



## **Science in the National Curriculum**

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**Key Stage 2 (Grade: 4, 5 and 6)**



**NATIONAL  
INSTITUTE OF  
EDUCATION**

Science in the National Curriculum - Key Stage 2

National Institute of Education  
Ghaazee Building  
Ameer Ahmed Magu  
Male', 20125  
Maldives  
<http://www.nie.edu.mv>

Developed by

Aminath Ismail	National Institute of Education
Aminath Mohamed	National Institute of Education
Gulfishan Shafeeu	National Institute of Education

Layout by

Mohamed Shakeel	National Institute of Education
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Cover Designed by

Abdulla Zaki	National Institute of Education
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## Foreword

May Almighty Allah bestow His blessings and mercy upon Muhammad, His messenger (PBUH), who personified his life as a curriculum throughout his life through the exemplary conduct and behaviours. May Almighty Allah also grant blessings and mercy upon his companions and household.

The year 1979 was an insightful year as the government of Maldives strategized to mainstream the primary school education. This led to the development of the first syllabi for grades 1 to 5 in the Maldives in 1980, following the revision of the syllabi in 1982. The crafting and implementation of the 1st National Curriculum for primary grades 1-5 was done in 1984. An effort was then made to revise the curriculum in 1997 and was completed by year 2000.

The 2nd revision of the 1st curriculum commenced in 2006, during which it was realised that enormous changes were needed to the curriculum. A decision for curriculum reform was made to address the needs and demands of the country, and bring rise to the development of the 2nd national curriculum framework.

The 2nd national curriculum is developed based on the changes that have taken place in the society, from practices of the past to the current needs, with a vision for a better tomorrow. It aims to build a knowledgeable future generation, highly skilled to cater the needs of the 21st century, with a focus on nurturing attitudes and values. The curriculum also intends to inculcate the main competencies outlined, such as practicing Islam. Other competencies include self-management, critical thinking, creative thinking, human relations, healthy life styles, sustainable practices and ICT literacy. The curriculum also intends to produce students who possess the 21st century skills, and are healthy both physically and also spiritually, to be responsible towards the progression of the Maldivian society.

Science plays a key role in our life. In an ever changing global world, the importance of science cannot be undermined. Science opens the minds of children and provides a rich context to develop critical thinking and make informed decisions.

Key Stage 1 Science is focused on enabling the student to acquire knowledge, skills and attitudes so as to develop an informed and critical understanding of, environment, science and technological issues.

Science teaching intends to cultivate humane and responsible attitudes and an appreciation of the world in accordance with Islamic principles and values.

The curriculum envisions the use of variety of teaching learning approaches where students are engaged in meaningful learning experiences.

I hereby take this opportunity to extend my sincere gratitude and heartfelt appreciation to each and every individual for the tireless effort, commitment and dedication in developing the National Curriculum Framework and this syllabus. I pray that the Almighty Allah bless them for their commitment and contribution.

Last but not least, it is my sincere hope that this syllabus be beneficial for the students and teachers in the Republic of Maldives.

Adam Shareef Umar  
Minister of State for Education  
Ministry of Education

# Introduction

## Rationale

The aim of science education in Maldives is to develop scientific literacy. Scientific and technological literacy is an evolving combination of the science-related attitudes, skills, and knowledge students need to develop inquiry, problem-solving, and decision-making abilities to become lifelong learners; and to maintain a sense of wonder about the world around them.

To develop scientific and technological literacy, students require diverse learning experiences which provide opportunity to explore, analyze, evaluate, synthesize, appreciate, and understand the interrelationships among science, technology, society, and the environment that will affect their personal lives, their careers, and their futures.

## Environment, Science and Technology

The purpose of this key learning area is for students to explore the natural world and its phenomena through systematic and organized inquiry. It provides the opportunity for students to question, investigate, predict and explain the events of the Earth and the universe.

The aims of Environment, Science and Technology are to:

- enable the student to acquire knowledge, skills and attitudes so as to develop an informed and critical understanding of environment, science and technological issues
- reinforce and stimulate curiosity and imagination about local and wider environments
- enable the student to play a responsible role as an individual, as a family member and as a member of local, regional, national and global communities
- foster an understanding of, and concern for, the total interdependence of all humans, all living things and the Earth on which they live
- foster a sense of responsibility for the long-term care of the environment and a commitment to promote the sustainable use of the Earth's resources through personal life-style and participation in collective environmental decision-making
- cultivate humane and responsible attitudes and an appreciation of the world in accordance with beliefs and values.

# Science in the National Curriculum

Along with the other subjects in the National Curriculum, Science curriculum contributes to the development of the student in all aspects. It aims to achieve the vision along with the eight principles identified, incorporating the key competencies and also relating to effective pedagogical approaches emphasized in the National Curriculum.

## The Vision

The Science curriculum is structured in such a way that it paves the road to achieve the vision of the National Curriculum.

The National Curriculum envisions the development of:

- successful individuals who are motivated to learn and explore; who are inquisitive and eager to seek, use and create knowledge.
- confident and competent individuals who have a firm belief in Islam, a strong sense of self and cultural identity, and believe in their own capabilities; and
- responsible and productive contributors to their own family, their local community and the global society.

Science learning experiences assist students to develop and understand scientific concepts along with process skills and the pedagogical approaches emphasize students to participate in practical hands-on experiences, exploring the world around them through posing questions, predicting and finding answers to these gives the student the grounds to develop themselves as successful learners who are eager to learn and explore.

Science provides ample opportunities for students to develop their scientific concepts along with necessary skills and values that would build their self confidence and esteem. Students will be given opportunities to relate learning beyond their classroom, such as visiting and studying various field sites, opportunities to get engaged with local community members in various disciplines, opportunities to participate in various school/community organized tasks. Engagement and involvement in these ensure that students acquire the knowledge, skills and values to be competent citizens.

A blend of the above mentioned experiences ensure that students are fully equipped as active participants in the scientific and technological society to keep pace with the rapid changes in life style and its impact on self, environment and the globe.

## The Principles

The National Curriculum identifies eight fundamental principles that need to be taken into account when designing and implementing learning and other school activities. These principles are taken into account in designing the Science curriculum.

The teaching and learning of Science highly emphasizes linking Science and Islam. Essentially, science provides the understanding of natural and other phenomena, events and objects through the study of inquiry, based on experiments and investigations. Facts, figures and theories contribute to the understanding of various scientific concepts. Linking these to Islam strengthens the faith of students.

Similarly, in-depth understanding of scientific concepts and processes ensures that students develop holistically, and relating these concepts and processes to their real life context ensuring relevance to students and preparing them for life.

## The Key Competencies

The eight key competencies outlined in the National Curriculum encompasses knowledge, skills, values and attitudes and dispositions to be explicitly taught in various key learning areas and through various school activities.

The Science curriculum provides a rich context in which these key competencies can be developed. The strands in the syllabus involve a lot of opportunities for students to explore their surroundings, ask questions, use high order thinking to analyse and solve issues. In addition, the curriculum allows students to design and invent new things based on their prior knowledge and using their creative thinking. It asks students to understand abstract concepts which require high level of cognition.

The key competency, using sustainable practices is very much part and parcel of the environment, science and technology curriculum. This curriculum encompasses many of the aspects highlighted in the key competency. Students are expected to explore how human activities impact the environment and identify ways to take care of the environment. In addition, many opportunities are provided for students to understand issues from both developmental as well as environmental perspectives so that students are encouraged to develop stewardship towards the environment.

At the same time, the science curriculum provides many opportunities for students to relate with the technological advancement in various fields and learn about how science has contributed to these advancements. In addition, student need to use technology in their learning and identify best sources to gather information; question the authenticity of the information gathered and also analyses, synthesizes and evaluate the information.

Moreover, students are required to carry out several investigations throughout the years and these investigations give ample opportunities for students to develop the key competency, understanding and managing self as they have to be carried out in a systematic and organised manner. As well as investigations and many other activities would be required to do in a group. Hence, there would be many opportunities for students to develop the key competency, relating to people.

# Structure of the Syllabus Statement

## The Strands

A strand is a broad area of concepts specifically linked with each other. In this curriculum the strand refers to general areas that students need to know. The Science syllabus is comprised of 6 strands. They are:

### Strand 1: Life and Living

Life and living looks into the biology of humans and that of other living things. Students develop an understanding of the diversity of life and the interdependence of life. It also explores the impact of environment on life and the effects of human intervention on the environment.

### Strand 2: Earth and Beyond

Earth and beyond is the study of Earth's processes and features. It looks into understanding patterns in nature and natural cycles. It also includes a detailed study of various parts of the solar system and the universe. In addition to this, it looks into the relationships of Earth's systems and their effects on living things. Students gain an understanding of the uniqueness of the planet Earth, and the importance of protecting and preserving resources of Earth and its environment.

### Strand 3: Matter and Materials

Matter and materials is the study of matter. It looks into the composition and properties of matter. It explores the changes matter undergoes and the energy involved. This strand also includes the study of a wide range of materials and substances which people use. The study also involves the use and management of materials and the influence of these uses on the environment. They explore how uses are determined by the properties and structures of materials.

### Strand 4: Energy and Change

Energy and change is the study of a range of concepts associated with energy and change. It explores various forms of energy and considers how these are applied and managed to meet various needs. This strand also includes the concepts of force, work and power. Students develop understanding of the social implications of energy use including the effects of use of natural resources, and the Law of conservation of energy. It also explores a range of alternative energy sources and the implications of their use.

### Strand 5: Science and Technology

This strand looks into ways of building inquiry and investigation skills through their study of science. This strand would be integrated in all the content strands.

It stresses on the importance of integrating technological aspects in all the strands such that students develop understanding of the different technological advancement in various fields. They also need to appreciate how science has contributed to these advancements. Students need to be given opportunities to acquire skills in designing and making products. Emphasis is given on using technology wisely throughout the science curriculum.

### Strand 6: Working Scientifically

This strand looks into the ways of creating students' natural curiosity and sense of wonder about their world, as they participate in experiences that enable them to explore, predict, clarify their ideas, ask questions, test explanations and conduct their own research. They come to appreciate the complexities of the world as they compare their current ideas and beliefs with those of scientists, and construct new understanding based on scientific thinking. They learn that scientists work in many different ways, including experimental and ecological studies.

This strand gives ample opportunities for students to participate in discussions so that they open their minds to new ideas, inculcate intellectual honesty and skills in critically evaluating data and preparing persuasive arguments. As students conduct scientific inquiries, they learn to question, problem solve, draw logical, evidence based conclusions, articulate ideas and work in ways that are ethical, fair and respectful. They work individually and in teams, engaging in critical and creative thinking to solve problems and clarify ideas.

## Outcomes

***Outcomes are statements of knowledge, understanding, skills and values expected to be achieved by most students at the end of a given stage.***

All outcomes are of equal importance. The presentation of the outcomes does not imply a sequence of teaching and learning activities.

## Indicators

***An indicator is an example of the behavior that students may display as they work towards the achievement of syllabus outcomes. Indicators reflect and describe aspects of knowledge, understanding, skills and values.***

An indicator may describe part or all aspects of an outcome.

Outcomes and indicators together assist teachers in identifying student's current achievement and in planning future learning experiences.

# Planning, Teaching and Assessing Science

## The Planning Stage

Careful and systematic planning is essential for the success of Science teaching. To begin with, in order to ensure that children receive a rich learning experience, it is important that Science teachers become familiar with the outcomes and indicators at each level and have an understanding of how these are translated and implemented in the classroom. The following are some key features to consider in planning science education:

### Content selection

It is important to note that children should experience a broad and balanced programme. Teachers should draw content from the four content areas as shown below:

*Life and Living*

*Earth and Beyond*

*Matter and Materials*

*Energy and Change*

In situations, where the selected topic or theme can incorporate other content areas, it is advisable to do so.

*For example, teachers may select our surrounding as a unit topic, where the outcomes from the content areas of Life and Living and Earth and Beyond can be taken together*

In selecting a theme or topic teachers should consider the student needs, their local environment and familiarity. It should also ensure continuity and progression in student's learning. For the smooth transition from each level requires the teachers to be aware of the students past learning experiences.

It is encouraged to use a thematic approach in teaching science. However, it may require teaching some concepts separately.

In general, effective planning thus require the teachers to initially identify the big ideas/concepts behind each of the outcomes and identify ways to collate outcomes and indicators together to ensure that students receive meaningful learning.

### Development of Skills and Values

The science curriculum highly encourages teacher to teach every content strand taught along with the scientific processes. Thus, the strands 'Science and technology' and 'Scientific Enquiry' need to be integrated with the content strands in order to maximize the learning of skills and values.

### Literacy and numeracy

Numeracy is about students having the confidence to choose and use mathematics skills they learn at school in everyday life, as well as the classroom and literacy is essential to a student's ability to learn and succeed in school and beyond.

Literacy capabilities need to be explicitly built as students' progress throughout the years in all the key learning areas. Teaching and learning in environment, Science and Technology, students may need to write science reports after undertaking investigations or experiments. This requires specialised text and language structures, vocabulary and graphics that are specific to constructing knowledge

in Science and that may not be learnt in other areas of learning. If these literacy demands are not addressed in teaching and learning, it would hinder student learning in science.

In this regard, every classroom teacher needs to address numeracy skills explicitly in all the curriculum areas. In science class when students interpret a graph, in woodwork when they confidently measure a piece of wood, or in cooking when a student halves a recipe without being given specific instructions on what to do. So every classroom teacher has a role to play in helping students develop numeracy skills.

Consequently all the teachers need to ensure that literacy and numeracy teaching and learning becomes part of their daily routine.

### **Integration**

The use of well-planned integrated approaches, both within Science and between Science and other curricular areas plays an important role in the teaching/learning of Science at all levels.

Systematically planned integrated topics can provide contexts in which knowledge and skills may be developed in a range of areas. In this regard, the environments of the child, particularly those of a local nature, provide ideal contexts and an effective ground for the integration of learning.

Likewise, many elements from the Social studies, Mathematics and Language curricula may be explored in parallel with Science, and much of the work involved will contribute to the development of the child's oral language, literacy, numeracy and communication skills. Science is best when approached in a holistic manner with younger children as this respects the wholeness of their view of the world.

As children grow older they begin to recognise that there are different ways or modes of looking at the world and of organising human knowledge. So teaching strategies may vary to include a holistic approach, some cross-curricular integration and a subject-centred focus. Such an approach utilises teaching and learning time efficiently and acknowledges that the social, emotional, attitudinal and moral development of the child is interwoven with the acquisition of knowledge and skills. It needs to be understood that each subjective offers a distinctive perspective on the world and equips children with a particular range of skills; however these divisions must not reverse the effective implementation of an integrated curriculum.

### **Recommended Time**

The following table shows the allocated time for teaching science to kS -2 (grades 4, 5 and 6) students:

<b>Key stage 2</b>	<b>Contact Time/Weeks</b>	<b>Minimum Contact Time/Year</b>
Key Stage 2 (Grade 4, 5 and 6)	180 min (4 periods/week)	109hrs (146 periods of 45 min)

# Teaching and Learning Science

Science deals with the development of knowledge and understanding, skills and values related to the physical and biological aspects of the world. Through various classroom and outside classroom activities, students should be given the opportunity to foster these knowledge, skills and values. The activities should therefore be arranged in a manner that arouses interest and curiosity, creates a love for science, provides room for creativity and imagination, offers opportunity to reflect critically and make sense and meaning of their experiences.

In order to make sense of the world around them, students need to be active learners. Teachers act as facilitators in providing a learning experience that allows for students to construct their own learning.

Thus the role of the teacher in such teaching would include:

- creating a classroom environment to support and challenge the learning and teaching of science
- designing effective learning experiences that help students to achieve designated outcomes
- stimulating and managing classroom discourse in support of student learning
- learning about, and then using, student's motivations, interests, abilities and learning styles to improve learning and teaching
- analyzing student learning, the scientific tasks and activities involved, and the learning environment to make ongoing instructional decisions
- selecting teaching strategies from a wide repertoire.

Effective science learning and teaching take place in a variety of situations. Instructional settings and strategies should create an environment which reflects a constructive, active view of the learning process. Learning occurs not by passive absorption, but rather as students actively construct their own meaning and assimilate new information to develop new understandings in terms of knowledge, skills and values and attitudes.

In addition to the above, the science curriculum emphasizes the need to get involved in practical activities such as field outings, projects, experiments and investigations. One of the main purposes of these is to provide a rich context for students to develop working scientifically.

## Working scientifically

The Science syllabus identifies a range of practical skills that need to be acquired by the students.

Some of these fundamental skills include:

- a) Observing
- b) Classifying
- d) Recognising patterns
- e) Estimating and measuring
- f) Questioning
- g) Making and testing
- h) Predicting
- i) Investigating and experimenting
- J) Recording and communicating
- k) Designing and making

Likewise, the development of scientific literacy in students is a function of the kinds of tasks they engage in, the discussions in which they participate, and the settings in which these activities occur. Students' disposition towards science is also shaped by these factors.

Consequently, the aim of developing scientific literacy requires careful attention to all of these facets of curriculum and instruction. Learning experiences in science education should vary and include opportunities for group and individual work, discussion among students, as well as between teacher and students, and hands-on/minds-on activities that allow students to construct and evaluate explanations for the phenomena under investigation. Such investigations, and the evaluation of the evidence accumulated, provide opportunities for students to develop their understanding of the nature of science and the nature and status of scientific knowledge.

### **Environmental awareness and care**

The curriculum area of science is specifically founded on the student's relationship and interaction with the world around them. The environment, in its broadest sense, is the context for learning, and student's classroom experience will be deepened and extended by direct experience of their surroundings. The locality will provide the starting points for environmental education, and as student's knowledge and understanding grow and develop they will encompass other places and direct pupils to other global dimensions.

One of the key aims of Science education should be to inculcate the necessary skills and values to understand local and global environmental vulnerabilities and be informed decision makers in deciding responsible actions in maintaining and protecting the environment.

# Assessment Practices

Assessment is an integral part of teaching and learning. Assessment is the ongoing systematic process of gathering and using evidence of student learning to make informed decisions regarding student achievement. Thus, the main purpose of assessment is to improve student learning.

Three major types of assessment used in conjunction can be used to support student achievement

## **Assessment for learning (formative assessment)**

It is used for purposes of greater achievement. Classroom assessment should provide opportunities for students to become actively involved in their learning and achievement. In this type of assessment students know what they need to do in order to be successful and know what is considered as 'good work'.

Assessment for learning is criterion referenced where students compare their work with a criterion. The criteria are based on the outcomes and indicators mentioned in the Science Syllabi.

In addition to this, students, peers and teachers provide appropriate and ongoing feedback. Through feedback students identify their strengths and areas for improvement. This helps students to redirect their efforts and energy in making plans on ways to improve learning.

As for teachers, this provides the opportunity to change instruction in accordance with students needs.

## **Assessment as learning (formative assessment)**

Assessment as learning is student driven whereby students are actively involved in their own learning. This is done through continuous self assessments whereby students identify areas to improve. Students are required to reflect and critically evaluate their work.

## **Assessment of learning (summative assessment)**

This is usually addressed through summative assessment. This includes topic assessment at the end of a topic and term exams. (Note: for the foundation and key stage one there will be NO term exams or tests). However, students' summative assessment can be done to check the level of understanding. The information gathered through the summative process should be used formatively to enhance student progress.

In order to gather evidence of student learning the following are some of the methods that can be used:

- Informal assessment- student and teachers make judgments about their learning based on discussions.
- Formal assessment- students and teachers make judgments based on success criteria that are shared by students and the teacher before the learning task is carried out.
- Observation – use of checklists, rating scales and rubrics
- Self and peer assessment
- Quizzes
- Tests
- Sample student work
- Projects
- Reports
- Journals/Logs
- Performance reviews
- Portfolios

## Life and Living

### Scope and Sequence

Sub Strand	Grade 1	Grade 2	Grade 3
<b>Living things, their Structure and Function</b>	<ul style="list-style-type: none"> <li>Characteristics of living things and distinguish living from non-living</li> </ul>	<ul style="list-style-type: none"> <li>Characteristics of living things</li> <li>Needs of living things.</li> </ul>	<ul style="list-style-type: none"> <li>Characteristics of living things using basic scientific vocabulary.</li> </ul>
	<ul style="list-style-type: none"> <li>Variety of living things with different characteristics.</li> </ul>	<ul style="list-style-type: none"> <li>Classification of living things based on their characteristics.</li> </ul>	<ul style="list-style-type: none"> <li>Classifies living things and uses simple keys in classification</li> </ul>
	<ul style="list-style-type: none"> <li>Care for themselves, other, plants and other animals.</li> </ul>	<ul style="list-style-type: none"> <li>Care for themselves plants and other animals in their locality</li> </ul>	<ul style="list-style-type: none"> <li>Care for themselves plants and other animals in their locality</li> </ul>
	<ul style="list-style-type: none"> <li>Characteristics of five senses</li> <li>Importance of senses to humans</li> </ul>	<ul style="list-style-type: none"> <li>Characteristics of five senses in humans</li> <li>Compares the senses with other animals.</li> </ul>	<ul style="list-style-type: none"> <li>Animals with amplified senses</li> <li>Use of some devices which could enhance the senses in humans.</li> </ul>
	<ul style="list-style-type: none"> <li>living things have different external body parts /structures for different functions</li> </ul>	<ul style="list-style-type: none"> <li>Relationship between the different external features / structures to their survival.</li> </ul>	<ul style="list-style-type: none"> <li>External structures of different plants and animals in relation to their survival needs.</li> </ul>
		<ul style="list-style-type: none"> <li>Main internal body parts and ways to care for it.</li> </ul>	<ul style="list-style-type: none"> <li>Main organs of the body and their uses.</li> <li>Organs that make up the digestive systems.</li> </ul>
<b>Interdependence of life</b>	<ul style="list-style-type: none"> <li>Different habitats within an environment.</li> <li>How basic needs of living things are met.</li> </ul>	<ul style="list-style-type: none"> <li>Different habitats of living things.</li> <li>How basic needs of living things are met.</li> </ul>	<ul style="list-style-type: none"> <li>Study various environments to identify how living things meet their basic needs.</li> </ul>
	<ul style="list-style-type: none"> <li>Sources of food and food groups</li> </ul>	<ul style="list-style-type: none"> <li>Healthy eating practices in relation to food groups.</li> </ul>	<ul style="list-style-type: none"> <li>Healthy eating practices in relation to food pyramid.</li> </ul>
<b>Reproduction and change</b>	<ul style="list-style-type: none"> <li>Living things produce young ones</li> <li>Similarities and differences between them.</li> </ul>	<ul style="list-style-type: none"> <li>Differences among same kinds of plants and animals.</li> </ul>	<ul style="list-style-type: none"> <li>Differences among same kinds of plants and animals.</li> </ul>
	<ul style="list-style-type: none"> <li>Changes that living things undergo as they grow and become older.</li> </ul>	<ul style="list-style-type: none"> <li>Relates how living things change as they grow</li> </ul>	<ul style="list-style-type: none"> <li>How living things change as they grow and develop.</li> </ul>

## Life and Living

Grade 4	Grade 5	Grade 6	Sub Strand
		<ul style="list-style-type: none"> <li>Characteristics of living things with the scientific terms</li> </ul>	<b>Living things, their Structure and Function</b>
<ul style="list-style-type: none"> <li>Living things can be classified in to plants, animals, fungi and bacteria.(diversity)</li> </ul>	<ul style="list-style-type: none"> <li>Variety of living things</li> <li>Classification methods to identify their relationships (diversity)</li> </ul>	<ul style="list-style-type: none"> <li>Identify relationships among living things using classification systems (diversity)</li> </ul>	
<ul style="list-style-type: none"> <li>Living things have common characteristics.</li> </ul>	<ul style="list-style-type: none"> <li>Living things have common characteristics.</li> <li>Living things can be multi cellular or unicellular.</li> </ul>	<ul style="list-style-type: none"> <li>All living things are made up of basic units of life called cells.</li> <li>Cells can differ depending on the organism.</li> </ul>	
		<ul style="list-style-type: none"> <li>Multi cellular organisms have specialized structures and systems to perform basic functions of life.-</li> </ul>	
	<ul style="list-style-type: none"> <li>Multi cellular organisms consist of systems which perform different functions.</li> </ul>	<ul style="list-style-type: none"> <li>Living things have different body parts for different functions.</li> <li>Malfunctioning of body parts or organs can affect life processes.</li> </ul>	
<ul style="list-style-type: none"> <li>Living things have structural features and adaptations that help them to survive in their environment.</li> </ul>	<ul style="list-style-type: none"> <li>Living things have different external features /structures which help them to survive.</li> </ul>	<ul style="list-style-type: none"> <li>Living things have different external features /structures which help them to survive.</li> </ul>	
<ul style="list-style-type: none"> <li>Micro-organisms are everywhere; some can cause diseases/Illnesses while others are useful.</li> </ul>	<ul style="list-style-type: none"> <li>Some diseases are caused by microorganisms</li> </ul>	<ul style="list-style-type: none"> <li>Common microorganisms can cause diseases.</li> <li>Controlled by adopting behaviors that prevent the spread of disease.</li> </ul>	<b>Interdependence of life</b>
<ul style="list-style-type: none"> <li>Variety of habitats</li> <li>Basic needs of living things interaction with each other and the environment.</li> </ul>	<ul style="list-style-type: none"> <li>Variety of habitats</li> <li>Basic needs of living things interaction with each other and the environment.</li> </ul>	<ul style="list-style-type: none"> <li>Individuals and groups of organisms interact with each other and their environment to full fill their basic needs. E.g., feeding relationship (food chain) between living things.</li> </ul>	
	<ul style="list-style-type: none"> <li>Human activities and natural disasters can have various impacts on habitats.</li> </ul>	<ul style="list-style-type: none"> <li>Human activities can have various impacts on populations living in different habitats.</li> </ul>	
<ul style="list-style-type: none"> <li>Importance of healthy food choices and the use of foods in living things.</li> </ul>	<ul style="list-style-type: none"> <li>Importance of healthy food choices and interprets data in relation to food to make informed decisions.</li> </ul>	<ul style="list-style-type: none"> <li>Importance of healthy food choices and interprets data in relation to food to make informed decisions.</li> </ul>	
<ul style="list-style-type: none"> <li>Living things have life cycles and as the organism grows they change.</li> </ul>	<ul style="list-style-type: none"> <li>Living things undergo changes as they grow and develop.</li> </ul>	<ul style="list-style-type: none"> <li>Living things undergo changes as they grow and develop.</li> </ul>	<b>Reproduction and change</b>
<ul style="list-style-type: none"> <li>Variations between parents and their offspring, and variations within the same species.</li> </ul>	<ul style="list-style-type: none"> <li>Reproduction is necessary for the inheritance of characteristics and the continuation of a species.</li> </ul>	<ul style="list-style-type: none"> <li>Reproduction is necessary for the inheritance of characteristics.</li> </ul>	

## Earth and Beyond

# Scope and Sequence

Sub Strand	Grade 1	Grade 2	Grade 3
Earth, Solar System and Universe as dynamic systems	<ul style="list-style-type: none"> <li>Features of their immediate environment</li> </ul>	<ul style="list-style-type: none"> <li>Features of the Earth (from globes, maps and other means) in relation to natural and built environments</li> </ul>	<ul style="list-style-type: none"> <li>Major land and water forms on Earth and recognizes that large proportion of the Earth is ocean.</li> </ul>
	<ul style="list-style-type: none"> <li>Features of the Sun and its effects on humans and the environment.</li> </ul>	<ul style="list-style-type: none"> <li>Composition and features of the Sun and the Earth.</li> </ul>	<ul style="list-style-type: none"> <li>Features of the Sun, Earth and Moon and makes comparison between Sun, Moon and the Earth.</li> </ul>
	<ul style="list-style-type: none"> <li>Describes familiar events/ phenomena that occur in their environment.</li> </ul>	<ul style="list-style-type: none"> <li>Natural features and phenomena and its relation to humans.</li> </ul>	<ul style="list-style-type: none"> <li>Characteristics that make the Earth a suitable environment for life to exist.</li> </ul>
		<ul style="list-style-type: none"> <li>Phases of the Moon.</li> </ul>	<ul style="list-style-type: none"> <li>Phases of the Moon and importance of Moon in our lives.</li> </ul>
	<ul style="list-style-type: none"> <li>Natural phenomenon's in relation to day and night.</li> <li>Local weather and how it affects us.</li> </ul>	<ul style="list-style-type: none"> <li>Process of water cycle.</li> <li>Local weather patterns and weather experienced at various parts of the world.</li> </ul>	<ul style="list-style-type: none"> <li>Processes of water cycle and its importance to life.</li> <li>Elements of weather and features of seasons.</li> </ul>
		<ul style="list-style-type: none"> <li>Impact of weather on society and the environment.</li> </ul>	<ul style="list-style-type: none"> <li>Impact of weather on society and the environment.</li> </ul>
	<ul style="list-style-type: none"> <li>Changes that occur in Earth are cyclical.</li> </ul>	<ul style="list-style-type: none"> <li>Changes occur to the Earth and some of the changes are cyclical.</li> </ul>	<ul style="list-style-type: none"> <li>Life on Earth has changed over time.</li> </ul>
Events on Earth and beyond occur on different scales of time and space	<ul style="list-style-type: none"> <li>Changes in the locality occur over time.</li> </ul>	<ul style="list-style-type: none"> <li>reasoning out the changes in their locality</li> </ul>	<ul style="list-style-type: none"> <li>Reasoning out the changes in the locality and how it impacts life.</li> </ul>
	<ul style="list-style-type: none"> <li>Physical properties of soil and how soil is used by living things.</li> </ul>	<ul style="list-style-type: none"> <li>Physical properties of soil.</li> </ul>	<ul style="list-style-type: none"> <li>Composition of soil from various locations.</li> </ul>
		<ul style="list-style-type: none"> <li>Natural things found in soil and how they are used by living things.</li> </ul>	<ul style="list-style-type: none"> <li>Living things depend on soil for various purposes.</li> </ul>
Living things use the resources of the Earth, solar system and universe to meet their needs	<ul style="list-style-type: none"> <li>Use of Earth's environment and the importance of conserving the resources.</li> </ul>	<ul style="list-style-type: none"> <li>Earth's environment is used by living things.</li> <li>Impacts of the overuse of resources.</li> </ul>	<ul style="list-style-type: none"> <li>Earth's environment is used by living things for various purposes.</li> </ul>
			<ul style="list-style-type: none"> <li>Earth's resources can be classified into renewable and non-renewable</li> </ul>
	<ul style="list-style-type: none"> <li>Physical properties of water and relates to some of its uses.</li> </ul>	<ul style="list-style-type: none"> <li>Physical properties of air and water.</li> </ul>	<ul style="list-style-type: none"> <li>Physical properties of air and water within the environment</li> <li>Essential component of the Earth System</li> </ul>
	<ul style="list-style-type: none"> <li>Environment can become polluted and necessary measures.</li> </ul>	<ul style="list-style-type: none"> <li>Types of pollution and ways to minimize.</li> </ul>	<ul style="list-style-type: none"> <li>sense of responsibility for taking care of and improving the environment</li> </ul>

## Earth and Beyond

Grade 4	Grade 5	Grade 6	Sub Strand
<ul style="list-style-type: none"> <li>Describes the features of the Earth especially the Earth's structure focusing on the layers.</li> </ul>	<ul style="list-style-type: none"> <li>Describes the layers of the atmosphere and its features</li> </ul>	<ul style="list-style-type: none"> <li>Explores the features of the Earth especially how landforms are created.</li> </ul>	<b>Earth, Solar System and Universe as dynamic systems</b>
	<ul style="list-style-type: none"> <li>Earth materials such as rocks, minerals and soil.</li> </ul>	<ul style="list-style-type: none"> <li>Types of fossils and fossil formation of fossils</li> </ul>	
<ul style="list-style-type: none"> <li>Process of erosion and deposition can cause changes to the Earth's surface</li> </ul>	<ul style="list-style-type: none"> <li>Types of weathering and how weathering causes changes to the Earth's surface</li> </ul>	<ul style="list-style-type: none"> <li>Process of weathering and erosion</li> </ul>	
<ul style="list-style-type: none"> <li>Features of local weather system</li> </ul>	<ul style="list-style-type: none"> <li>Differences between weather and climate</li> <li>Weather patterns and seasons.</li> </ul>	<ul style="list-style-type: none"> <li>Factors that influence weather and climate systems</li> </ul>	
	<ul style="list-style-type: none"> <li>Greenhouse gases</li> <li>Greenhouse effect and its impact</li> </ul>	<ul style="list-style-type: none"> <li>Causes and their effects on climate change on living things and the environment.</li> </ul>	
<ul style="list-style-type: none"> <li>Disasters and how it impacts humans and the environment.</li> </ul>	<ul style="list-style-type: none"> <li>Natural disasters that are likely to occur in the Maldives</li> </ul>	<ul style="list-style-type: none"> <li>Human made disasters and identifies some preventive measures</li> </ul>	
<ul style="list-style-type: none"> <li>Rotation and revolution of the Earth.</li> </ul>	<ul style="list-style-type: none"> <li>Occurrence of tides and seasons</li> </ul>	<ul style="list-style-type: none"> <li>Phases of the moon</li> <li>Formation of solar and lunar eclipse.</li> </ul>	
<ul style="list-style-type: none"> <li>Earth's surface change over time.</li> </ul>	<ul style="list-style-type: none"> <li>Scales of time in which different changes take place</li> <li>Human impact on the changes to landscapes</li> </ul>	<ul style="list-style-type: none"> <li>Short and long term impacts of human activities on the environment</li> </ul>	<b>Events on Earth and beyond occur on different scales of time and space</b>
<ul style="list-style-type: none"> <li>Soil is formed over years</li> <li>Composition/ characteristic of soil.</li> </ul>	<ul style="list-style-type: none"> <li>Properties of soil.</li> </ul>	<ul style="list-style-type: none"> <li>Soil profile and Soil layers are formed over Soil formation in Maldives</li> </ul>	
<ul style="list-style-type: none"> <li>Relationship between soil and other living things.</li> </ul>	<ul style="list-style-type: none"> <li>Ways to enrich and preserve the soil.</li> </ul>	<ul style="list-style-type: none"> <li>Compost and uses of composting as a means to sustainably enrich the soil.</li> </ul>	
<ul style="list-style-type: none"> <li>Use of Earth's resources by living things.</li> <li>Ways to reduce over usage of resources.</li> </ul>	<ul style="list-style-type: none"> <li>Earth's available resources are limited and that living things depend on them.</li> <li>Renewable and non-renewable resources.</li> </ul>	<ul style="list-style-type: none"> <li>Natural resources are affected by human activities and managing resources sustainably</li> </ul>	<b>Living things use the resources of the Earth, solar system and universe to meet their needs</b>
<ul style="list-style-type: none"> <li>Air is an important resource</li> <li>Characteristics of air.</li> </ul>	<ul style="list-style-type: none"> <li>Properties of air.</li> <li>Air pressure and its impact on our lives.</li> </ul>	<ul style="list-style-type: none"> <li>Importance of ozone layer to sustain life on Earth, causes of ozone layer depletion and its effects.</li> </ul>	
<ul style="list-style-type: none"> <li>Water as an important resource</li> <li>Ways to safeguard drinking water</li> </ul>	<ul style="list-style-type: none"> <li>Ways to manage and preserve water.</li> </ul>	<ul style="list-style-type: none"> <li>Availability of water and the impact of human activities on the quality of water</li> </ul>	
	<ul style="list-style-type: none"> <li>Physical properties of water.</li> <li>Water cycle</li> </ul>	<ul style="list-style-type: none"> <li>Properties of water that make it an essential component of the Earth System.</li> </ul>	
<ul style="list-style-type: none"> <li>Factors which contribute to pollution and ways to minimize pollution.</li> </ul>	<ul style="list-style-type: none"> <li>Ways through which waste can be managed</li> </ul>	<ul style="list-style-type: none"> <li>Local environmental issues and ways of addressing the issues.</li> </ul>	

## Matter materials

# Scope and Sequence

Sub Strand	Grade 1	Grade 2	Grade 3
Properties of materials	<ul style="list-style-type: none"> <li>• Objects are made of particular material</li> <li>• Links between materials and their properties</li> </ul>	<ul style="list-style-type: none"> <li>• Materials can be changed by different means</li> <li>• Change can happen faster or slowly and their causes</li> </ul>	<ul style="list-style-type: none"> <li>• Uses of materials are determined by their properties and some things can be changed.</li> </ul>
Materials and their uses	<ul style="list-style-type: none"> <li>• Grouping objects according to their uses, properties and material types</li> </ul>	<ul style="list-style-type: none"> <li>• Grouping objects according to their uses, properties and material types</li> </ul>	<ul style="list-style-type: none"> <li>• Grouping objects according to their uses, properties and material types</li> </ul>
Mixtures, Compounds and Elements			
Physical and Chemical Changes			

## Matter materials

Grade 4	Grade 5	Grade 6	Sub Strand
<ul style="list-style-type: none"> <li>Properties of materials (flexibility, solubility, and luster) and their uses.</li> </ul>	<ul style="list-style-type: none"> <li>Physical properties of materials such as heat and electrical conductivity</li> <li>Properties of materials and their uses</li> </ul>	<ul style="list-style-type: none"> <li>Properties such as biodegradability and solubility</li> <li>Properties of materials relate to their usage.</li> </ul>	Properties of materials
		<ul style="list-style-type: none"> <li>Matter as everything that has mass and occupies space.</li> </ul>	
<ul style="list-style-type: none"> <li>Measuring of physical properties (volume, mass, and temperature).</li> </ul>	<ul style="list-style-type: none"> <li>Measuring of physical properties (volume and mass)</li> <li>Using appropriate equipment accurately</li> </ul>	<ul style="list-style-type: none"> <li>Measuring a range of physical quantities using appropriate methods and apparatus.</li> </ul>	
			Materials and their uses
<ul style="list-style-type: none"> <li>Common mixtures</li> <li>Pure substances and mixtures</li> </ul>	<ul style="list-style-type: none"> <li>Types of mixtures.</li> </ul>	<ul style="list-style-type: none"> <li>Pure substances, mixtures and compounds.</li> </ul>	Mixtures, Compounds and Elements
<ul style="list-style-type: none"> <li>Ways to separate mixtures.</li> </ul>	<ul style="list-style-type: none"> <li>Importance of mixtures and separating techniques.</li> </ul>	<ul style="list-style-type: none"> <li>Chromatography and simple distillation and their importance</li> </ul>	
<ul style="list-style-type: none"> <li>Materials can change in different conditions</li> </ul>	<ul style="list-style-type: none"> <li>Physical changes</li> </ul>	<ul style="list-style-type: none"> <li>Physical and chemical changes.</li> </ul>	Physical and Chemical Changes

## Energy and Change

### Scope and Sequence

Sub Strand	Grade 1	Grade 2	Grade 3
Energy and its impact	<ul style="list-style-type: none"> <li>Humans get the energy resources they need from the environment</li> </ul>	<ul style="list-style-type: none"> <li>Various effects of energy in our lives.</li> <li>How the sun affects the environment.</li> </ul>	<ul style="list-style-type: none"> <li>Various effects of energy and its impacts on our lives.</li> </ul>
Energy and its impact	<ul style="list-style-type: none"> <li>Various ways to use energy wisely at home and school.</li> </ul>	<ul style="list-style-type: none"> <li>Ways on how energy is used at home and different ways energy can be used wisely.</li> </ul>	<ul style="list-style-type: none"> <li>Different ways in which energy can be used wisely.</li> </ul>
Types of Energy, energy sources and receivers			
Electricity	<ul style="list-style-type: none"> <li>Safety measures in using a variety of electrical appliances.</li> </ul>	<ul style="list-style-type: none"> <li>Use of electricity at home and the safety measures taken in using electrical appliances.</li> </ul>	<ul style="list-style-type: none"> <li>Electric circuits and circuit components.</li> </ul>
Magnets	<ul style="list-style-type: none"> <li>Different magnets and their effects on different materials.</li> </ul>	<ul style="list-style-type: none"> <li>effects of magnets on different materials</li> <li>Classification of magnetic and non-magnetic material.</li> </ul>	<ul style="list-style-type: none"> <li>Relationship between magnets and compass.</li> </ul>
Sound Energy	<ul style="list-style-type: none"> <li>Natural and artificial sounds in the environment</li> <li>Sound - a form of energy.</li> </ul>	<ul style="list-style-type: none"> <li>Making sounds and identifying that it is a form of energy.</li> </ul>	<ul style="list-style-type: none"> <li>Sound is a form of energy which travels as vibrations from a source.</li> </ul>
Light Energy	<ul style="list-style-type: none"> <li>Different colours in the environment</li> <li>Different sources of light</li> </ul>	<ul style="list-style-type: none"> <li>Relationship between light and materials</li> </ul>	<ul style="list-style-type: none"> <li>Light can be split into many different colours.</li> </ul>
Force and Motion	<ul style="list-style-type: none"> <li>Push and pull can cause some objects to move.</li> </ul>	<ul style="list-style-type: none"> <li>Motion of objects and ways to change the motion of an object.</li> </ul>	<ul style="list-style-type: none"> <li>Various effects of forces on movement of objects.</li> </ul>

## Energy and Change

Grade 4	Grade 5	Grade 6	Sub Strand
			Energy and its impact
			Energy and its impact
<ul style="list-style-type: none"> <li>Forms of energy</li> </ul>	<ul style="list-style-type: none"> <li>Energy sources and how energy is transformed.</li> </ul>	<ul style="list-style-type: none"> <li>Energy transformations</li> </ul>	Types of Energy, energy sources and receivers
	<ul style="list-style-type: none"> <li>renewable and non-renewable</li> <li>The impacts of using both types</li> </ul>	<ul style="list-style-type: none"> <li>potential and kinetic energy</li> <li>Factors that affect them.</li> </ul>	
<ul style="list-style-type: none"> <li>Sources of heat and heat transfer</li> </ul>	<ul style="list-style-type: none"> <li>Sound energy how sound travels</li> </ul>	<ul style="list-style-type: none"> <li>Light energy and properties of light</li> </ul>	
<ul style="list-style-type: none"> <li>Simple circuits</li> </ul>	<ul style="list-style-type: none"> <li>Parallel and series circuits</li> </ul>	<ul style="list-style-type: none"> <li>The power plant utilized for energy production. (e.g. power stations in islands)</li> </ul>	Electricity
		<ul style="list-style-type: none"> <li>Conservation of energy and its importance.</li> </ul>	
<ul style="list-style-type: none"> <li>Magnets, and their applications</li> </ul>	<ul style="list-style-type: none"> <li>Properties of magnets and its applications.</li> </ul>	<ul style="list-style-type: none"> <li>Magnets and magnetic field</li> </ul>	Magnets
			Sound Energy
			Light Energy
<ul style="list-style-type: none"> <li>Effects of forces (including magnetic) on the motion and shape of objects.</li> </ul>	<ul style="list-style-type: none"> <li>Friction and air resistance</li> </ul>	<ul style="list-style-type: none"> <li>Simple machines and their usage in everyday lives</li> </ul>	Force and Motion
<ul style="list-style-type: none"> <li>Effect of friction</li> </ul>		<ul style="list-style-type: none"> <li>Levers as simple machines.</li> </ul>	
<ul style="list-style-type: none"> <li>Measuring forces using force meters</li> </ul>	<ul style="list-style-type: none"> <li>Balanced and unbalanced forces.</li> </ul>	<ul style="list-style-type: none"> <li>Gravitational force</li> </ul>	

## Science and technology

### Scope and Sequence

Sub Strand	Grade 1	Grade 2	Grade 3
Science as a human endeavour	<ul style="list-style-type: none"> <li>Use of science and how scientists work.</li> </ul>	<ul style="list-style-type: none"> <li>Scientific method-way scientists work</li> </ul>	<ul style="list-style-type: none"> <li>Contributions to science</li> </ul>
	<ul style="list-style-type: none"> <li>Scientific knowledge used to understand events/phenomenon</li> <li>Contribution of science to quality of life.</li> </ul>	<ul style="list-style-type: none"> <li>Scientific knowledge used to understand events/phenomenon</li> <li>Contribution of science to quality of life.</li> </ul>	<ul style="list-style-type: none"> <li>Impacts and contributions of science.</li> </ul>
Design and making	<ul style="list-style-type: none"> <li>Formulating ideas and implementing designs.</li> </ul>	<ul style="list-style-type: none"> <li>Implements designs and communicating of findings</li> </ul>	<ul style="list-style-type: none"> <li>Implements designs and communicating of findings</li> </ul>
Using science wisely	<ul style="list-style-type: none"> <li>Follow scientific methods to make informed decisions</li> </ul>	<ul style="list-style-type: none"> <li>Applies the knowledge gained to make informed decisions</li> </ul>	<ul style="list-style-type: none"> <li>Applies the knowledge gained to solve real life problems</li> </ul>

## Working scientifically

### Scope and Sequence

Sub Strand	Grade 1	Grade 2	Grade 3
Observation and communication	<ul style="list-style-type: none"> <li>Observational skills and communicates their observations in various means and methods.</li> </ul>	<ul style="list-style-type: none"> <li>Observational skills and communicates their observations in various means and methods.</li> </ul>	<ul style="list-style-type: none"> <li>Observational skills and communicates their observations in various means and methods.</li> </ul>
Investigations	<ul style="list-style-type: none"> <li>Conducts investigations by observing, questioning, recording data and suggesting possible explanations with guidance.</li> </ul>	<ul style="list-style-type: none"> <li>Conducts investigations with teacher guidance.</li> </ul>	<ul style="list-style-type: none"> <li>Conducts simple investigations with guidance.</li> </ul>
Safety and responsibility	<ul style="list-style-type: none"> <li>Take care of themselves, others and respects others viewpoints.</li> </ul>	<ul style="list-style-type: none"> <li>Take care of themselves, others and respects others viewpoints.</li> </ul>	<ul style="list-style-type: none"> <li>Take care of themselves, others and respects others viewpoints.</li> </ul>

## Science and technology

Grade 4	Grade 5	Grade 6	Sub Strand
<ul style="list-style-type: none"> <li>Use of science and how scientists work.</li> </ul>	<ul style="list-style-type: none"> <li>Scientific method-way scientists work</li> </ul>	<ul style="list-style-type: none"> <li>Contributions to science</li> </ul>	Science as a human endeavour
<ul style="list-style-type: none"> <li>Scientific knowledge used to understand events/phenomenon</li> <li>Contribution of science to quality of life.</li> </ul>	<ul style="list-style-type: none"> <li>Scientific knowledge used to understand events/phenomenon</li> <li>Contribution of science to quality of life.</li> </ul>	<ul style="list-style-type: none"> <li>Impacts and contributions of science.</li> </ul>	
<ul style="list-style-type: none"> <li>Formulating ideas and implementing designs.</li> </ul>	<ul style="list-style-type: none"> <li>Implements designs and communicating of findings</li> </ul>	<ul style="list-style-type: none"> <li>Implements designs and communicating of findings</li> </ul>	Design and making
<ul style="list-style-type: none"> <li>Follow scientific methods to make informed decisions</li> </ul>	<ul style="list-style-type: none"> <li>Applies the knowledge gained to make informed decisions</li> </ul>	<ul style="list-style-type: none"> <li>Applies the knowledge gained to solve real life problems</li> </ul>	Using science wisely

**Scope and Sequence**

## Working scientifically

Grade 4	Grade 5	Grade 6	Sub Strand
<ul style="list-style-type: none"> <li>Observational skills and communicates their observations in various means and methods.</li> </ul>	<ul style="list-style-type: none"> <li>Makes observations to provide supporting evidence</li> </ul>	<ul style="list-style-type: none"> <li>Makes observations to provide supporting evidence</li> </ul>	Observation and communication
<ul style="list-style-type: none"> <li>Conducts simple investigations with guidance.</li> </ul>	<ul style="list-style-type: none"> <li>Conducts simple investigations</li> </ul>	<ul style="list-style-type: none"> <li>Conducts simple investigations</li> </ul>	Investigations
<ul style="list-style-type: none"> <li>Take care of themselves, others and respects others viewpoints.</li> </ul>	<ul style="list-style-type: none"> <li>Take care of themselves, others and respects others viewpoints.</li> </ul>	<ul style="list-style-type: none"> <li>Take care of themselves, others and respects others viewpoints.</li> </ul>	Safety and responsibility

**Scope and Sequence**

# **GRADE 4**

## Outcomes and Indicators

## Strand: Life and Living

## Sub-strand: Living things- their structure and functions

Outcome	Indicators
LL1.2 Recognise that there are a variety of living things and most of them can be classified in to plants, animals, fungi and bacteria. (diversity)	<p><b>This is evident when the student:</b></p> <ol style="list-style-type: none"> <li>Classifies some broad groups of living things into plants, animals, fungi, bacteria)</li> <li>Observes and make simple drawing of organisms from four groups of living things.</li> <li>Researches on the diversity of living things in a selected habitat (<i>e.g. woods, mangroves, beach</i>).</li> </ol>
LL1.3 Observes and explains the characteristics of life common to minute organisms.	<p><b>This is evident when the student:</b></p> <ol style="list-style-type: none"> <li>Observes and describes minute organisms, such as shrimp, algae, and aphids etc. that are found in the environment.</li> <li>Observes and describes the characteristics of living things which are common to minute organisms</li> </ol>
LL1.6 Explain that living things have structural features and adaptations that help them to survive in their environment	<p><b>This is evident when the student:</b></p> <ol style="list-style-type: none"> <li>Identifies different structures of birds and explain the relationship between structure and function, (<i>e.g. relate the shape of birds' beaks to the food they eat, temperature regulations and type of skin etc.</i>).</li> <li>Describes examples of adaptations to structures and behaviours (<i>e.g., flippers, webbed feet, night-time vision, wide wings, camouflage coloring, migration, and hibernation</i>) that have enabled living things to adapt to their environments in the long term).</li> <li>Studies how animals use mimicry and camouflage (<i>e.g. mimic octopus, beach crab</i>)</li> <li>Identifies different parts of a plant and their functions, (<i>e.g. a trunk or stem for strength and for water to move up, a flower is coloured or scented to attract insects</i>)</li> </ol>

## Grade 4

### Outcome

LL1.7 Recognises that micro-organisms are everywhere, some can cause diseases/illnesses while others are useful

### Indicators

#### This is evident when the student:

- Identifies that micro-organisms are found everywhere.
- Identifies that some micro-organisms can cause common illness.
- Identifies some useful applications of microorganisms (*e.g. making yogurt, making bread*)

## Sub-strand: Interdependence of life

### Outcome

LL.2.1 Explores a variety of habitats- beach and reef and identify ways in which individuals and groups of organisms interact with each other and their environment.

### Indicators

#### This is evident when the student:

- Researches the different plants and animals that exist in beach and reef.
- Identifies the components of an animal habitat. (Include: food, water, living space, cover/shelter)
- Identifies the factors that affect the survival of an organism (*e.g., physical characteristics of the environment, availability of food, types of other organisms present etc.*).
- Investigates and describes a variety of local habitats and their associated populations of plants and animals.
- Illustrates ways that plants and animals depend on each other
- Investigates the importance of plants to the environment.
- Respects living things and care for their environment.

### Outcome

LL2.4 Explore healthy food choices and explain how food is used by living things.

### Indicators

#### This is evident when the student:

- Recognises the various ways in which food is used by plants and animals. (*e.g., growth, support and repair, provides energy etc.*)
- Identifies the six essential nutrients needed for a balanced diet and locates the different nutrients by the food groups.

- c. Plans healthy meals and snacks that emphasize the principles of food pyramid using local foods.
- d. Identifies and applies an understanding of a healthy, balanced diet with a variety of daily choices.
- e. Identifies benefits of daily water intake
- f. Explains how human health may be affected by food choices made.

### Sub-strand: Reproduction and Change

#### Outcome

LL3.1 Recognises that living things have life cycles and as the organism grows they change.

#### Indicators

##### This is evident when the student:

- a. Describes how humans grow and change as they get older based on personal experiences.
- b. Identifies that there are similarities in the growth of living things that can be recognized as basic stages (*e.g: stages in life cycles, babies , toddlers, teenagers, adult*)
- c. Observes and compare the life cycles of animals over a period of time(*e.g., butterfly, grasshopper, cockroach, chicken, frog*)

#### Outcome

LL3.2 Recognises that there are variations between parents and their offspring, and there are variations within the same species.

#### Indicators

##### This is evident when the student:

- a. Observes the similarities and differences between offspring and their parents, (*e.g., kittens are similar to cats and children have similarities to their parents and siblings*)
- b. Collects and organises data about the observable features of humans in different countries, (*e.g. eye colour, size, height etc.*)
- c. Investigates to compare different features of a selected plant species.

Strand: Earth and Beyond

Sub-strand: Earth, Solar system and universe as dynamic systems

Outcome	Indicators
EB1.1 Describes the features of the Earth especially the Earth's structure.	<p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"><li>a. Discusses the structure of the Earth and identifies the layers of the Earth.</li><li>b. Recognises that the Earth's crust is made of rocks and soil.</li></ul>
EB1.3 Explores how the process of erosion and deposition can cause changes to the Earth's surface and identify ways to reduce erosion.	<p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"><li>a. Describes how erosional and depositional processes (<i>e.g., waves, wind, rivers and glaciers</i>) can cause changes to the Earth's surface.</li><li>b. Observes and identifies erosion, accretion and deposition.</li><li>c. Identifies ways how human activities lead to erosion and deposition of Earth's materials (<i>e.g., clearing of land, planting vegetation, paving land, construction of new buildings</i>).</li><li>d. Identifies ways beach erosion can be minimised (<i>e.g., planting of trees, building retaining walls</i>)</li></ul>
EB1.4 Explores the local weather system.	<p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"><li>a. Identifies features that accompany different weather phenomenon.</li><li>b. Recognizes local features/components of weather systems (<i>e.g. cloud cover, temperature, wind speed</i>) using weather charts.</li></ul>
EB1.6 Describes disasters and how it impacts humans and the environment.	<p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"><li>a. Identifies different types of disasters such fire, flood, earthquakes, tsunamis and storm surge.</li><li>b. Describes some causes and effects of disasters.</li><li>c. Identifies measures to reduce the impact of disasters.</li></ul>

## Outcome

EB1.7 Describes rotation and revolution of the Earth.

## Indicators

**This is evident when the student:**

- a. Explains revolution in relation to the Earth's movement.
- b. Shows using models how rotation of the Earth produces day and night.
- c. Appreciates the phenomena of Earth's rotation and revolution.

**Sub-strand:** Events on Earth and beyond occur on different scales of time and space

## Outcome

EB2.1 Recognises that Earth's surface change over time.

## Indicators

**This is evident when the student:**

- a. Identifies some agents ( wind, moving water, waves) can cause changes to the Earth surface over time (*e.g. changing of landscape*)
- b. Observes changes to Earth surface (*e.g., beach area, mangroves*) that has occurred over time.

## Outcome

EB2.2 Relates to the fact that soil is formed over years and investigates the composition/ characteristic of soil.

## Indicators

**This is evident when the student:**

- a. Recognises that soil is formed over years.
- b. Describes the various components of the soil sample.
- c. Observes and describes the differences between sand, clay, humus and other soil components.
- d. Experiments to find out that soil can be separated into different components.

## Grade 4

### Outcome

EB2.3 Explores the relationship between soil and other living things.

### Indicators

#### This is evident when the student:

- a. Studies the relationship between living things and soil (*e.g., earthworms live in soil, the roots use soil as an anchor*).
- b. Identifies ways in which the components of various soils enable the soil to provide shelter/homes and or nutrients for different kinds of living things (*e.g., micro-organisms feed on decaying matter on the soil*).

### Sub-strand: Living things use the resources of the Earth, solar system and universe to meet their needs

### Outcome

EB3.1 Explores how living things use Earth's resources.

### Indicators

#### This is evident when the student:

- a. Investigates the ways that the Earth's resources are used by living things.
- b. Identifies that natural resources can be living or non-living things.
- c. Recognizes ways to reduce the wastage and over usage of resources.

### Outcome

EB3.2 Identifies that air is an important resource and explores the characteristics of air.

### Indicators

#### This is evident when the student:

- a. Identifies that air is an important resource (*e.g. air is needed for breathing, oxygen is used for combustion*).
- b. Recognises that the Earth is surrounded by a layer of air called the atmosphere.
- c. Recognises that air is a mixture of gases.
- d. Investigates that air takes up space and has mass.

## Outcome

EB3.3 Explores water as an important resource and discusses ways to safeguard drinking water

## Indicators

**This is evident when the student:**

- a. Appreciates water as precious resource and realises that potable water is limited.
- b. Identifies the kind of threats to drinking water (*e.g., no proper sanitary facilities- leads to seeping of microorganisms to wells*)
- c. Discusses different ways local communities can collect and protect water (*e.g., chlorinating water and filtering*)

## Outcome

EB3.5 Identifies factors which contribute to pollution (air, land and water) and discusses ways to minimize pollution.

## Indicators

**This is evident when the student:**

- a. Identifies pollutants that affect our environment (air, water and land)
- b. Recognises the need to keep our *environment* (*e.g., beach areas, harbor, roads, ferry terminals etc.*) clean.
- c. Investigates factors contributing to the pollution of a selected environment (local beach, mangrove, and landfill) and identifies ways to conserve the environment.
- d. Creates a plan to keep a selected environment clean (*e.g. beach area, harbour, ferry terminals etc.*)
- e. Advocates the importance of keeping the environment clean.

## Strand: Matter & Materials

### Sub-strand: Properties of Materials

Outcome

MM1.1 Investigates various properties of materials such as flexibility, solubility, and luster and explores their uses.

Indicators

**This is evident when the student:**

- a. Recognizes that there can be different types of material and they have different uses depending on their properties (*e.g. paper can be hard or soft/heavy or light/thick or thin and that tissue is used for wiping face while thick paper is used for writing on*)
- b. Investigates the properties (*e.g. flexibility, hardness, solubility, luster*) of a range of everyday materials such as fabric, metals, plastic and glass.
- c. Designs a product using everyday materials based on a particular property of a material (*e.g. hardness, flexibility, texture*)

Outcome

MM1.3 Measures physical properties such as volume, mass, and temperature using appropriate equipment.

Indicators

**This is evident when the student:**

- a. Recognises that all objects and substances have physical properties that can be measured.
- b. Measures mass (balances in grams or kilograms) of objects.
- c. Measures volumes of liquids in milliliters and liters.
- d. Measures the temperature of various substances using a thermometer.

## Sub-strand: Mixtures, Compounds and Elements

Outcome	Indicators
MM2.1 Explores and identifies common mixtures and distinguishes pure substances from mixtures.	<p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"> <li>a. Observes and describes how mixtures are made.</li> <li>b. Identifies materials such as pure substances (<i>e.g. water, sugar, salt</i>) or mixtures (<i>e.g. salt and pepper, mixed dry beans</i>).</li> <li>c. Classifies pure and mixtures they find around their home or school.</li> </ul>

Outcome	Indicators
MM2.2 Explores and identifies ways to separate mixtures according to their physical property.	<p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"> <li>a. Describes ways to separate the components of a mixture based on their physical properties (<i>e.g., sorting, magnets, screening</i>)</li> <li>b. Investigates and separates a variety of mixtures.</li> </ul>

## Sub-strand: Physical and Chemical Changes

Outcome	Indicators
MM3.1 Explores and identifies that materials can change in different conditions.	<p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"> <li>a. Recognises the cause of a change in a variety of materials (<i>e.g. Clothes on the line dry out in the sun/ Ice-cream melted because it got too hot</i>)</li> <li>b. Compares the ways that different materials change (<i>e.g. eggs go hard when boiled, onions go soft when cooked</i>)</li> <li>c. Compares the differences in the extent to which things dissolve in water (<i>e.g. sugar disappears when you dissolve in water whereas chalk and sand would not dissolve</i>)</li> <li>d. Identifies that some changes do not result in a new substance being formed (<i>e.g. breaking glass, cutting paper</i>) whereas other changes bring about a change (<i>e.g. baking a cake, burning paper</i>)</li> <li>e. Investigates simple changes that occur in materials in everyday life (<i>e.g. rusting, discolouration in materials, ice melting</i>)</li> </ul>

**Strand: Energy and Change**

**Sub-strand: Types of energy, energy sources and receivers**

**Outcome**

EC1.1 Explores and investigates forms of energy and compare various forms of energy such as heat, sound and light

**Indicators**

**This is evident when the student:**

- a. Identifies a variety of forms of energy: sound, heat, light, present in their home and classroom and gives examples from everyday life of how these types of energy are used. (e.g. electricity is used for cooking, watching television, listening to radio)

**Outcome**

EC1.3 Explores and identifies sources of heat and classifies different ways heat gets transferred

**Indicators**

**This is evident when the student:**

- a. Recognises variety of sources of heat (e.g. solar energy, heat from burning of biomass, burning of fossil fuels, friction in mechanical movement).
- b. Measures and records temperature using thermometer.
- c. Experiments with a range of materials to identify that heat get transferred. (Note: technical terms of heat transfer is not required at this level)

**Sub-strand: Electricity**

**Outcome**

EC2.1 Draws and constructs simple circuits and explain how it works.

**Indicators:**

**This is evident when the student:**

- a. Constructs a simple circuit and draws the circuit.
- b. Observes and identifies that electricity will only travel around a circuit that is complete. (That means it has no gaps)

**Sub-strand: Magnets**

**Outcome**

EC3.1 Investigates magnets, how they affect other magnets and common objects and identifies that magnets have useful applications.

**Indicators**

**This is evident when the student:**

- a. Explores that magnets have poles and investigate how these poles work.
- b. Examines and classify objects and materials as magnetic and non-magnetic.
- c. Investigates that magnets attract certain materials through other materials such as water, glass and plastic.

- d. Studies on how magnets are used in daily life (*e.g. in refrigerator, , clippings*)
- e. Designs and make a/an object/device/toy (*e.g. a fishing game using a magnet*)

### Sub-strand: Force and Motion

#### Outcome

EC4.1 Describes the effects of forces (including magnetic) on the motion and shape of objects.

#### Indicators

##### This is evident when the student:

- a. Identifies that when something moves or changes shape it is due to a force or forces acting on it.
- b. Recognizes that objects at rest will not move unless a force is applied to them.
- c. Observes and records various examples of push and pull from everyday life.

#### Outcome

EC4.2 Explores and investigates the effect of friction experienced in everyday life.

#### Indicators

##### This is evident when the student:

- a. Identifies and explains friction as an opposing force which slows down the motion.
- b. Explores floating and sinking using different objects in water.
- c. Explores and identifies the usefulness of force of friction.
- d. Investigate helpful and harmful effects of friction.

#### Outcome

EC4.3 Explores and identifies how force meters are used to measures forces.

#### Indicators

##### This is evident when the student:

- a. Measures forces between objects in Newtons
- b. Identifies objects change their shape (stretched or compressed) when a force exerted on them.
- c. Investigates how the shape of the spring changes using different forces.

**Strand: Science and Technology**

**Sub-strand: Science as a human endeavor**

**Outcome**

ST1.1 Explores the use of science in everyday life and identifies how scientists work.

**Indicators**

**This is evident when the student:**

- a. Recognises that scientists work in a particular manner to find out how phenomenon's occur (*e.g. experimenting, planning, testing hypothesis etc.*)
- b. Identifies that scientific knowledge is applied in everyday activities (*e.g. greasing for various lubrication purposes-reducing friction*).

**Outcome**

ST1.2 Explores that scientific knowledge is used to understand events/phenomenon and it contributes to quality of life.

**Indicators**

**This is evident when the student:**

- a. Recognises that most of everyday events can be explained through the knowledge of science (*e.g. food gives them energy, vehicles need fuel*)
- b. Recognizes that scientific ideas help us to improve the quality and sustainability of life. (*e.g. vaccines, water quality, sanitation mechanism, etc.*)

**Sub-strand: Design and Making**

**Outcome**

ST2.1 Formulates ideas and implement their own designs.

**Indicators**

**This is evident when the student:**

- a. Explains how everyday materials and objects work.
- b. Identifies characteristics of different objects and give reasons for the preferences.
- c. Designs and make a plan to create a new or revised product.
- d. Selects and uses variety of materials to make a product.
- e. Evaluates own work and the work of others to make modifications.

**Sub-strand: Using Science Wisely**

**Outcome**

ST3.1 Uses the knowledge gained to make informed decisions

**Indicators:**

**This is evident when the student:**

- a. Identifies the changes that take place in some objects (*e.g. through observations of different objects*).
- b. Recognises that some objects change over a time.
- c. Relates everyday activities to their scientific knowledge where appropriate (*e.g. the clothes on a clothes line dry from the heat of the sun*).

## Strand: Working Scientifically

## Sub-strand: Observation, Questions &amp; Hypothesis

Outcome	Indicators
WS1.1 Uses observations to provide supporting evidence for event/phenomena.	<p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"> <li>a. Uses appropriate tools in making observations.</li> <li>b. Uses appropriate vocabulary to explain events/ phenomena.</li> <li>c. Describes observations through various means. (E.g. sketches, drawings, tables etc.)</li> </ul>

## Sub-strand: Investigations

Outcome	Indicators
WS2.1 Conducts simple investigations	<p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"> <li>a. Formulates investigative questions</li> <li>b. Identifies variables in an investigation.</li> <li>c. Plans simple procedures in carrying out simple investigations</li> <li>d. Collects data using appropriate tools.</li> <li>e. Uses appropriate units in measurement.</li> <li>f. Organizes data in appropriate ways.</li> </ul>

## Sub-strand: Safety &amp; Taking responsibility

Outcome	Indicators
WS3.1 Take care of themselves, others and respects others viewpoints.	<p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"> <li>a. Follows safety procedures given by the teacher (<i>e.g. wear goggles while heating</i>)</li> <li>b. Demonstrates responsibility when doing practicals.</li> <li>c. Listens and respects others viewpoints.</li> <li>d. Discusses ways to reduce consumptions.</li> <li>e. Demonstrates the understanding about why we need to look after environment</li> </ul>

# **GRADE 5**

## Outcomes and Indicators

## Strand: Life and Living

### Sub-strand: Living things- their structure and functions

Outcome	<b>Indicators</b>
LL1.2 Explore a variety of living things and uses simple classification methods to infer the relatedness or divergence of organisms.(diversity)	<p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"> <li>a. Observes and describes the diversity of living things within the local environment. (<i>Include: fungi, plants, animals</i>).</li> <li>b. Distinguishes between vertebrates and invertebrates.</li> <li>c. Describes traits common to all invertebrates.</li> <li>d. Observes and compares the main traits of insects and spiders.</li> <li>e. Describes what classifying tells us about the relatedness among the animals placed within a group.</li> <li>f. Recognises the diversity of living things their importance to the environment and appreciates the creations of Allah (SWT)</li> </ul>
Outcome	<b>Indicators</b>
LL1.3 Observes to infer that some living organisms are unicellular.	<p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"> <li>a. Observes and make sketches (scientific drawings) of a variety of single celled organisms and cells.</li> <li>b. Describe the observable behaviors of single celled organisms</li> <li>c. Recognises that most single celled organisms have needs similar to those of multicellular organisms.</li> <li>d. Appreciates that single cell also shows all the characteristics of life.</li> </ul>
Outcome	<b>Indicators</b>
LL1.5 Describe that multicellular organisms consist of systems which perform different functions	<p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"> <li>a. Identifies the organs that make up the skeletal system and respiratory system.</li> <li>b. Identifies the functions of root system in plants.</li> <li>c. Recognises that body systems are made up of different organs and perform specific functions.</li> </ul>

## Grade 5

### Outcome

LL1.6 Explore the relationship between the different external features /structures to the survival of organisms.

### Outcome

LL1.7 Explores microorganisms and identify that diseases can be caused by some microorganisms.

- d. Identifies the functions of various systems in humans (*e.g. respiratory system, skeletal system*)
- e. Shows curiosity in exploring their own body and questioning about the structure or function of the body.

### Indicators

#### This is evident when the student:

- a. Recognises that body features or structures are adapted to enhance organism's survival and it can be structural or behavioural. (*e.g. cope with physical factors, obtain food, escape predators, reproduce by finding and attracting mates or dispersing seeds*)
- b. Studies various observable structural features of plants that grow in different environmental conditions (*e.g. beach – thick leaves, root system in mangroves*)

### Indicators

#### This is evident when the student:

- a. Identifies some illnesses and the organism causing the illness. (*e.g. rubella, flu, chicken pox* and some conditions *e.g. boils, tooth decay*) are caused by micro-organisms
- b. Discusses ways to protect the body from common illnesses.

## Sub-strand: Interdependence of life

### Outcome

LL2.1 Explores a variety of habitats and identify ways in which individuals and groups of organisms interact with each other and their environment.

### Indicators

#### This is evident when the student:

- a. Recognises that each plant and animal depends on a specific habitat to meet its needs.
- b. Compares the needs of a variety of living things and identify how the needs of animals change with the habitat. (*e.g. some living organisms live in water and some on land, some eat plants and some eat other animals*)
- c. Identifies how living things depend on one another (*e.g. trees produce the oxygen that other living things breathe; plants such as tomatoes and apple trees and animals such as cows and fish provide food for humans and for other animals*)

- d. Investigates organisms in coral reefs and communicate its importance.
- e. Investigates how living things are dependent on the non-living environment, (*e.g. . using air for breathing, water for drinking, nutrients from soil for plant growth*)

## Outcome

LL2.3 Explore the impact on various habitats caused by human activities and natural disasters.

## Indicators

**This is evident when the student:**

- a. Studies the impacts of human activity on a familiar habitat.
- b. Researches on a local endangered organism and identify the reasons for it to become endangered.

## Outcome

LL2.4 Explore healthy food choices and interprets data to make informed decisions.

## Indicators

**This is evident when the student:**

- a. Calculates the body mass index and describes how eating habits and physical activity levels can affect a person's weight and health.
- b. Utilizes the basic information on food labels to make decisions about the nutritional value of various foods.
- c. Evaluates a daily menu and suggest changes to align more closely with food pyramid.

### Sub-strand: Reproduction and Change

## Outcome

LL3.1 Identifies the major changes living things undergo as they grow and develop.

## Indicators

**This is evident when the student:**

- a. Describes seasonal changes in the life of a tree. (*e.g. appearance of fruits: mango, water melon during the season*).
- b. Describes observable changes at different stages of development in familiar living things. (*e.g. seed growing into a seedling and further development, egg hatch into a chick and develop further* )
- c. Identifies the bodily changes that occur during puberty (*e.g. height, growth of body hair, deepening voice, menstruation*)
- d. Discusses ways to address personal hygiene during puberty.

## Grade 5

### Outcome

LL3.2 Explain that reproduction is necessary for the inheritance of characteristics and the continuation of a species.

### Indicators

#### **This is evident when the student:**

- a. Recognises that reproduction is necessary for the survival of any species and continuation of species.
- b. Investigates some characteristics found in animals and plants, such as eye color, height, leaf shape, seed type that are passed from one generation to another.

## Strand: Earth and Beyond

## Sub-strand: Earth, Solar system and universe as dynamic systems

## Outcome

EB1.1 Describes the layers of the atmosphere and its features.

## Indicators

**This is evident when the student:**

- a. Studies the features of the atmosphere.
- b. Describes the layers of the atmosphere.
- c. Discusses the protective role of the atmosphere.

## Outcome

EB1.2 Explores earth materials such as rocks, minerals and soil.

## Indicators

**This is evident when the student:**

- a. Recognises that the earth materials are composed of rocks and soil.
- b. Studies different rocks and minerals (*e.g. limestone, pumice, quartz, calcium carbonate, feldspar*)
- c. Describes ways in which soil is formed from rocks and sand.

## Outcome

EB1.3 Explores the types of weathering and how weathering causes changes to the Earth's surface.

## Indicators

**This is evident when the student:**

- a. Describes different types of weathering and identifies that it can occur at different rates.
- b. Observes sites where weathering occurs and relates to the types of weathering (*e.g. boulder rocks change the colour, surface changes*).

## Outcome

EB1.4 Explores the difference between weather and climate, and relate changes in weather to different seasons.

## Indicators

**This is evident when the student:**

- a. Distinguishes between weather and climate.
- b. Studies different weather patterns and associates them with different seasons.

## Outcome

EB1.5 Explores the greenhouse effect and its impact.

## Indicators

**This is evident when the student:**

- a. Identifies the greenhouse gases that exist naturally in the environment.
- b. Explains greenhouse effect.
- c. Identifies the factors that contribute to the increase of greenhouse gases and its impact on lives.
- d. Discusses ways to reduce greenhouse gases.

## Grade 5

### Outcome

EB1.6 Recognises natural disasters that are likely to occur in the Maldives and identifies preventive measures.

### Indicators

#### This is evident when the student:

- Identifies some natural disasters that are likely to happen in the Maldives (*e.g., flood, tsunami, sea swell, tornado and tidal surge, coastal erosion*).
- Researches on a selected natural disaster and discusses the cause, impacts and likely preventive measures that could be taken.
- Discusses some environmental hazards and its impacts on humans and the environment (*e.g., water pollution*).

### Outcome

EB1.7 Explains the occurrence of tides and seasons.

### Indicators

#### This is evident when the student:

- Discusses the features of the seasons of the world.
- Identifies that the seasons are caused by the Earth's tilt.
- Explains the formation of spring and neap tides.

## Sub-strand: Events on Earth and beyond occur on different scales of time and space

### Outcome

EB2.1 Compares the scales of time in which different changes take place and describes the impact of changes to landscapes caused by human activities.

### Indicators

#### This is evident when the student:

- Identifies that some changes are regular and others are irregular and these occur at different time scales (*e.g., regular: seasons/day-night, irregular: volcanic eruptions, beach erosion*).
- Determines positive and negative effects of human alteration of landscape (*e.g., cutting down the forest for housing, reclaiming mangroves/swamps, reclamation of land, creation of parks*).
- Collects data to study the changes that has taken place for a selected area over the years.

### Outcome

EB2.2 Investigates properties of different soil samples

### Indicators

#### This is evident when the student:

- Investigates soil characteristics and properties especially permeability, porosity, texture and colour.
- Analyses soil samples in relation to plant growth.

## Outcome

EB2.3 Explores ways to enrich and preserve the soil.

## Indicators

**This is evident when the student:**

- a. Relates importance of recycling organic materials in the soil to keep the soil fertile (*e.g., keeping leaves on the ground*).
- b. Identifies some of the artificial fertilizers used to enrich soil.
- c. Discusses advantages/disadvantages of using natural and artificial fertilizers.
- d. Appreciates the importance of soil.

**Sub-strand:** Living things use the resources of the Earth, solar system and universe to meet their needs

## Outcome

EB3.1 Identifies Earth's available resources are limited and that living things depend on them.

## Indicators

**This is evident when the student:**

- a. Recognises that Earth's available resources are limited.
- b. Classifies resources as renewable and non-renewable.
- c. Selects a range of resource (*e.g. fossil fuels, trees etc.*) and discusses how we depend on them.
- d. Identifies one's own needs and wants and relates to the needs of the whole community.
- e. Identifies ways to reduce ecological footprint and advocates the importance of reducing consumption.
- f. Appreciates that all the resources are created by Allah for the benefit of living things.

## Outcome

EB3.2 Investigates properties of air such as air pressure.

## Indicators

**This is evident when the student:**

- a. Recognises that air has mass and exerts pressure.
- b. Investigates the effects of air pressure.
- c. Explores the impacts of air pressure on our lives (*e.g. inflating tires, blowing up a balloon, drinking from a straw*).

## Grade 5

### Outcome

EB3.3 Describes ways to manage and preserve water.

### Indicators

#### This is evident when the student:

- a. Surveys to find out the availability of water / its sources within their locality.
- b. Describes ways how people manage water in their community especially focusing on rainwater harvest.
- c. Studies some ways water can be conserved (*e.g., conducts a water usage audit and takes necessary actions to minimise water wastage*)

### Outcome

EB3.4 Investigates the physical properties of water.

### Indicators

#### This is evident when the student:

- a. Explains the terms freezing, melting, evaporation and condensation.
- b. Describes and illustrate the water cycle using the physical properties of water.
- c. Demonstrates that water acts as a good solvent.

### Outcome

EB3.5 Explore ways through which waste can be managed

### Indicators

#### This is evident when the student:

- a. Discusses the need to reduce the amount of waste produced.
- b. Identifies some of the ways to reduce the amount of solid waste produced in the island.
- c. Identifies good practices of waste management done within the community and elsewhere.

## Strand: Matter & Materials

### Sub-strand: Properties of Materials

Outcome	Indicators
<p>MM1.1 Explores and investigates physical properties of materials such as heat and electrical conductivity and identifies that properties of materials and their uses are linked.</p>	<p><b>This is evident when the student:</b></p> <ol style="list-style-type: none"> <li>a. Identifies some common metals especially familiar metals like gold, silver, aluminium, copper and makes connections between their uses and properties (<i>e.g. gold and silver are shiny and used for jewellery/ copper and aluminium are used in saucepan because they heat up quickly</i>)</li> <li>b. Investigates properties (<i>e.g. magnetic/light weight</i>) of some common materials such as steel and aluminium.</li> <li>c. Investigates the properties such as heat and electric conductivity of some materials and relates to their everyday uses.</li> </ol>
<p>Outcome</p> <p>MM1.3 Measures physical properties such as volume and mass using appropriate equipment accurately.</p>	<p><b>Indicators</b></p> <p><b>This is evident when the student:</b></p> <ol style="list-style-type: none"> <li>a. Measures and compares the masses of objects using appropriate instruments.</li> <li>b. Measures and compares the volumes (the amount of space an object occupies) of objects using a graduated cylinder.</li> </ol>

### Sub-strand: Mixtures, compounds and elements

Outcome	Indicators
<p>MM2.1 Explores and identifies different types of mixtures.</p>	<p><b>This is evident when the student:</b></p> <ol style="list-style-type: none"> <li>a. Identifies four different types of mixtures as solution, suspension, emulsions and colloids.</li> <li>b. Analyzes the differences between different types of mixtures.</li> <li>c. Differentiates solutes, solvent and solution</li> </ol>
<p>Outcome</p> <p>MM2.2 Investigates to separate mixtures and recognizes the significance of mixtures and separating techniques to our lives.</p>	<p><b>Indicators</b></p> <p><b>This is evident when the student:</b></p> <ol style="list-style-type: none"> <li>a. Discusses various methods for separating mixtures.</li> <li>b. Investigates simple separating techniques to separate mixtures (<i>e.g. filtration, evaporation, decanting, sorting, sieving</i>)</li> </ol>

## Grade 5

- c. Recognises that separations of mixtures provide valuable or important substances on which we depend. (*e.g. extraction oil/milk from coconut*)
- d. Describes real life applications of mixtures.

### Sub-strand: Physical and Chemical Change

#### Outcome

MM3.1 Explores physical changes in the state of matter.

#### Indicators

##### This is evident when the student:

- a. Investigates and recognizes water can change from a liquid (melt), as the result of temperature changes.
- b. Measures and compares the temperature of water when it exists as a solid to its temperature when it exists as a liquid.
- c. Describes the changes in the physical properties of water (i.e. shape and volume) when frozen or melted.
- d. Investigates the effect of heat energy on various materials (i.e. change in temperature, melting, evaporation)

## Strand: Energy and Change

### Sub Strand: Types of Energy, Energy Sources and Receivers

#### Outcome

EC1.1 Explores and identify energy sources and describes how energy is transformed.

#### Indicators

##### **This is evident when the student:**

- a. Identifies different types of energy sources.
- b. Researches about energy and where it comes from and presents a report on energy sources.
- c. Describes how energy is stored and transformed in a given device or system (*e.g. battery operated device*)

#### Outcome

EC1.2 Classifies energy types as renewable and non-renewable and understands the impacts of using both types.

#### Indicators

##### **This is evident when the student:**

- a. Differentiates that energy sources are either renewable or non-renewable
- b. Identifies both immediate and long term impacts in using renewable and non-renewable energy.
- c. Discusses practices designed to conserve energy.

#### Outcome

EC1.3 Explores and identifies that sound is a form of energy and investigates how sound travels through various materials (air, water and solids).

#### Indicators

##### **This is evident when the student:**

- a. Explores how different sounds may be made by making a variety of materials *vibrate* (*e.g. skin of drum, plastic ruler on table*).
- b. Investigates what happens to the sound produced when length, thickness, diameter and type of materials are varied.
- c. Designs and make simple instruments to produce variety of sounds.
- d. Appreciate the importance of hearing.

### Sub Strand: Electricity

#### Outcome

EC2.1 Observe and investigate that parallel and series circuits have different characteristics.

#### Indicators

##### **This is evident when the student:**

- a. Represents simple circuits using schematic diagrams.
- b. Identifies series and parallel circuits using diagrams.
- c. Explains and compare the effects of series and parallel circuits on brightness of bulb.
- d. Designs a model for circuits in the home on paper and on a circuit board (using light bulbs and switches).

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### Sub Strand: Magnets

#### Outcome

EC3.1 Explores and investigates properties of magnets and identifies important applications including magnetic compass.

#### Indicators

##### This is evident when the student:

- a. Investigates the properties of magnets such as North and South poles, transfer of magnetic properties.
- b. Observes the effect of magnets and the strength of various magnets.
- c. Explores how a compass works.
- d. Studies various ways magnets are used in daily life (*e.g. used in doors, cabinets, pencil cases*)

### Sub Strand: Force and Motion

#### Outcome

EC4.1 Explores and investigates friction, including air resistance as a force that slows moving objects and may prevent objects from starting to move.

#### Indicators

##### This is evident when the student:

- a. Identifies that when objects are pushed or pulled an opposing push or pull can be felt.
- b. Identifies the direction in which forces act.
- c. Investigates and explains the force of air resistance as an opposing force.
- d. Recognise the force of air resistance of a free falling object.

#### Outcome

EC4.3 Investigates the relationship between forces and motion, in balanced and unbalanced forces.

#### Indicators

##### This is evident when the student:

- a. Investigates that an unbalanced force is needed to move an object or change its direction.
- b. Uses spring scales to measure forces.
- c. Designs their own experiment to predict and test about balanced and unbalanced forces.

## Strand: Science and Technology

### Sub-strand: Science as a human endeavor

#### Outcome

#### Indicators

ST1.1 Explores how scientists work

#### This is evident when the student:

- a. Describes the procedures scientists follow in their work (*e.g. investigations, experimenting, and research.*)
- b. Explores occupations related to science (*e.g. laboratory technicians, meteorological officers, fisheries technology, agriculturalist etc.*).

#### Outcome

#### Indicators

ST1.2 Explores that scientific knowledge is used to understand events/phenomenon and contributes to quality of life.

#### This is evident when the student:

- a. Recognises that scientific ideas help to explain how things work (*e.g. products and tools used by humans for various purposes*).
- b. Recognises that people use scientific ideas to solve problems faced in daily life (*e.g. food preservation techniques, sewerage systems, new medicinal drugs*).

### Sub-strand: Design and Making

#### Outcome

#### Indicators

ST2.1 Implements their own designs and communicates their findings

#### This is evident when the student:

- a. Investigates a range of materials to make a usable product.
- b. Recognizes the importance of new designs to create interest among people.
- c. Presents a design proposal of a workable/usable product.
- d. Creates a product to solve an everyday problem using a variety of materials. (*E.g. making a storage container*).
- e. Evaluates the effectiveness of the product, process and the plan.

### Sub-strand: Using science wisely

#### Outcome

#### Indicators

ST3.1 Applies the knowledge gained to make informed decisions

#### This is evident when the student:

- a. Identifies and explains events and phenomenon using their scientific knowledge (*e.g. germination of seeds, spreading of germs*).

**Strand: Working Scientifically**

**Sub-strand: Observation, Questions & Hypothesis**

Outcome	Indicators
<p>WS1.1 Uses observations to provide supporting evidence for event/phenomena.</p>	<p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"> <li>a. Uses appropriate tools in making observations.</li> <li>b. Uses appropriate vocabulary to explain events/phenomena</li> <li>c. Describes observations by various means. (E.g. sketches, drawings, tables etc.)</li> </ul>

**Sub-strand: Investigations**

Outcome	Indicators
<p>WS2.1 Conducts simple investigations</p>	<p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"> <li>a. Formulates investigative questions</li> <li>b. Identifies variables in an investigation.</li> <li>c. Plans procedures in carrying out simple investigations</li> <li>d. Collects data using appropriate tools.</li> <li>e. Recognises the need to take accurate measurements.</li> <li>f. Uses appropriate units in measurements</li> <li>g. Organizes data in appropriate ways.</li> <li>h. Proposes ways to improve the investigation.</li> <li>i. Analyses data to make conclusions.</li> </ul>

**Sub-strand: Safety & Taking responsibility**

Outcome	Indicators
<p>WS3.1 Take care of themselves, others and respects others viewpoints.</p>	<p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"> <li>a. Follows safety procedures given by the teacher (<i>e.g. wear goggles while heating</i>).</li> <li>b. Demonstrates responsibility when doing practicals</li> <li>c. Listens and respects others viewpoints.</li> <li>d. Develops a plan to reduce consumption in various aspects of life (<i>e.g. energy, food, and clothing</i>).</li> <li>e. Advocates the need to take care of the environment.</li> </ul>

# **GRADE 6**

## Outcomes and Indicators

## Strand: Life and Living

**Sub-strand:** Livings things- their structure and functions

## Outcome

LL1.1 Experiments to explore the characteristics of living things and describes the characteristics of living things using scientific vocabulary.

## Indicators

**This is evident when the student:**

- a. Distinguishes between living from non living things using scientific vocabulary (*excrete, reproduce, sensitive etc*).
- b. Experiments to show that living things can grow while non living cannot.
- c. Recognises that some living things may not display all the characteristics of life. (*e.g. movement – plants do not move from place to place/ excretion in plants*)
- d. Observes and reasons out that minute organisms are living things.
- e. Classifies the characteristics of living things in to their needs and what they do (*need: water, food and air. do: Grow, respond and reproduce*)

## Outcome

LL1.2 Construct simple classification systems and uses present classification systems to infer the relatedness or divergence of organisms.

## Indicators

**This is evident when the student:**

- a. Develops a system to classify common objects or living things into groups and subgroups.
- b. Classifies plants into two broad groups: flowering and non-flowering.
- c. Identifies living things using an existing classification key, and explain the rationale used. (*e.g. identification of vertebrates and flowering plant or non-flowering plant*)
- d. Creates and analyses their own chart or diagram for classifying living things and describe the role (use) of a common classification system.
- e. Identify the five kingdoms commonly used for the classification of living things, and provide examples of organisms from each to illustrate the diversity of living things.
- f. Recognises the diversity of living things their importance to the environment and appreciates the creations of Allah(SWT)

## Outcome

LL1.3 Explain that living organisms are composed of cells (single-celled to multi-cellular) and differentiate between plant cells and animal cells

## Indicators

**This is evident when the student:**

- a. Recognises the cell as the basic unit of all living things.
- b. Calculates the magnification of cell specimens under microscope.
- c. Observes and differentiates between plant cells and animals cells.
- d. Observes and make sketches (scientific drawings) of a variety of single celled organisms and cells.
- e. Observes and make sketches (scientific drawings) of a variety of cells present in multi cellular organisms (*e.g. onion cell, leaf cell, cheek cells*)
- f. Compares the structure of cells in a variety of multi-cellular organisms, such as cells in onions cells; muscle cells, nerve cell.
- g. Studies and describes that some organisms are composed of a collection of similar cells to perform a similar function.
- h. Appreciates the perfectness of Allah's creations (*e.g. single cell can portray all characteristics of life*)

## Outcome

LL1.4 Identifies that multi cellular organisms have specialized structures and systems to perform basic functions of life.

## Indicators

**This is evident when the student:**

- a. Recognises that cell development and specialization occurs in multicellular organisms.
- b. Observes different human specialized cells to identify the structural modifications that allow the cell to perform its special function.
- c. Describes the observable features of structures of a plant and relates structures to function (*e.g. leaf, trunk roots and flowers*).
- d. Describes the process of photosynthesis.
- e. Investigates the factors (light) necessary for photosynthesis.
- f. Recognizes that multicellular organisms need specialized structures and systems to perform basic life functions (*e.g. lungs, heart, brain etc.*)
- g. Appreciates the perfectness of Allah's creations (*e.g. the organization of organs, systems and the division of labour in the body etc.*)

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### Outcome

LL1.5 Describe the function of different body parts in humans, other animals and plants and identify that malfunctioning of internal organs can affect life processes.

### Indicators

#### This is evident when the student:

- a. Researches on different structures or features that carry out life processes in living things, (e.g. *Circulatory system in humans, leaves for production of food in plants*).
- b. Recognises that some processes takes in the body unconsciously(e.g. *gaseous exchange, reflexes*)
- c. Shows curiosity in exploring their own body and questioning about the structure or function of their body and other living things.
- d. Identifies that organs may malfunction which can have various effects on life processes. (e.g. *breathing difficulty, Heart problems can hinder circulation*)

### Outcome

LL1.6 Explain that living things have structural and behavioural features and adaptations that help them to survive in their environment.

### Indicators

#### This is evident when the student:

- a. Observes plants from a variety of environments and identifies structural features which help them to survive in particular environments.
- b. Describes examples of structures and behaviours, including seasonal changes, which help living things survive in their environments during the lifetime of the organism.
- c. Examines the roots systems of a variety of plants to identify the adaptations for efficient water absorption.
- d. Compares closely-related animals that live in different parts of the world and propose explanations for any differences in their structures and behaviours.

### Outcome

LL1.7 Studies common microorganisms that cause diseases and identify behaviors that prevent the spread of disease.

### Indicators

#### This is evident when the student:

- a. Compares the basic structures of common microorganisms (bacteria, fungi and virus)
- b. Identifies ways in which most germs spread and how spreading of germs can be prevented.
- c. Researches on how science and technology have been used in identifying and controlling some of the common diseases caused by microorganisms.

## Sub-strand: Interdependence of life

Outcome	Indicators
<p>LL2.1 Identify ways in which individuals and groups of organisms interact with each other and their environment.</p>	<p><b>This is evident when the student:</b></p> <ol style="list-style-type: none"> <li>a. Researches how some animals and plants respond to their environment and change their behavior based on the weather, season, food supply, (<i>e.g. dragon flies appears during Hey nakath, ants collect during dry season</i>)</li> <li>b. Differentiates between populations and habitats and determines an appropriate method for measuring a plant population within a given habitat.</li> <li>c. Investigates interactions between animals and plants other than providing food, (<i>e.g. transfer of pollen grains by insects and dispersal of seeds by animals</i>)</li> <li>d. Explains some predator/prey relationships found in local environments, (<i>e. g., lizards (predators) and ants or termites (prey)</i>)</li> </ol>
<p>Outcome</p> <p>LL2.2 Explore the feeding relationship (food chain) between living things</p>	<p><b>Indicators</b></p> <p><b>This is evident when the student:</b></p> <ol style="list-style-type: none"> <li>a. Recognises the difference between how animals get their food and how plants make their own food using the sunlight energy.</li> <li>b. Recognises the Sun as the principle source of energy for life.</li> <li>c. Explores the processes that connect living things in an ecosystem, (<i>e.g. food chains</i>)</li> <li>d. Investigates how living things get their energy and group animals according to what they eat, (<i>e.g. herbivore, carnivore, omnivore</i>)</li> <li>e. Investigates the feeding relationships that exists between living things in a familiar area and constructs a food chain.</li> <li>f. Constructs a model (Using the design process) of a local habitat and its associated populations.</li> </ol>

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### Outcome

LL2.3 Explore the impact on populations in various habitats due to human activities and natural disasters.

### Indicators

#### This is evident when the student:

- a. Identifies that changes in habitats can affect the survival of an individual organism or an entire species.
- b. Describes how human actions can help conserve plant and animal populations and their habitats.
- c. Investigates natural and human-caused changes to habitats, and identify resulting effects on plant and animal populations. Include: endangerment, extinction.

### Outcome:

LL2.4 Explore healthy food choices/ habits and interprets data to make informed decisions.

### Indicators:

#### This is evident when the student:

- a. Studies serving portions and the impact portions have on overall nutritional content.
- b. Evaluates the advantages and disadvantages of consuming processed food and beverages.
- c. Interprets the energy values indicated on food labels and compare the energy content per 100 g of a number of foods.
- d. Discusses benefits of eating in moderation and relates to Islam

## Sub-strand: Reproduction and Change

### Outcome

LL3.1 Identifies the major changes humans undergo at specific stages of life.

### Indicators

#### This is evident when the student:

- a. Recognises that many changes occur in a predictable sequence.
- b. Compares bodily changes that male and female undergo during puberty (*e.g., body height, breasts, body form, body hair and voice of boys and girls in puberty, as well as occurrence of menstrual cycle in the female body*).
- c. Identifies and discuss some of the factors that influence growth and development of an individual.
- d. Accepts and values differences in growth and development between individuals at the same developmental stage.

**Outcome:**

LL3.2 Explain that reproduction is necessary for the inheritance of characteristics.

**Indicators**

**This is evident when the student:**

- a. Identifies that individual of the same species display different characteristics.
- b. Explains that some likenesses between parents and offspring are inherited (such as eye color in humans, or flower color in plants) and other likenesses are learned.
- c. Researches the physical characteristics of a family over three generations and presents the data.

**Strand: Earth and Beyond**

**Sub-strand: Earth, Solar system and universe as dynamic systems**

<p>Outcome</p> <p>EB1.1 Explores the features of the Earth especially how landforms are created.</p>	<p><b>Indicators</b></p> <p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"> <li>a. Identifies Earth’s major plates.</li> <li>b. Identifies events such as earthquakes, volcanic eruptions and how landforms are created by these events especially at different plate boundaries.</li> <li>c. Describes the unique features of coral island geography.</li> <li>d. Describes the basic features of reefs and lagoons and its importance.</li> </ul>
<p>Outcome</p> <p>EB1.2 Explores the formation of fossils.</p>	<p><b>Indicators</b></p> <p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"> <li>a. Describes briefly the process of fossil formation.</li> <li>b. Distinguishes between types of fossils.</li> <li>c. Compares and contrasts common fossils.</li> </ul>
<p>Outcome</p> <p>EB1.3 Explores the process of weathering and erosion and recognizes ways to reduce erosion.</p>	<p><b>Indicators</b></p> <p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"> <li>a. Differentiates between weathering and erosion.</li> <li>b. Describes how weathering agents (<i>e.g., water, chemicals, temperature, wind, plants</i>) cause changes to the Earth’s surface</li> <li>c. Observes and collects data to identify the impact of erosion /accretion on a selected area.</li> <li>d. Creates a plan for reducing erosion for a selected beach area at community level.</li> </ul>
<p>Outcome</p> <p>EB1.4 Studies factors that influence weather and climate systems</p>	<p><b>Indicators</b></p> <p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"> <li>a. Identifies factors that influence weather and climate systems (<i>e.g., temperature, wind, air, moisture, pressure, the sun</i>).</li> <li>b. Studies local weather patterns over a period of time.</li> <li>c. Explain features of the local weather system.</li> </ul>

Outcome	<b>Indicators</b>
EB1.5 Recognises the causes and their effects on climate change and how it affects the living and non- living environment.	<p><b>This is evident when the student:</b></p> <ol style="list-style-type: none"> <li>a. Identifies how humans contribute to enhanced greenhouse effect.</li> <li>b. Relates enhanced greenhouse effect to global warming.</li> <li>c. Identifies causes of climate change (<i>e.g. burning of fossils fuels, deforestations</i>).</li> <li>d. Recognises the likely impact of climate change globally and to our local environment (<i>e.g. coral bleaching, ocean acidification, coastal erosion, food and water security</i>).</li> </ol>
Outcome	<b>Indicators:</b>
EB1.6 Analyses some human made disasters and identifies some preventive measures.	<p><b>This is evident when the student:</b></p> <ol style="list-style-type: none"> <li>a. Identifies some human made disasters (<i>e.g., structure collapse, accidents and fires</i>).</li> <li>b. Studies ways through which human made disasters can be reduced (<i>e.g., maintaining standard building codes, identifying evacuation plans</i>).</li> <li>c. Studies the " safe island concept" used locally.</li> </ol>
Outcome	<b>Indicators</b>
EB1.7 Explores the phases of the moon and explains the formation of solar and lunar eclipse.	<p><b>This is evident when the student:</b></p> <ol style="list-style-type: none"> <li>a. Explains how solar and lunar eclipse occurs in relation to the position of Earth, Moon and the Sun.</li> <li>b. Creates models to illustrate solar and lunar eclipse.</li> <li>c. Researches on the phases of the Moon.</li> <li>d. Appreciates the phenomena of rotation and revolution of Sun and Moon.</li> </ol>

**Sub-strand:** Events on Earth and beyond occur on different scales of time and space

Outcome	<b>Indicators</b>
EB2.1 Researches the short and long term impacts of human activities on the environment.	<p><b>This is evident when the student:</b></p> <ol style="list-style-type: none"> <li>a. Studies some human activities within the locality and identify the impact on the environment.</li> <li>b. Discusses ways to create awareness on issues related to human activities and the impact on the environment.</li> </ol>

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### Outcome

EB2.2 Examines the various soil layers in a soil profile and recognize that soil layers are formed over time

### Indicators

#### This is evident when the student:

- Recognises that different soil layers have properties that can be measured.
- Differentiates between the different soils horizons using standard composition of each.
- Identifies the factors that may contribute to the formation of soil (*e.g. topography, parent material, climate, time, living organisms*).
- Recognises how soil is formed in the Maldives.

### Outcome

EB2.3 Prepares compost and uses composting as a means to sustainably enrich the soil.

### Indicators

#### This is evident when the student:

- Describes how a compost heap is established.
- Makes compost and advocates the benefits of composting.
- Surveys the extent to which composting is practiced in their locality.

## Sub-strand: Living things use the resources of the Earth, solar system and universe to meet their needs

### Outcome

EB3.1 Identifies that natural resources are affected by human activities and explore ways to sustainably manage them.

### Indicators

#### This is evident when the student:

- Identifies one's own needs and wants and relates to the needs of the world population.
- Identifies ways to reduce ecological footprint and advocates the importance of reducing consumption.
- Discusses how changing environments can have advantages and disadvantages (*e.g., cutting of trees to make roads, clearing swamp areas for land use*)
- Researches a global environmental issue (*e.g., deforestation, taking sand from the beach*) and identify the reasons why people continue to act in the same manner.
- Recognises that informed decisions have to be made when dealing with environmental issues to sustainably manage resources.

## Outcome

EB3.2 Explores the importance of ozone layer to sustain life on Earth.

## Indicators

**This is evident when the student:**

- a. Recognises that ozone layer protects the Earth from harmful radiation.
- b. Discusses the causes of ozone layer depletion and its effects.
- c. Identifies ways in which damage to ozone layer can be reduced.

## Outcome

EB3.3 Researches the availability of water and the impact of human activities on the quality of water.

## Indicators

**This is evident when the student:**

- a. Relates the comparative amount of fresh and salt water on the Earth to the availability of water for living organisms.
- b. Describes the effect of human activities (*e.g., landfills, use of fertilizers and herbicides, farming, septic systems*) on the quality of available water.
- c. Discusses measures taken to maintain quality of water in the community (*e.g. boiling, chlorinating etc.*)

## Outcome

EB3.4 Recognizes the properties of water that make it an essential component of the Earth System.

## Indicators

**This is evident when the student:**

- a. Identifies the properties of water that make it an essential component of the Earth System (*e.g., its ability to act as a solvent, its ability to remain as liquid at a wide range of temperatures*).
- b. Investigates the changes in state of water (freezing, condensation, precipitation, evaporation)
- c. Investigates some of the factors that affect evaporation (*e.g. temperature*)

## Outcome

EB3.5 Analyses a local environmental issue and identifies mechanisms to address the issue

## Indicators

**This is evident when the student:**

- a. Identifies some environmental issues in the locality (*e.g. beach erosion, reclaiming mangroves etc.*)
- b. Analyses the causes and possible solutions for a selected environmental issue.

## Strand: Matter &amp; Materials

## Sub-Strand Classifying and Changing Materials

Outcome	Indicators
MM1.1 Investigates properties such as biodegradability and solubility and explores how properties of materials relate to their usage.	<p><b>This is evident when the student:</b></p> <ol style="list-style-type: none"> <li>Investigates materials for their biodegradability (<i>e.g. leaf, paper, plastic, straw, food scraps, wood</i>)</li> <li>Compares the solubilities of substances in different solvents and groups them according to their solubility.</li> <li>Researches on the type of materials that different professions' use in their work. (<i>e.g. baker, builder, gardener, and engineer, goldsmith, carpenter</i>)</li> </ol>
Outcome	Indicators
MM1.2 Identify matter as everything that has mass and occupies space	<p><b>This is evident when the student:</b></p> <ol style="list-style-type: none"> <li>Recognizes no two objects can occupy the same space at the same time (<i>e.g., water level rises when an object or substance, such as a rock, is placed in a quantity of water</i>)</li> <li>Distinguishes between the three states of matter (solid, liquid and gas) in terms of shape, volume and arrangement of particle.</li> <li>Investigates properties of liquids, solids and gases. (<i>e.g. air takes up space in a balloon, air moves, water takes the shape of container</i>)</li> <li>Measures mass and volume using appropriate instruments and relates these two to properties of matter.</li> </ol>
Outcome	Indicators
MM1.3 Measures a range of physical quantities using appropriate methods and apparatus	<p><b>This is evident when the student:</b></p> <ol style="list-style-type: none"> <li>Follows appropriate procedures and selects appropriate instrument to measure a specific entity.</li> <li>Measures various physical quantities such as mass, temperature, volume etc.</li> </ol>

## Sub-Strand: Mixtures, Compounds &amp; Elements

Outcome	Indicators
MM2.1 Explores and identifies pure substances, mixtures and compounds.	<p><b>This is evident when the student:</b></p> <ol style="list-style-type: none"> <li>Identifies differences between pure substances and mixtures.</li> <li>Identifies elements as a pure substance.</li> </ol>

- c. Identifies compounds as substances formed from two or more elements.
- d. Studies and compares the differences in elements, mixtures, and compounds.

## Outcome

MM2.2 Explores and investigates the separating technique: chromatography and simple distillation and recognizes their importance in our lives.

## Indicators

**This is evident when the student:**

- a. Identifies chromatography as a technique for separating dissolved substances by different interaction with (i.e., travel through) a material.
- b. Identifies simple distillation as a technique for separating mixtures of liquids with different boiling points.
- c. Demonstrates to separate mixtures into their constituent parts. (*e.g. distillation and chromatography*)
- d. Researches on the use of the separation techniques (*e.g. distillation - water purification, chromatography*) in real life.

**Sub-Strand: Physical and Chemical Changes**

## Outcome

MM3.1 Explores and investigates the variety of changes materials undergo and classifies them into physical and chemical changes.

## Indicators

**This is evident when the student:**

- a. Investigates the observable changes that materials undergo as a result of everyday processes (*e.g. some fabrics colour fade more/ food colour changes in cooking, decaying of food*)
- b. Identifies that when matter undergo changes, their properties also changes (*e.g. changes observed while making Haluvidha*)
- c. Investigates that properties of materials change under certain conditions (*e.g. heating, cooling, freezing, / mixing: adding water*)
- d. Differentiate between physical and chemical changes.

## Strand: Energy and Change

## Sub strand: Types of Energy, energy sources and receivers

## Outcome

EC1.1 Explores and investigates that energy can be transformed from one type of energy into another.

## Indicators

**This is evident when the student:**

- a. Classifies system components of a selected item or a gadget into the following categories: energy source, energy receiver and energy transfer.

## Outcome

EC1.2 Investigates potential and kinetic energy and understands the factors that affect them.

## Indicators

**This is evident when the student:**

- a. Observes and manipulates to identify energy as potential or kinetic.
- b. Identifies and investigates the two factors that affect potential and kinetic energy (*e.g. height and weight*)

## Outcome

EC1.3 Explores and identifies that light is a form of energy and investigates the properties of light.

## Indicators

**This is evident when the student:**

- a. Identifies that light is a form of energy and that light travels from a source.
- b. Investigates the properties of lights using a flash-light, prism and lenses.
- c. Designs and make a model of a telescope.
- d. Appreciates the importance of sight.
- e. Recognizes the dangers of looking directly at the Sun and laser light.

## Sub strand: Electricity

## Outcome

EC2.1 Researches about the power generation of the power plant in their island/city and describes how the power plant is utilized for energy production

## Indicators

**This is evident when the student:**

- a. Researches the method of generating electricity in the island.
- b. Explores the transformation of electrical energy.

## Outcome

EC2.2 Explores the term conservation and explain its importance.

## Indicators

**This is evident when the student:**

- Recognizes that energy can neither be created nor destroyed, but it can be transformed (*e.g. chemical energy in a battery becomes electrical energy*)
- Investigate and identify ways to conserve energy.
- Recognises that energy that is apparently “lost” from a system has been transformed into other energy forms (usually heat or sound) that are not useful to the system (*e.g. sound from a car ‘s engine does not help the car move*)
- Describes how the use of technology affects the demand for energy.

**Sub strand: Magnets**

## Outcome

EC3.1 Explores and identifies that magnets have an invisible force field known as a magnetic field and makes a magnet.

## Indicators

**This is evident when the student:**

- Observes magnetic field by observing the patterns formed with iron filings using a variety of magnets.
- Investigates how magnets can be made by stroking a piece of iron or steel with a magnet.
- Identifies the properties of magnets and links to the Earth’s magnetic field.

**Sub strand: Force and Motion**

## Outcome

EC4.1 Explores and determines how people use simple machines to solve problems.

## Indicators

**This is evident when the student:**

- Identifies different types of simple machines (*e.g. Incline plane, screw, pulley, lever, wedge and wheel and axle*)
- Observes and describes the advantages of using a simple machine.
- Investigates relationships involving force and distance with simple machines.
- Applies knowledge of simple machines to solve an everyday problem.
- Designs and constructs a simple machine to move an object.

## Grade 6

### Outcome

EC4.2 Explores the use of levers as simple machines.

### Indicators

#### This is evident when the student:

- a. Identifies first class and second class levers.
- b. Observes and identifies the main parts of levers (force, weight and fulcrum).
- c. Investigates how simple machines make work easier.

### Outcome

EC4.3 Explores and identifies that the weight of an object is the force of the Earth on the object.

### Indicators

#### This is evident when the student:

- a. Identifies that objects are pulled downwards because of the gravitational attraction between them and the Earth.
- b. Appreciates that gravity is a force

*(Note: details of gravitational force is not required at this level)*

## Strand: Science and Technology

### Sub-strand: Science as a human endeavor

Outcome	Indicators
ST1.1 Explores the contributions to science made by people around the world	<p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"> <li>a. Outline some contributions to the development of scientific ideas made by people from different cultural and historical backgrounds.</li> <li>b. Studies major breakthroughs by scientists who have contributed to scientific developments (<i>e.g. discovery of penicillin, electric bulb, etc.</i>).</li> </ul>
Outcome	Indicators
ST1.2 Discusses the impacts and contributions of science.	<p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"> <li>a. Predicts about the immediate impact of some applications of science on their community and environment.</li> <li>b. Studies the contributions of science to the quality of life for a selected aspect. (<i>E.g. drinking water – availability of safe drinking water</i>).</li> </ul>

### Sub-strand: Design and Making

Outcome	Indicators
ST2.1 Implements their own designs and communicates their findings	<p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"> <li>a. Chooses appropriate materials to make a usable product.</li> <li>b. Designs and makes a plan to create a new or revised product.</li> <li>c. Evaluates own work and the work of others to make modifications.</li> <li>d. Reviews a product to identify possible adaptations.</li> </ul>

### Sub-strand: Using science wisely

Outcome	Indicators
ST3.1 Applies the knowledge gained to solve real life problems	<p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"> <li>a. Applies scientific knowledge to solve local problems (<i>e.g. food preservation, controlling mosquitos, and purification of water, etc.</i>).</li> </ul>

**Strand: Working Scientifically**

**Sub-strand: Observation, Questions & Hypothesis**

Outcome	Indicators
<p>WS1.1 Makes observations and selects appropriate scientific information to make predictions/hypothesis</p>	<p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"> <li>a. Uses appropriate tools in making observations.</li> <li>b. Uses appropriate vocabulary to explain events/ phenomena</li> <li>c. Recognises that there can be more than one explanation for a set of data.</li> </ul>

**Sub-strand: Investigations**

Outcome	Indicators
<p>WS2.1 Conducts simple investigations</p>	<p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"> <li>a. Formulates investigative questions.</li> <li>b. Identifies variables in an investigation.</li> <li>c. Plans procedures in carrying out simple investigations.</li> <li>d. Collects data using appropriate tools.</li> <li>e. Uses appropriate units in measurement</li> <li>f. Organizes data in appropriate ways.</li> <li>g. Proposes ways to improve the investigation.</li> <li>h. Analyses data to identify trends and make conclusions.</li> </ul>

**Sub-strand: Safety & Taking responsibility**

Outcome	Indicators
<p>WS3.1 Take care of themselves, others and respects others viewpoints.</p>	<p><b>This is evident when the student:</b></p> <ul style="list-style-type: none"> <li>a. Follows safety procedures given by the teacher (<i>e.g. wear gloves while using chemicals, wash the hand and clean the work area after an activity</i>).</li> <li>b. Demonstrates responsibility when doing practicals</li> <li>c. Listens and respects others viewpoints.</li> <li>d. Demonstrates and advocates the shared responsibility for addressing environmental issues. (<i>e.g. , reducing consumption, use durable products/ecofriendly products, save money etc</i>)</li> </ul>

# Planning, Teaching and Assessment Examples

## Sample lesson plan

<b>Subject: Science</b>	<b>Grade 4</b>	<b>Duration</b>
<b>Strand: Life and living</b>	<b>Sub-strand: Living things- their structure and functions</b>	
<b>Key competencies:</b>	<b>Shared values:</b>	
<b>Prior knowledge:</b>	<b>Materials Needed:</b>	

### Learning Outcomes:

Recognise that there are a variety of living things and most of them can be classified into plants, animals, fungi and bacteria. (diversity)

### Indicators:

This is evident when the student:

- Classifies some broad groups of living things into plants, animals, fungi, bacteria)
- Observes and make simple drawing of organisms from four groups of living things.
- Researches on the diversity of living things in a selected habitat (e.g. woods, mangroves, beach).

### Learning Intentions

- We are learning to classify living things into plants, animals, fungi and bacteria

### Success criteria

- We would be successful if we are able to
- Classify living things into 4 main groups (animals, plants, fungi and bacteria)
- Observe and make simple drawing of organisms from these groups.
- Research on a selected animal and presents them to the class.

<b>Duration</b>	<b>Teaching and Learning</b>	<b>Resources/ materials needed</b>	<b>Differentiated Instruction</b>
10 mins	<p><b>Introduction</b></p> <ul style="list-style-type: none"> <li>• Begin the lesson by warming students up with a review that will illustrate useful groupings of living and nonliving things.</li> <li>• Provide students with pictures of various living things (include plants, animals, bacteria and fungi)</li> <li>• Get students to discuss and group the things provided as per their own criteria. Let them give reasons for the way they have classified.</li> </ul>	<p>Pictures of living and non-living things</p> <p>Pictures of animals, plants, bacteria and fungi</p>	

	<p><b>Developmental activity 1</b></p> <ul style="list-style-type: none"> <li>• Brainstorm (in groups) on how they have classified the things which do not belong into animals or plants.</li> <li>• Let them share one reason why it isn't a plant or an animal. (teacher can make a note of the reasons on the board)</li> <li>• Teacher can make students aware that the given pictures can be grouped into 4 groups (bacteria, fungi, plants and animals) Discuss the reasons for grouping in such a way.</li> </ul>		
	<p><b>Developmental activity 2</b></p> <ul style="list-style-type: none"> <li>• Teacher can discuss the various parts of the microscope and let students to handle the microscopes. And also discuss with students on why we need to use a microscope to observe some of the things.</li> <li>• Provide students with prepared slides of bacteria and fungi to observe using a simple microscope.</li> <li>• Allow them to make sketches of the observed slides. Let them discuss the appearance.</li> </ul>	<p>Microscopes and prepared slides of bacteria and fungi.</p>	
	<p><b>Developmental activity 3</b></p> <ul style="list-style-type: none"> <li>• Get students to work in groups and do a research on a selected habitat for the diversity of organisms and their characteristics.</li> <li>• Let them present their work in groups. The other groups will give feedback based on the following criteria <ul style="list-style-type: none"> <li>○ Accuracy of the information</li> <li>○ Clear and confident in presenting</li> <li>○ Able to answer questions from the audience.</li> </ul> </li> </ul>	<p>Internet</p>	

	<p><b>Closure</b></p> <ul style="list-style-type: none"> <li>• Students will be identifying 2-3 aspects they have learnt during the day and would be explaining to their peers.</li> </ul>		
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**Assessment:**

- Students can be assessed on
  - how they have classified the given pictures and their reasoning
  - the appropriateness of the sketches drawn from the slides.
- Students can be assessed during presentations
  - The appropriateness of the information
  - Presentation skills
- Students can be assessed on how students work within groups.

**Extension option:**

- If an appropriate video is available on the diversity of animals and plants or anything related to the outcome. It would be worthwhile to show students.

Links to other key learning areas:

- Dhivehi and English

**Teacher reflection:**

Personal note of what went well and what needs to improve. This is to be filled by the respective teacher soon after the lesson.

## Glossary

animal	a living thing that relies on eating for energy
adaptation	a change in a living organism (species) which permits it to survive under new conditions. Cacti are adapted to live in desert conditions
appendages	a part or organ, such as an arm, leg, tail, or fin, that is joined to the axis or trunk of a body.
bird	any feathered, egg-laying vertebrates having feathers, wings, and a beak
blood	the red fluid which circulates in the bodies of higher animals transporting oxygen and nutrients. The red colouration is due to hemoglobin, the oxygen-carrying substance in red blood cells
balanced diet	a healthy diet that involves eating foods from all the different food groups
battery	the power source in a circuit made up of two or more cells
breathe	to take air into the lungs and expel it
circuit	a circuit is formed when electricity flows through the electrical components
current	the flow of electric charges through a wire or other conductor
classification	the process of sorting and arranging objects according to observable similarities and differences
compass	a device used to locate directions – the four points of the compass – north, east, south and west
condensation	the process of change from a gas to a liquid
clouds	any visible mass of water vapour or ice particles suspended in the atmosphere. There are 3 basic types: cirrus (thin wispy at high elevation); cumulus (dense mounds or heaps); stratus (low-lying, greyish, fog-like).
carnivores	a flesh-eating animal normally characterized by powerful jaws and especially developed canine teeth. Carnivores may be predators (polar bears, wolves) or carrion eaters
constellation	a pattern of stars which appear close together in the sky. This means only that they are in the same direction from Earth.
continent	one of Earth's main land masses. The seven continents are Europe, Asia, Africa, North America, South America, Australia, and Antarctica
diet	diet the variety of foods eaten by an animal or human
disease	illness brought about by infection with micro-organisms

dissolving	the process of a substance becoming part of a liquid – this is a reversible change
digestion	the breaking down of food into chemically simpler forms that can be absorbed and used by the body.
digestive System	the system of organs involved in digestion including, in mammals, the salivary glands, stomach, small intestine, liver, pancreas, and related structures
energy	all living things need energy in order to work – to move, grow etc. We eat food in order to provide the body with energy
evaporation	change of state from liquid to gas
echolocation	the determination, as by a bat, of the position of an object by the emission of sound waves which are reflected back to the sender as echoes
erosion	the wearing away of land forms by the removal of soil and other weathered products by natural forces as water, wind and gravity
environment	the overall conditions (physical, chemical, and biological) of the region in which an organism lives
fair test	a test where only one factor changes and all other factors are kept the same
fabric	manufactured cloth made of fibres - sometimes referred to as “material
flowering plants	plants that have flowers in order to reproduce
force	a push or pull tending to cause movement of a body, for example, the force of gravity
flower	the structures of a flowering plant concerned with reproduction
friction	is the force between two moving surfaces
food	any substance which serves to nourish an animal or plant to maintain its life and growth
fungi	A group of plant-like organisms which lack chlorophyll and live off decaying organic material or plant species. Mushrooms, mold, mildew and tree brackets are fungi. Molds and mildews are of fungal origin
gravity	A force of attraction between two masses. On Earth, this force is predominantly between an object and the planet itself, and results in the object’s weight
habitat	the place where animals and plants live e.g. seashore, woodland etc
heart	A muscular organ that pumps blood through the body’s circulatory system
hypothesis	A hypothesis is a supposition—or guess—advanced in an attempt to explain a happening and to be used as a basis for further investigations
herbivores	A vegetation-eating animal such as a caribou, muskox, cow, or horse. Such animals have teeth suited to grinding and digestive systems able to assimilate cellulose
interdependence	the pattern of dependence between animals and plants in a habitat – how the survival of one species relies on the survival of another in the food chain

insects	A class of invertebrates having a body of three parts (head, thorax, abdomen), having three pairs of legs and possibly one or two pairs of wings
invertebrates	Animals which lack a backbone or skeletal structure such as insects, spiders, snails, and worms
lever	A simple machine comprising a rigid rod pivoted at a fixed point, the fulcrum. The lever may serve to multiply force or to apply a force at a given position. A crowbar and a shovel act as levers.
luminous	property of something that is a light source e.g. a lighted candle
machine	A device permitting force to be applied in an advantageous manner to accomplish mechanical work. Six simple machines introduced in school science are: inclined plane, lever, pulley, screw, wedge, wheel and axle.
magnet	an object made usually from iron, nickel or cobalt materials which attracts other objects made from these materials
material	The substance or substances out of which a thing is or can be made
nutrition	The scientific study of the nature and quantities of nutritive elements needed for the growth, maintenance, and repair of living organisms and of the foods from which such nutritive elements may be obtained.
observation	Taking note of what occurs. A science process skill that calls for seeing and using, as appropriate, other senses.
omnivores	An omnivore is an organisms that eats meats and plants.
organ	A differentiated part of an organism, such as an eye, wing, or leaf, that performs a specific function
opaque	Impenetrable by light; neither transparent nor translucent
omnivores	An animal that eats both animal and plant matter
organisms	A living thing. Some characteristics which distinguish a living thing are: (i) movement (in whole or in parts), (ii) obtaining and making use of food, (iii) growing and repairing body parts, (iv) reproduction, and (v) responding to change in the environment.
predicting	forecasting what will appear on the basis of patterns and regularities observed in the past. Predicting is a science process skill.
pull	a force of attraction, for example, “the pull of gravity.”
push	a force of repulsion
population	the number of members of one particular species in a habitat
prism	a transparent body of this form, often of glass and usually with triangular ends, used for separating white light passed through it into a spectrum or for reflecting beams of light
rainbow	an arc of colours in the sky produced when sunlight is bent in droplets of falling rain. The sun is behind the observer, and the colours of the light spectrum (red, orange, yellow, green, blue, indigo, violet) are displayed. Under ideal conditions, an outer secondary rainbow may be visible, the order of colours being reversed.

sensitivity	the capacity of an organ or organism to respond to stimulation
senses	information—gathering faculty of an organism. Human senses are sight or vision, hearing, smell, taste, and touch (in general, but especially sensation in the fingertips)
stem	the above-ground central part of a plant which serves to support the leaves and flowering parts, and to transport water and minerals from the roots and nutrients from the leaves
shadow	an area of relative darkness caused by the blocking of light rays.
solar energy	energy derived from that portion of the Sun’s radiation that strikes Earth. Solar energy warms water and land, causes evaporation to perpetuate the water cycle, and provides light for photosynthesis. Solar energy may also refer to electrical energy derived from solar radiation through photovoltaic cells
solar System	the Sun and the planets and other bodies that orbit about it. Comets, asteroids, meteoroids, and planets’ moons therefore also belong to the Solar System
stomach	A major organ of digestion. Digestion begins in the mouth with the mixing of food and saliva, and continues in the stomach and small intestine where the food mixes with the acids and other secretions.
solar eclipse	when the sun, moon and Earth are lined up such that the moon appears to cover the sun and a shadow is cast on the Earth
sound	a longitudinal wave form of energy of a frequency and intensity that is capable of being detected by the human ear
species	In the overall classification of organisms, a group of similar individuals capable of breeding and producing fertile offspring.
temperature	the degree of hotness or coldness of a body or environment
translucent	transmitting light but causing sufficient diffusion to prevent perception of distinct images
transparent	capable of transmitting light so that objects or images can be seen as if there were no intervening material
variation	differences between organisms of the same species
variables	the factors that can be changed or measured in a fair test
vertebrate	have a backbone or spinal column
waterfall	a vertical flow of water, typically from considerable height, where a river flows over a ledge
water vapor	water in a gaseous state
weather	the current or short-term conditions of the atmosphere including temperature, pressure, wind speed and direction, sunshine and cloud cover, and amount and nature of precipitation. Long-term conditions constitute climate
weathering	the breaking down and alteration of rocks and minerals by physical and chemical processes, including frost action, temperature change, and acidic reactions. Removal of the products of weathering—as by water, wind, and glacial action—is termed erosion