals according to observed characteristics. 2.2.1 Convey information by means of oral presentations or visual display.	1.3.1 Handle materials carefully. 1.3.2 Demonstrate equity in distribution of materials. 2.3.1 Value the contributions of scientists.	1. Classify animals as vertebrates or invertebrates. 2. Appreciate the work of local scientists.	• Categorize popular farm, domestic and zoo animals as vertebrates or invertebrates. (1.1.1, 1.2.1, 1.3.1) • Explain the importance of the work of local scientists. (2.1.1,2.2.1,2.3.1) • Identify one local scientist and write the main idea of his/her work. (2.1.1,2.2.1,2.3.1)

SCIENCE: STANDARD 1				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
Form and Function:				
3.1.1Investigate traditional methods such as sieving and handpicking to separate mixtures of solids.	3.2.1 Choose the appropriate apparatus for separating solids of different size. 3.2.2 Carry out procedures systematically.	3.3.1Be open-minded about traditional practices.	3. Discriminate amongst traditional methods of separation.	• Explain the procedures to separate mixtures e.g. handpicking: ▪ rice and stone; ▪ sand and rice; and ▪ nails and pebbles. (3.1.1,3.2.1,3.3.1)
4.1.1Evaluate the usefulness of objects/structures based on the materials used to make them.	4.2.1 Investigate the flaws in structures that result from the choice of materials. 4.2.2 Explore possible alternatives.	4.3.1Be innovative in choice of materials.	4. Illustrate the usefulness of structures/objects based on the materials used to make them.	• Use appropriate materials when creating models or completing projects etc. that are suitable based on o appearance, o texture, o strength, and o mass. (4.1.1,4.2.1,4.3.1)

SCIENCE: STANDARD 1				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
5.1.1 Differentiate among various types of simple machines as levers, pulleys, wheel and axle.	5.2.1Use an appropriate simple machine to complete a specified task.	5.3.1Value the usefulness of simple machines.	5. Demonstrate an understanding of the use of simple machines.	• Classify simple machines as: o levers, o pulleys, or o wheel and axle. (5.1.1,5.2.1, 5.3.1) • Select appropriate simple machines to solve everyday problems. (5.1.1,5.2.1, 5.3.1)
Systems and Interaction: 6.1.1Examine the use of forces including twists and turns.	6.2.1 Carry out procedures showing the use of different forces. 6.2.2 Record observations using scientific drawings.	6.3.1 Be thorough when conducting investigations. 6.3.2 Be organised when performing tasks.	6. Evaluate the effects of for ces.	• Explain the effects of simple twists and turns. (6.1.1,6.2.1,6.3.1) • Draw and label diagrams to ill ustrate the use of twists and turns. (6.1.1,6.2.2,6.3.2) • Predict the most plausible

SCIENCE: STANDARD 1				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
	6.2.3 Predict the outcome of applying a force.			outcome in given situations where twists and turns are applied. (6.1.1,6.2.2,6.3.2)
7.1.1Investigate relationships that exist within ecosystems.	7.2.1Construct a graphic representation of the feeding habits of animals.	7.3.1Exhibit sensitivity to the delicate balance that exists within ecosystems.	7. Demonstrate an understanding of the relationships within ecosystems.	• Identify relationships existing in ecosystems. (7.1.1, 7.2.1, 7.3.1) • Create simple flow diagram (food chains) to illustrate energy relationships amongst organisms in common ecosystems. (7.1.1, 7.2.1, 7.3.1) • Outline the negative effects of mans' actions within ecosystems. (7.1.1, 7.2.1, 7.3.1)

SCIENCE: STANDARD 1				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
8.1.1 Assess the importance of the daily cycle. 9.1.1 Compare the wet and dry seasons based on activities that take place in each.	8.2.1 Map events/activities in terms of sequence and period of time.	8.3.1 Be aware of patterns of behaviours or habits.	8. Value the daily cycle. 9. Demonstrate an aware-ness of the differences between the wet and dry seasons.	• Illustrate and predict the daily cycle. (8.1.1, 8.2.1, 8.3.1) • Associate everyday tasks with day and night. (8.1.1, 8.2.1, 8.3.1) • Identify the characteristics of the two seasons. (9.1.1, 8.2.1, 8.3.1) • Explain why common activities are associated with a season. (9.1.1, 8.2.1, 8.3.1) • Associate natural events that occur in the seasons. E.g. wet: - hurricanes, flooding. (9.1.1, 8.2.1, 8.3.1)

SCIENCE: STANDARD 1				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
Conservation and Sustainability: 10.1.1 Evaluate how wind had been used as a source of energy. 10.1.2 Create models of traditional devices that use wind.	10.2.1 Assemble a display conveying information on wind energy. 10.2.2 Design and build models. 10.2.3 Explore possible modifications of wind powered devices to improve their usefulness.	10.3.1 Value traditional practices that incorporate the use of wind energy. 10.3.2 Demonstrate creativity in developing designs and models.	10a. Explain how wind has been used as a source of energy 10b. Create and modify models of traditional wind devices.	• Explain how windmills have been used in some industries in the past. (10.1.1, 10.2.1, 10.3.1) • Explain common uses of wind energy. (10.1.1, 10.2.1, 10.3.1) • Construct models of traditional devices that use wind (10.1.2, 10.2.2, 10.2.3,) • Evaluate models and propose modifications to enhance their operation. (10.2.3, 10.3.2)

Primary School Curriculum

Science

Standard 2

SCIENCE: STANDARD 2				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
Individuals and Groups: 1.1.1 Categorize vertebrates into classes.	1.2.1 Construct operational definitions of each class of vertebrate from observations recorded.	1.3.1 Value the commonalities shared by individual species.	1. Associate each class of vertebrates with at least two distinguishing characteristics.	• Associate common animals with the five groups of vertebrates based on the identification of distinguishing characteristics: o mammals o birds o reptiles o fish o amphibians (1.1.1, 1.2.1, 1.3.1, 2.3.1)
Form and Function: 2.1.1 Differentiate among the three states of matter.	2.2.1 Convey understanding of meaning of terms from observations.	2.3.1 Effectively communicate information in appropriate formats.	2. Understand that matter exists in three basic states.	• Categorize matter into the three basic states: o solids, o liquids, and o gases (2.1.1, 2.2.1, 2.3.1, 3.3.1) • Explain that matter can change states. o water

SCIENCE: STANDARD 2				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
				○ carbon dioxide (dry ice) (2.1.1, 2.2.1)
3.1.1 Investigate the separation of solids from mixtures using filtration and magnetism.	3.2.1 Construct an operational definition of magnetic property from what has been observed. 3.2.2 Report on the method used to separate mixtures into their solid components.	3.3.1 Share responsibility for completing assigned task.	3. Understand that mixtures can be separated into their components.	• Separate mixtures using the processes of ○ Filtration or ○ Magnetism. (3.1, 3.2.1, 2.3.1, 3.3.1,4.3.1)
4.1.1 Investigate substances that dissolve in water.	4.2.1 Measure the volume of water using a beaker and a measuring cylinder. 4.2.2 Make inferences	4.3.1 Demonstrate concern for safety of self and others when handling materials and equipment.	4. Recognize that some substances can be dissolved in water.	• Name common substances that can be dissolved in water. (4.1.1, 4.2.2, 4.3.1, 3.3.1,2.3.1) • Explain the terms: solute,

SCIENCE: STANDARD 2				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
	about the nature of the substances from observations.			solvent and solution. (4.1.1, 4.2.1, 4.3.1, 3.3.1,2.3.1) • Conduct experiments to demonstrate substances that can be dissolved in water. (4.1.1, 4.2.1, 4.3.1,3.3.1,2.3.1)
5.1.1 Investigate the movement of water through various soil types.	5.2.1 Present information in tabulated format showing the movement of water through different soil types. 5.2.2 Take precautions to improve accuracy.		5. Distinguish between soil types based on rate of flow of water.	• Set up and conduct experiments to illustrate the movement of water through the different soil types. (5.1.1, 5.2.1, 4.3.1, 3.3.1, 2.3.1) • Read water volumes at eye level after placing measuring cylinder/beaker on a flat surface. (5.1.1,5.2.2,4.3.1) • Draw and label scientific representations which: o are clear and clean,

SCIENCE: STANDARD 2				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
6.1.1 Assess the importance of minerals.	6.2.1 Convey information through oral or visual presentation about minerals. 6.2.2 Create a display of ways minerals are used.	5.3.1 Show concern for conservation of minerals and the environment from which they are extracted.	6. Assess the importance of minerals.	○ contain smooth lines, ○ are large (> half page), ○ are properly labelled and ○ are appropriately titled. (5.1.1, 5.2.2, 4.3.1, 3.3.1, 2.3.1) • Explain why water moves through the various soil types at differing rates. (5.1.1, 5.2.1, 4.3.1, 3.3.1, 2.3.1) • Explain the uses of some common minerals. ○ asphalt ○ limestone ○ coal ○ gold ○ silver ○ iron (6.1.1, 6.2.1, 5.3.1, 2.3.1)

SCIENCE: STANDARD 2				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
				• Describe ways to conserve minerals and the environment they are extracted from. (6.1.1, 6.2.2, 5.3.1, 2.3.1)
Systems and Interaction: 7.1.1 Demonstrate that plants need light and water for growth.	7.2.1 Deduce the variables that relate to an investigation of the growth of plants. 7.2.2 Carry out procedures systematically, present findings and draw conclusions.	6.3.1 Communicate findings in a concise and logical manner.	7. Discuss some of the conditions necessary for plant growth.	• Conduct experiments to demonstrate that plants need light and water to grow. (7.1.1, 7.2.1, 6.3.1, 4.3.1, 3.3.1,2.3.1) • Represent findings in appropriate graphic organizers which: o are easy to extract information from o are labelled appropriately (7.1.1, 7.2.1, 6.3.1, 4.3.1, 3.3.1,2.3.1)

SCIENCE: STANDARD 2				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
8.1.1 Justify the importance of the water cycle in making water available for life processes.	8.2.1 Draw an annotated diagram of the water cycle.	6.3.1 Display conservation habits when using water.	8. Value the importance of the water cycle.	• Predict what is likely to occur if plants are deprived of water (7.1.1, 7.2.2, 6.3.1, 4.3.1, 3.3.1,2.3.1) • Explain the processes in the water cycle: o evaporation o condensation o precipitation (8.1.1,8.2.1,6.3.1) • Label a diagram of the water cycle using o appropriate title and o labels placed on right of diagram/page. (8.1.1,8.2.1, 6.3.1) • Assess water conservation habits that incorporate reduce, reuse and recycle. (8.1.1,8.2.1,6.3.1)

SCIENCE: STANDARD 2				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
Conservation and Sustainability: 9.1.1Examine the use of fossil fuels such as petroleum and natural gas.	9.2.1Extract appropriate information from various media.	7.3 1 Develop an appreciation for the need to conserve energy resources.	9. Understand the need to conserve energy.	• List traditional sources of energy as: o petroleum (gasoline, diesel, kerosene) and o natural gas. (9.1,9.2,7.3) • Name alternative sources of energy as: o wind, o solar, and o hydroelectric. (9.1.1,9.2.1,7.3.1) • Explain why energy needs to be conserved with reference to: o cost, o availability, (9.1.1,9.2.1,7.3.1)

SCIENCE: STANDARD 2				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
10.1.1 Justify the need to conserve potable water.	10.2.1 Gather and represent information on daily usage of water in various contexts.	8.3.1 Recognise when it is important to maintain confidentiality concerning personal information.	10. Understand the importance of conserving water.	• Represent research data on water usage in appropriate graphic organizers. (10.1.1,10.2.1,8.3.1) • Defend why it is necessary to conserve potable water. (10.1.1,10.2.1,8.3.1) • Discuss ways to conserve potable water including: o fixing leaks; o turning off taps when not in use; o reducing shower time; and o using eco-friendly toilets. (10.1.1,10.2.1,8.3.1)

Primary School Curriculum

Science

Standard 3

SCIENCE:STANDARD 3				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
Individuals and Groups: 1.1.1 Discriminate among the stages in the life cycle of animals showing complete metamorphosis.	1.2.1 Draw annotated diagrams of the stages in the life cycle of animals.	1.3.1 Be objective when representing scientific information as a drawing.	1. Understand that some animals go through different stages in growth.	• Explain the stages of the metamorphosis process. o egg o larvae o pupa and o adult (1.1.1,1.3.1) • Classify common animals as those that undergo complete metamorphosis. o mosquito o house fly o butterfly and o frog. (1.1.1,1.2.1,1.3.1) • Draw and label diagrams to illustrate life cycles of named organisms. Diagrams should: o be clear and clean; o contain smooth lines;

SCIENCE:STANDARD 3				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
				○ be large (> half page); ○ be properly labelled and ○ contain appropriate titles. (1.1.1, 1.2.1, 1.3.1)
2.1.1 Examine distinguishing features in animals and plants that allow for variation and adaptation.	2.2.1. Illustrate distinguishing features through scientific drawings.		2. Recognize that variation within a species exists as a result of adaptation.	• Differentiate among some of the distinguishing features of animals and the uses of such features as: ○ limbs; ○ head and ears; ○ eyes (predator, prey); ○ camouflage; ○ fins and gills; and ○ external covering. (2.1.1, 2.2.2) • Differentiate among some of the distinguishing features of plants e.g. ○ leaves – size, shape (including cacti)

SCIENCE:STANDARD 3				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
				○ external covering (bark, leaf, flower colour). (2.1.1,2.2.1)
Form and Function: 3.1.1 Investigate the separation of soluble solids from solutions.	3.2.1 Measure temperature using a thermometer. 3.2.2 Manipulate variables to identify the factors that affect the separation of soluble solids from solutions. 3.2.3 Make inferences from data	2.3.1 Be efficient when using materials to avoid wastage.	3. Understand that the solute and solvent can be separated from solutions.	• Design and conduct experiments to separate solutions of ○ Salt/sugar and water. (3.1.1,3.2.2,2.3.1) • Explain that temperature and surface area facilitate the separation of mixtures. • Manipulate, use and label the parts of a thermometer. (3.2.1)

SCIENCE:STANDARD 3				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
4.1.1 Examine the external parts of the flower.	recorded. 4.2.1 Draw external flower parts and label each clearly.	3.3.1 Be careful when handling delicate materials and fragile equipment.	4. Differentiate amongst the external parts of the flower.	• Draw and label the external parts of the flower showing: o Petals, Sepals o Anther, Filaments (parts of the stamen) o Style, Stigma (parts of the pistil). (4.1.1,4.2.1,3.3.1)
Systems and Interaction: 5.1.1 Justify the need to protect aquatic habitats including wetlands.	5.2.1 Construct an argument in support of initiatives to protect wetlands.	4.3.1 Be aware of their responsibility to preserve wetlands.	5. Understand the delicate nature of aquatic habitats.	• Differentiate amongst aquatic habitats as: o rivers, o ponds, o swamps, and o marine environments. (5.1.1,4.3.1) • Explain how natural factors

SCIENCE:STANDARD 3				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
				affect aquatic environments. ○ climate and weather ○ temperature change ○ drought and flooding ○ overpopulation ○ predator/prey relationship ○ food supply. (5.1.1,5.2.1,4.3.1) • How human activities affect aquatic environments. ○ pollution ○ over exploitation, indiscriminate use of resources ○ introduction of non-native species. (5.1.1,5.2.1,4.3.1) • Construct food webs to illustrate the feeding relationships among common animals in

SCIENCE:STANDARD 3				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
6.1.1 Justify that interdependency exists among plants and animals.	6.2.1 Construct information about food webs using graphic representation. 6.2.2 Predict the impact of the introduction of non-native or loss of native species.		6. Understand that interdependency exists among plants and animals.	○ terrestrial habitats and ○ aquatic habitats. (6.1.1, 6.2.1) • Predict the impact of: ○ introduction of non-native species ○ loss of native species. (6.1.1, 6.2.2)
Conservation and Sustainability: 7.1.1 Examine the uses of solar energy as an alternative to fossil fuels.	7.2.1 Construct an operational definition of alternative energy based on	5.3.1 Share their views CONFIDENTLY via multiple methods.	7. Appreciate solar energy as an alternative to fossil fuels.	• Differentiate between alternative forms of energy and fossil fuels. (7.1.1,7.2.1,5.3.1)

SCIENCE:STANDARD 3				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
	observations.			• Explain some ways that solar energy can be used. (7.1.1,7.2.1,5.3.1) • Explain the benefits of solar energy as being: o clean, o renewable and o readily available due to our tropical location. (7.1.1,7.2.1,5.3.1)
8.1.1 Evaluate the effects of pollution: • on land, • in air, and • in water.	8.2.1 Present arguments against pollution.		8. Evaluate the effects of pollution: • on land, • in air, and • in water.	• Differentiate among land, air and water pollution. (8.1.1) • Discuss the effects of pollution on land, air and water. (8.1.1, 8.2.1) • Discuss simple strategies for reducing pollution. (8.1.1)

SCIENCE:STANDARD 3				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
				• Justify why pollution must be reduced. (8.1.1, 8.2.1)

Primary School Curriculum

Science

Standard 4

SCIENCE: STANDARD 4				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
Individuals and Groups: 1.1.1Examine the biological changes that take place in animals and plants during the growth process.	1.2.1 Measure lengths using instruments of varying ranges. 1.2.2 Compose a suitable aim for investigating changes in measurable physical characteristics that vary with growth. 1.2.3 Report procedures in logical sequence and appropriate language.	1.3.1 Show respect for the variations that exist among all forms of life. 1.3.2 Demonstrate self-assurance about their uniqueness.	1. Understand the changes that take place in plants and animals as they mature.	• Represent the dimensions of plants and animals using metric units. (1.1.1, 1.2.1, 1.3.1) • Explain that as plants and some animals mature, their parts grow in size. o height o mass o span o girth (1.1.1, 1.2.1, 1.3.1) • Differentiate between adults and their young. (1.1.1, 1.2.1, 1.3.1) • Formulate and test hypotheses. (1.1.1, 1.2.1, 1.2.2, 1.3.2) • Design and conduct experiments to investigate the physical changes which take place as plants grow. (1.1.1,1.2.1, 1.2.2, 1.3.2)

SCIENCE: STANDARD 4				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
	1.2.4 Interpret recorded data			• Report findings using logical sequencing and appropriate graphic organizers using: o past tense, o concise language, and o third person. (1.1.1, 1.2.3, 1.3.2) • Interpret data on growing plants and animals. (1.1.1, 1.2.4, 1.3.2)
2.1.1Justify the need for eating healthy foods (balanced and natural).	2.2.1Extract information about ingredients and methods of food preparation from varied sources.	2.3.1 Exhibit self-control in choosing healthy options. 2.3.2 Be sensitive when discussing food related illnesses or challenges.	2a. Justify their choice of healthy foods. 2b. Exhibit sensitivity to individuals who suffer from food related illnesses or challenges.	• Explain that healthy foods are impacted by o ingredients used and o method of preparation. (2.1.1, 2.2.1) • Select healthy foods from pictures and lists. (2.1.1, 2.2.1, 2.3.1) • Defend their food choices. (2.1.1,2.2.1, 2.3.1)

SCIENCE: STANDARD 4				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
				• Demonstrate appropriate responses and behaviours to individuals who do not choose healthy food options. (2.3.2)
Form and Function: 3.1.1 Investigate the properties of materials such as: • ability to transmit sound and light, • absorbency • strength, and • conduction of heat and electricity.	3.2.1 Measure temperature using a thermometer. 3.2.2 Formulate a hypothesis and select a workable method. 3.2.3 Interpret data to confirm or refute hypothesis.	3.3.1 Propose innovative recommendations.	3. Defend the choice of materials based on their properties.	• Design experiments to compare the properties of materials based on: ○ ability to transmit: ▪ sound and/or ▪ light; ○ absorbency; ○ strength; ○ conduction of ▪ heat, and/or ▪ electricity. (3.1.1, 3.2.1) • Use a thermometer correctly by immersing the bulb into liquid to be tested. (3.1.1, 3.2.1)

SCIENCE: STANDARD 4				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
	3.2.4 Draw appropriate conclusion.			• Formulate and test hypotheses on the most suitable material to be used in given situations. (3.1.1,3.2.2,3.2.3) • Interpret data and draw appropriate conclusions from observations made. (3.1.1,3.2.3, 3.2.4) • Propose innovative recommendations for improvement to apparatus/equipment. (3.1.1, 3.3.1)
4.1.1 Investigate the factors that affect the stability of simple structures	4.2.1 Explore possible modifications of simple structure to improve its stability. 4.2.2 Select the best solution.		4. Modify simple structures to improve their stability	• Create a stable simple structure with consideration of: o choice of basic material; o shape; o width of base; o overall height; o placement of load; and o centre of gravity. (4.1.1, 4.2.1)

SCIENCE: STANDARD 4				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
	4.2.3 Evaluate the selected solution.			• Analyse simple structures and improve their stability by attempting to lower the centre of gravity.
Systems and Interaction: 5.1.1Differentiate between weather and climate.	5.2.1 Observe weather pattern over a period of time. 5.2.2 Chart the weather pattern in various locations. 5.2.3 Interpret inferences from data gathered.	5.3.1Be proactive in preparing for extreme weather conditions (Natural Disasters).	5. Distinguish between weather and climate.	• Observe and record weather patterns using symbols. [5.1.1,5.2.1] • Explain the difference between weather and climate. [5.1.1,5.2.1] • Outline steps to prepare for extreme weather conditions. (5.1.1, 5.3.1)

SCIENCE: STANDARD 4				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
Conservation and Sustainability: 6.1.1 Differentiate between renewable and non-renewable sources of energy.	6.2.1 Construct operational definition of terms renewable and non-renewable from activities.	6.3.1 Demonstrate initiative in conserving electrical energy.	6. Assess uses of renewable and non-renewable energy.	• Understand that non-renewable energy stores are finite. (6.1.1,6.2.1) • Explain the difference between renewable and non-renewable energy. (6.1.1,6.2.1)
7.1.1 Investigate the Greenhouse Effect and its link to Global Warming.	7.2.1 Conduct demonstrations of the Greenhouse Effect.	7.3.1 Be accountable for their negative attitudes and behaviours towards the environment.	7. Differentiate between the Greenhouse Effect and the Enhanced Greenhouse Effect.	• Explain how the earth becomes warm as a result of the Greenhouse Effect. (7.1.1,7.2.1) • Draw and label diagrams to illustrate the Greenhouse Effect. (7.1.1, 7.2.1) • Create models to illustrate the Greenhouse Effect. (7.1.1, 7.2.1)

SCIENCE: STANDARD 4				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
				• Explain how man's actions have created the Enhanced Greenhouse Effect. (7.1.1, 7.2.1, 7.3.1)

Primary School Curriculum

Science

Standard 5

SCIENCE: STANDARD 5				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
Form and Function: 1.1.1Justify the use of various technologies in everyday life.	1.2.1 Measure mass using a balance. 1.2.2 Measure weight using a spring balance. 1.2.3 Construct operational definition of forces that can be an effort or load. 1.2.4 Investigate the use of simple machines (levers, gears and inclined planes) to reduce the effort needed.	1.3.1 Be responsive to new technologies. 1.3.2 Be innovative as they adapt to technological changes.	1. Justify the use of various technologies in everyday life.	• Differentiate between mass and weight (1.1.1, 1.2.1, 1.2.2) • Use appropriate devices to measure mass and weight avoiding common reading errors. o Zero error o Parallax o Using a level surface. (1.1.1, 1.2.1, 1.2.2) • Differentiate among load, effort and fulcrum in the different types of levers. • Draw and label force diagrams: o arrow begins at application of force; o arrow head shows force direction; o length of arrow is proportional to size of force. (1.1.1,1.2.1, 1.2.2, 1.2.4)

SCIENCE: STANDARD 5				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
				• Explain using force diagrams, that some devices/ equipment reduce the effort needed to overcome the load, namely: ▪ levers, ▪ gears, and ▪ inclined planes. (1.1.1, 1.2.4) • Design or modify simple machines that can make our lives easier, using the steps in the IDEATE model. o I - Identify the problem. o D - Define the problem. o E - Explore possible solutions. o A - Access the various solutions. o T - Try-out and Test the solution. o E - Evaluate the solution. (1.1.1, 1.2.1, 1.3.1)

SCIENCE: STANDARD 5				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
Conservation and Sustainability: 2.1.1Justify the use of energy efficient devices and practices to conserve electrical energy.	2.2.1 Identify an energy saving strategy to address a particular problem. 2.2.2 Explore possible options and select the one that is most viable.	2.3.1Make responsible choices that will sustain the environment.	2. Justify the use of energy efficient devices and practices to conserve electrical energy.	• Discuss the use of energy efficient devices used in the community, including: o energy star products; o energy efficient lighting; ▪ fluorescent lighting and ▪ Light Emitting Diodes. (LEDs) (2.1.1, 2.2.1, 2.3.1) • Construct contextually relevant operational definitions of the term "energy efficient". • Propose alternative methods of o washing and drying clothes; o using artificial lighting; o using electrical water pumps; o using air-conditioning. (2.1.1, 2.2.1, 2.3.1) • Design model homes that are energy

SCIENCE: STANDARD 5				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
				efficient. (2.1.1, 2.2.1, 2.3.1) • Explain the effects of global warming. • Predict what will happen if earth's temperature continues to rise. (2.1.1, 2.2.2, 2.3.1)
3.1.1Justify the need to reduce the effects of Global Warming	3.2.1Evaluate the effectiveness of the proposed solution.	3.3.1Be sensitive about issues that affect our environment	3. Understand the need to reduce Global Warming.	• Devise plans to reduce the production of major Greenhouse Gases. (3.1.1,3.2.1,3.3.1)
4.1.1Appraise strategies used for conserving and sustaining the environment.	4.2.1 Interpret data to detect impact of Global Warming. 4.2.2 Research initiatives of various environmental protection agencies.	4.3.1Show concern about the destruction of the environment.	4. Appreciate the need for conservation as a means of sustaining the environment.	• Discuss strategies used in environmental conservation including: o responsible use of resources; ▪ reduce ▪ reuse ▪ recycle o using natural ways of doing things; o using alternative transportation; ▪ cycling ▪ walking

SCIENCE: STANDARD 5				
CONTENT	**SKILLS**	**DISPOSITIONS**	**OUTCOMES**	**ELABORATIONS**
Students will:				
				▪ carpooling • Explain initiatives used by environmental protection agencies. • Interpret data which illustrates the impact of Global Warming. • Devise personal plans to demonstrate environmental conservation. (4.1.1, 4.2.1, 4.3.1)