Science in The National Curriculum

Key Stage 1 (grade 1, 2 and 3)
Science in the National Curriculum
National Institute of Education
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Maledives
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The publisher is grateful for the immense work done by the Science panel members who have contributed their time and effort to revise and finalize the contents of the Science Syllabus. In particular, we wish to thank:

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<td>Zaherin Zahir</td>
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Foreword

May Almighty Allah bestow his blessings and mercy upon Mohamed, 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
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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, 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 ensures that student 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 lifestyle 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. Science curriculum is also designed taking into account these principles.

The teaching 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 Islamic values 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.

Likewise, in designing the indicators consideration has been given to include a range of indicators that takes into account various learning styles and cognitively differentiated such that every student has the opportunity to reach to personal excellence.

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, learning for sustainable development is very much part and parcel of the environment, science and technology curriculum which encompass many of the aspects highlighted. Students are expected to explore how human activities impact the environment and identify ways to take care of the environment. In addition, many opportunities 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 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, synthesises and evaluates 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 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. 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 material is the study of matter. It looks into the composition and properties of matter. It explores the changes the matter undergoes and the energy involved. This strand also includes the study of wide range of materials and substance 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.
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 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, ecological studies.

This strand gives ample opportunities for students to participate in discussions so that they open 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:

- 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 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 account for student needs, their local environment and familiarity. It should also ensure continuity and progression in student’s learning. For smooth transition from each level requires to teachers to be aware of the students past learning experiences.

Although it is encouraged that a thematic approach be used in teaching science, it needs to be understood that to achieve certain outcome may require specific teaching related to the selected outcomes and indicators.

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 in explicit teaching of numeracy skills 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 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-centered 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 K.S – 1 (grade 1, 2 and 3) students:

<table>
<thead>
<tr>
<th>Key Stage</th>
<th>Contact Time/Weeks</th>
<th>Minimum Contact Time/Year</th>
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<tbody>
<tr>
<td>Key Stage 1 (Grade 1, 2 &amp; 3)</td>
<td>180 min (4 periods/week)</td>
<td>109hrs (146 periods of 45 min)</td>
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**Teaching and Learning Science**

Science deals with the development of knowledge & 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 constructs their own meaning and assimilates 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 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
c. Recognising patterns
d. Estimating and measuring
e. Questioning
f. Making and testing
g. Predicting
h. Investigating and experimenting
i. Recording and communicating
j. 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 environmental vulnerabilities locally as well as globally, 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 student 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 student’s needs.

**Assessment as Learning (Formative Assessment)**

Assessment as learning is student driven whereby students 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 students’ 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 making 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
## Scope and Sequence by Strand

### Strand – 1: Life and Living

<table>
<thead>
<tr>
<th>Sub-strands</th>
<th>Grade 1</th>
<th>Grade 2</th>
<th>Grade 3</th>
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<td>Living things, their</td>
<td>Characteristics of living things and distinguish living from non-living</td>
<td>Characteristics of living things</td>
<td>Characteristics of living things using basic scientific vocabulary.</td>
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<td>Variety of living things with</td>
<td>Classification of living things based on their characteristics.</td>
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<td>plants and other animals.</td>
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<td>Inter-dependence of life</td>
<td>Different habitats within an environment.</td>
<td>Different habitats of living things.</td>
<td>Study various environments to identify how living things meet their basic needs.</td>
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<td>Reproduction and change</td>
<td>Living things produce young ones</td>
<td>Differences among same kinds of plants and animals.</td>
<td>Differences among same kinds of plants and animals.</td>
</tr>
<tr>
<td></td>
<td>Similarities and differences between them.</td>
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<tr>
<td></td>
<td>Changes that living things undergo as they grow and become older.</td>
<td>Relates how living things change as they grow</td>
<td>How living things change as they grow and develop.</td>
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### Strand – 2: Earth and Beyond

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<tr>
<td><strong>Earth, Solar System and Universe as dynamic systems</strong></td>
<td>Features of their immediate environment</td>
<td>Features of the Earth (from globes, maps and other means) in relation to natural and built environments</td>
<td>Major land and water forms on Earth and recognizes that large proportion of the Earth is ocean.</td>
</tr>
<tr>
<td></td>
<td>Features of the Sun and its effects on humans and the environment.</td>
<td>Composition and features of the Sun and the Earth.</td>
<td>Features of the Sun, Earth and Moon and makes comparison between Sun, Moon and the Earth.</td>
</tr>
<tr>
<td></td>
<td>Describes familiar events/phenomena that occur in their environment.</td>
<td>Natural features and phenomena and its relation to humans.</td>
<td>Characteristics that make the Earth a suitable environment for life to exist.</td>
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<td></td>
<td>Natural phenomenon’s in relation to day and night.</td>
<td>Process of water cycle.</td>
<td>Processes of water cycle and its importance to life.</td>
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<td></td>
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<td>Local weather patterns and weather experienced at various parts of the world.</td>
<td>Elements of weather and features of seasons.</td>
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<tr>
<td></td>
<td>Changes that occur in Earth are cyclical.</td>
<td>Changes occur to the Earth and some of the changes are cyclical.</td>
<td>Life on Earth has changed over time.</td>
</tr>
<tr>
<td><strong>Events on Earth and beyond occur on different scales of time and space</strong></td>
<td>Changes in the locality occur over time.</td>
<td>reasoning out the changes in their locality</td>
<td>Reasoning out the changes in the locality and how it impacts life.</td>
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<tr>
<td></td>
<td>Physical properties of soil and how soil is used by living things.</td>
<td>Physical properties of soil.</td>
<td>Composition of soil from various locations.</td>
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<td>Natural things found in soil and how they are used by living things.</td>
<td>Living things depend on soil for various purposes.</td>
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<tr>
<td>Living things use the resources of the Earth, solar system and universe to meet their needs</td>
<td>Use of Earth’s environment and the importance of conserving the resources.</td>
<td>Earth’s environment is used by living things. Impacts of the overuse of resources.</td>
<td>Earth’s environment is used by living things for various purposes.</td>
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<tr>
<td>Physical properties of water and relates to some of its uses.</td>
<td>Physical properties of air and water.</td>
<td>Physical properties of air and water within the environment Essential component of the Earth System</td>
<td>Earth’s resources can be classified into renewable and non-renewable</td>
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<tr>
<td>Environment can become polluted and necessary measures.</td>
<td>Types of pollution and ways to minimize.</td>
<td>sense of responsibility for taking care of and improving the environment</td>
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<tr>
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<tr>
<td>Properties of materials</td>
<td>Objects are made of particular material</td>
<td>Materials can be changed by different means</td>
<td>Uses of materials are determined by their properties and some things can be changed.</td>
</tr>
<tr>
<td></td>
<td>Links between materials and their properties</td>
<td>Change can happen faster or slowly and their causes</td>
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</tr>
<tr>
<td>Materials and their uses</td>
<td>Grouping objects according to their uses, properties and material types</td>
<td>Grouping objects according to their uses, properties and material types</td>
<td>Grouping objects according to their uses, properties and material types</td>
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<tr>
<td>Mixtures, Compounds and Elements</td>
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<tr>
<td>Physical and Chemical Changes</td>
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</table>
## Strand – 4: Energy and Change

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<tbody>
<tr>
<td>Energy and its impact</td>
<td>Humans get the energy resources they need from the environment</td>
<td>Various effects of energy in our lives.</td>
<td>Various effects of energy and its impacts on our lives.</td>
</tr>
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<td></td>
<td>How the sun affects the environment.</td>
<td></td>
</tr>
<tr>
<td>Wise Use of Energy</td>
<td>Various ways to use energy wisely at home and school.</td>
<td>Ways on how energy is used at home and different ways energy can be used wisely.</td>
<td>Different ways in which energy can be used wisely.</td>
</tr>
<tr>
<td>Types of Energy, energy sources and receivers</td>
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<td>-</td>
</tr>
<tr>
<td>Electricity</td>
<td>Safety measures in using a variety of electrical appliances.</td>
<td>Use of electricity at home and the safety measures taken in using electrical appliances.</td>
<td>Electric circuits and circuit components.</td>
</tr>
<tr>
<td>Magnets</td>
<td>Different magnets and their effects on different materials.</td>
<td>effects of magnets on different materials</td>
<td>Relationship between magnets and compass.</td>
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<tr>
<td></td>
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<td>Classification of magnetic and non-magnetic material.</td>
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<tr>
<td>Sound Energy</td>
<td>Natural and artificial sounds in the environment</td>
<td>Making sounds and identifying that it is a form of energy.</td>
<td>Sound is a form of energy which travels as vibrations from a source.</td>
</tr>
<tr>
<td></td>
<td>Sound - a form of energy</td>
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</tr>
<tr>
<td>Light Energy</td>
<td>Different colours in the environment</td>
<td>Relationship between light and materials</td>
<td>Light can be split into many different colours.</td>
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</tr>
<tr>
<td>Force and Motion</td>
<td>Push and pull can cause some objects to move.</td>
<td>Motion of objects and ways to change the motion of an object.</td>
<td>Various effects of forces on movement of objects.</td>
</tr>
<tr>
<td>Sub-strands</td>
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</tr>
<tr>
<td>Science as a human endeavour</td>
<td>Use of science and how scientists work.</td>
<td>Scientific method-way scientists work</td>
<td>Contributions to science</td>
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<tr>
<td></td>
<td>Scientific knowledge used to understand events/phenomenon</td>
<td>Scientific knowledge used to understand events/phenomenon</td>
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<tr>
<td></td>
<td>Contribution of science to quality of life.</td>
<td>Contribution of science to quality of life.</td>
<td>Impacts and contributions of science.</td>
</tr>
<tr>
<td>Design and making</td>
<td>Formulating ideas and implementing designs.</td>
<td>Implements designs and communicating of findings</td>
<td>Implements designs and communicating of findings</td>
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<tr>
<td></td>
<td>Follow scientific methods to make informed decisions</td>
<td>Applies the knowledge gained to make informed decisions</td>
<td>Applies the knowledge gained to solve real life problems</td>
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<tr>
<td>Sub-strands</td>
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<tr>
<td>Observation and communication</td>
<td>Observational skills and communicates their observations in various means and methods.</td>
<td>Observational skills and communicates their observations in various means and methods.</td>
<td>Observational skills and communicates their observations in various means and methods.</td>
</tr>
<tr>
<td>Safety and responsibility</td>
<td>Take care of themselves, others and respects others viewpoints.</td>
<td>Take care of themselves, others and respects others viewpoints.</td>
<td>Take care of themselves, others and respects others viewpoints.</td>
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</table>
Grade 1 Syllabus Details
GRADE 1

Strand – 1: Life and Living

Sub-strand: Livings Things - Their Structure and Functions

Outcome:
LL 1.1: Explore the characteristics of living things and distinguish living from non-living

Indicators:
This is evident when the student:
  a. Identifies and records observable characteristics of living things (e.g., move, take in food etc.)
  b. Compares the characteristics of living things and non-living things.

Outcome:
LL 1.2: Recognises that there are a wide variety of living things with different characteristics.

Indicators:
This is evident when the student:
  a. Observes and groups living things in to two broad categories plants and animals.
  b. Examines and identify that there are many different types of organisms that differ in body shape, form, size and have different names.
  c. Recognizes that there are many different types of animals and plants and appreciates the creations of Allah.

Outcome:
LL 1.3: Demonstrate care for themselves, other, plants and other animals.

Indicators:
This is evident when the student:
  a. Shows interest in and curiosity about living things.
  b. Discusses some of the ways to care for living things.
  c. Demonstrates respect and care for living things.
  d. Follows established safety procedures and humane practices while handling living things.

Outcome:
LL 1.4: Explore characteristics of five senses and relates the importance of senses to humans.

Indicators:
This is evident when the student:
  a. Identifies that humans have five senses and sense organs, each one of them give different information, which allow us to find out about the environment.
  b. Describes the range of observations related to each sense. (e.g. Sound: loud, soft-textures: hard or soft, smooth or rough, sticky or not sticky-taste –smell, appearance)
  c. Assess how each of the senses helps us to recognize, describe, and safely use a variety of materials.
  d. Shows empathy towards people who are deprived of one or more of the senses.
Outcome:
LL 1.5: Recognises that living things have different external body parts /structures for different functions.

Indicators:
This is evident when the student:

a. Illustrates the external body parts of humans and communicates these with others.

b. Observes appendages of different living things using magnifying glass and records the measurements. (E.g. arms, legs, wings, fins, and tails, that extend from the main body and that have specific functions. (students need not know the term appendages)

c. Observes the external structures of plants (e.g. flower, bark and leaves etc)

Sub-strand: Interdependence of Life

Outcome:
LL 2.1: Explore the different habitats within an environment and describes how basic needs of living things are met.

Indicators:
This is evident when the student:

a. Identifies familiar living things in the immediate environment, their roles and uses, (e.g. Cats and birds can be pets; trees give us shade, and food).

b. Describes the basic needs of living things (e.g., food, water, air, and shelter) using personal observations and their own needs.

c. Groups animals according to the environments in which they live (e.g., land, sea, air)

d. Analyses a selected environment (e.g., sea, land and air) to gather information about the variety of living things in the environment.

Outcome:
LL 2.2: Recognises the sources of food and group food in to different categories.

Indicator:
This is evident when the student:

a. Identifies foods that come from different sources, such as plant and animal.

b. Categorises food in to different groups (e.g., Milk and Milk Substitutes, Bread group, bread and cereals, Meat Group, meat, fish, birds and eggs, Fruit and Vegetables Group).

c. Recognizes that food gives us energy.

d. Recognises that we need to eat foods from all the food groups.

Sub-strand: Reproduction and Change

Outcome:
LL 3.1: Identifies that living things produce young ones and compares similarities and differences between them.

Indicators:
This is evident when the student:

a. Recognises that all living things produce young ones.

b. Examines a variety of living things and their young ones and compares the similarities and difference between them.
Outcome:

LL 3.2: Identifies the changes that living things undergo as they grow and become older.

Indicators:

This is evident when the student:

a. Illustrates by various means the changes that have taken place in themselves since birth. (e.g., height, weight, body size etc.).

b. Identifies observable features of living things that change over time (e.g., eggs-butterfly, young – old people).
Strand – 2: Earth and Beyond

Sub-strand: Earth, Solar System and Universe as Dynamic Systems

Outcome:
EB 1.1: Describes the features of their immediate environment and shows interest towards the environment.

Indicators:
This is evident when the student:

a. Observes and describes different features of their immediate environment (e.g., water, sun, sky, land, roads, beaches, trees)

b. Creates a model of their immediate environment.

c. Shows interest, curiosity and respect towards their surroundings.

Outcome:
EB 1.2: Begins to describe features of the Sun and explore its effects on humans and the environment.

Indicators:
This is evident when the student:

a. Describes the Sun as only being seen in the day time.

b. Recognizes that Sun gives heat and light.

c. Investigates some effects of the Sun on humans and the environment (e.g., Sun warms the land, we feel hot)

d. Acknowledges that Sun is a creation of Allah.

Outcome:
EB 1.3: Explores and describes familiar events/phenomena that occur in their environment.

Indicators:
This is evident when the student:

a. Discusses familiar events/phenomena e.g. (natural processes: sunrises, presence of rain, change of colour of clouds).

b. Makes prediction about the environment and natural phenomena (e.g., sunset, sunrise, rain, wind, rainbows)

c. Poses questions about changes in natural phenomena (e.g., sunlight, and temperature) in their environment over the course of a day.

Outcome:
EB 1.4: NA

Outcome:
EB 1.5: Observes records and describes natural phenomenon’s in relation to day and night.

Indicators:
This is evident when the student:

a. Observes and describes what they see in the sky during day and night.

b. Documents the visibility and position of objects (e.g., sun, moon) in the sky at different times of the day and month

c. Creates visual or physical representations of differences in natural phenomena for day and night. (e.g., creates a model of the sky (day /night) using everyday materials).
Outcome:
EB 1.6: Observes records and describes local weather and how it affects us.

Indicators:
This is evident when the student:

a. Observes and describes weather patterns for the day (e.g., today is a rainy day).
b. Measures and records simple weather data for a week (e.g., cloud cover, precipitation, temperature).
c. Uses appropriate vocabulary to describe the weather (e.g., cloudy, rainy, sunny, windy).
d. Listens to weather forecasts and communicates this in their own words.

e. Identifies how the weather conditions affect the type of activities that we do (e.g., in rainy days, we clean the roofs to collect water. In sunny days, children enjoy outdoor activities, dry clothes).

Outcome:
EB 1.7: NA

Outcome:
EB 1.8: Recognises that some changes that occur in Earth are cyclical.

Indicators:
This is evident when the student:

a. Describes and records features of day and night (e.g. light, temperature, cloud, sky).
b. Describes activities that they do during day and night.
c. Appreciates the fact that day and night is created for a particular reason (e.g., people rest at night and work during the day time).

Sub-strand: Events on Earth and Beyond Occur on Different Scales of Time and Space

Outcome:
EB 2.1: Begins to recognise that changes in the locality occur over time.

Indicators:
This is evident when the student:

a. Identifies that some changes are very slow while other changes are fast (e.g. changing of landscape, day and night).
b. Recognises some changes in nearby environment (e.g., landscape of school yard, neighbourhood).
c. Compares the changes to the locality that have occurred overtime (e.g. landscape: past and present).

Outcome:
EB 2.2: Observes and describes the physical properties of soil and how soil is used by living things.

Indicators:
This is evident when the student:

a. Observes and describes soil samples from different locations and compares similarities and differences in relation to colour, size and texture.
b. Observes and suggests ways on how plants and animals use soil (e.g. provide shelter for some animals, plants get their nutrients in the soil).
Sub-strand: Living things Use The Resources of The Earth, Solar System and Universe to Meet Their Needs

Outcome: EB 3.1: Identifies how Earth’s environment is used and the importance of conserving the resources.

Indicators:
This is evident when the student:

a. Discusses how Earth’s environment is used to fulfill various needs: (e.g. Sun, water, shelter and gases)

b. Identifies that resources such as air and water are obtained from the environment.

c. Recognizes that some of the resources can be conserved, reused and recycled.

Outcome: EB 3.2: NA

Outcome: EB 3.3: Observes and describes the observable physical properties of water and relates to some of its uses.

Indicators:
This is evident when the student:

a. Observes and describes various water samples in terms of colour, smell, turbidity (opaque and muddy).

b. Recognizes why clean water is important and discusses the use of water.

c. Expresses ways to reduce water usage.

Outcome: EB 3.4: Recognises that the environment can become polluted and discuss necessary measures.

Indicators:
This is evident when the student:

a. Discusses and communicates their views on the quality of the environment.

b. Recognises the importance of conserving resources (e.g., water, air, land etc.)

c. Identifies ways they care for the environment (e.g., switch off lights, use both sides of the paper, recycling, reuse)
Strand – 3: Energy and Change

Sub-strand: Energy and Its Impact

Outcome:
EC 1.1: Becomes aware that humans get the energy resources they need from the environment.

Indicators:
This is evident when the student:

a. Identifies everyday uses of various sources of energy (e.g. Sun enables plants to grow and gives us warmth, electricity lights our houses, fuel to run vehicles, food gives us energy to move.)

b. Recognises that Sun is the major source of energy on Earth.

c. Appreciates that the Sun is one of Allah’s creation and all life depend on it.

d. Investigates how various energy sources (e.g. Sun, wind, electricity) are used in the immediate environment (e.g. home/school/island.)

Sub-strand: Wise Use of energy

Outcome:
EC 2.1: Recognises various ways to use energy wisely at home and school.

Indicators:
This is evident when the student:

a. Identifies ways to save energy and resources through discussions, role plays, scenarios.

b. Avoids wasting energy and resources both at home and at school.

Sub-strand: Force and Motion

Outcome:
EC 3.1: Identifies push and pull can cause some objects to move.

Indicators:
This is evident when the student:

a. Identifies pushes and pulls in everyday action (e.g. opening a can)

b. Manipulates the motion of various objects and classifies movements as push and pull.

c. Designs and make a device that can be used for carrying toys.

Sub-strand: Electricity

Outcome:
EC 4.1: Identifies safety measures while using a variety of electrical appliances.

Indicators:
This is evident when the student:

a. Recognises the need for safety when using electricity (e.g. never touch an electrical object with wet hands or not to touch sockets and torn wires or not to plug an appliance when barefooted.)

b. Discusses what to do in an emergency and follows, drills the safety procedure (E.g. dial 112)
Sub-strand: Magnets

Outcome:
EC 5.1: Becomes aware of the different magnets and their effects on different materials.

Indicators:
This is evident when the student:
- Identifies that magnets attract and repel each other.
- Use magnets to explore their effects on different materials.
- Through purposeful play, relates that that the ends of the magnets are the most powerful.

Sub-strand: Sound Energy

Outcome:
EC 6.1: Becomes aware that there are lots of different sounds in the environment (natural and artificial) and this is a form of energy.

Indicators:
This is evident when the student:
- Identifies that sounds can be loud or quiet.
- Discriminates among various natural and artificial sounds.
- Recognizes that loud sounds are harmful to human ears and we need to be careful with it.
- Recognises that sound is a form of energy and it travels away from the sources.

Sub-strand: Light Energy

Outcome:
EC 7.1: Becomes aware that there are different colours in the environment and identifies different sources of light.

Indicators:
This is evident when the student:
- Identifies various sources of light.
- Identifies the Sun as the primary source of light.
- Compares natural sources of light and human made sources of light.
- Observes and records what happens to light as it passes through a prism.
- Describes what happens to light by experimenting with colours using variety of filters.
**Strand – 4: Matter and Material**

**Sub-strand: Materials and Their Properties**

**Outcome:**

**MM 1.1:** Becomes aware that objects are made of particular material and make links between materials and their properties.

**Indicators:**

**This is evident when the student:**

a. Explores a collection of materials using their senses. (E.g. steel is hard and shiny, wood is brown in colour).

b. Examines all the objects within the classroom/school and identifies the materials they are made from and find out which material is most commonly used.

c. Designs and makes a favorite object from selected materials and explains their choice of materials (e.g. hand puppet)

**Sub-strand: Materials and Their Uses**

**Outcome:**

**MM 2.1:** Group objects according to their uses, properties and material types.

**Indicators:**

**This is evident when the student:**

a. Explores different ways of grouping a given set of materials (e.g. by colour, by size, by texture)

b. Uses appropriate vocabulary in describing their observations (e.g. use words such as soft, smooth, rough and sticky in describing textures)

c. Examines the objects within the classroom/school and explains why they are made of specific material (e.g. window is made of glass because it is see-through)
### Strand – 5: Science and Technology

#### Sub-strand: Science As Human Endeavour

**Outcome:**
ST 1.1: Recognises that scientists work in a particular way.

**Indicators:**

*This is evident when the student:*

  a. Demonstrates curiosity and poses questions.
  b. Talks about scientific inventions and discusses about their work (e.g. invention of bicycles).
  c. Cooperates with others in a group or pair settings.

**Outcome:**
ST 1.2: Begins to explore how science has contributed to our way of life.

**Indicators:**

*This is evident when the student:*

  a. Identify things that helps us in our daily lives (e.g. scissors, computers)
  b. Discusses and appreciates the work of scientists (e.g. knowledge of science has contributed in making many things such as equipment, gadgets, machineries)

### Sub-strand: Design and Making

**Outcome:**
ST 2.1: Begins to formulate ideas and implement their own designs.

**Indicators:**

*This is evident when the student:*

  a. Manipulates a range of materials and objects.
  b. Identifies different characteristics of different objects and give reasons for the preferences.
  c. Designs and make a plan to create a new or revised product.
  d. Uses a range of tools and equipment to make a product/object.
  e. Evaluates own work and the work of others.

### Sub-strand: Using Science Wisely

**Outcome:**
ST 3.1: Begins to make informed decisions

**Indicators:**

*This is evident when the student:*

  a. Observes and distinguishes real events/objects using their direct or indirect experiences.
### Strand – 6: Working Scientifically

#### Sub-strand: Observation and Communication

**Outcome:**
WS 1.1: Begins to develop observational skills and communicates their observations in various means and methods.

**Indicators:**
This is evident when the student:
- a. Uses appropriate tools and their senses to make observations of real objects and events in their surroundings.
- b. Describes their observations using simple scientific terms (e.g. we measured, we observed, we think.)
- c. Participates in discussions related to finding solutions to a problem.

#### Sub-strand: Investigation

**Outcome:**
WS 2.1: Conducts investigations by observing, questioning, recording data and suggesting possible explanations with guidance.

**Indicators:**
This is evident when the student:
- a. Asks questions about events, phenomena
- b. Carries out simple investigations with teacher assistance.
- c. Talks about their observations/recorded data, drawings and shares their experiences with others.
- d. Expresses their own ideas and respecting others views.

#### Sub-strand: Safety and Taking Responsibility

**Outcome:**
WS 3.1: Begins to take care of themselves, others and respects others viewpoints.

**Indicators:**
This is evident when the student:
- a. Follows safety procedures given by the teacher (e.g. handlings things carefully, washing hands, not tasting things unless instructed by the teacher)
- b. Recognizes the importance of being responsible in carrying out practicals (e.g. taking care of animals, handling equipment)
Grade 2 Syllabus Details
GRADE 2

Strand – 1: Life and Living

Sub-strand: Livings Things - Their Structure And Functions

Outcome: LL 1.1: Explore the characteristics of living things and identify the needs of living things

Indicators:

This is evident when the student:

a. Researches the characteristics (takes in food, breathe, get rid of waste, reacts to environment) of a selected organisms as a living thing and communicates them using every day language

Outcome: LL 1.2: Classify living things based on their characteristics.

Indicators:

This is evident when the student:

a. Classifies characteristics of animals and plants by using the senses (e.g., texture, color, size, sounds)

b. Observes and records information, about the appearance and behaviour of familiar animals, such as personal pets.

c. Classifies organisms according to one selected feature, such as body covering, and identify other similarities shared by organisms within each group formed. (E.g. Both rabbits and cats have fur and they both feed their young ones)

Outcome: LL 1.3: Demonstrate that people need to care for themselves plants and other animals in their locality

Indicators:

This is evident when the student:

a. Explores how people demonstrate respect for living things by caring for domestic plants and animals (e.g., growing a plant, hatching eggs).

b. Follows established safety procedures and humane practices while handling living things.

c. Demonstrates ways to care for themselves and others.

d. Reflects on how people care and show empathy towards people from different age groups.

e. Appreciates the blessings of Allah (e.g. good health, five senses etc.)

Outcome: LL 1.4: Explore the characteristics of five senses in humans and compares the senses with other animals.

Indicators:

This is evident when the student:

a. Explore the relationships between senses. (e.g., noise seeming louder when you can’t see).

b. Compares the ways humans use their senses to make meaning with the ways animals make meaning (e.g. receive messages from all around, smell of food, signals of danger).
Outcome:

LL 1.5: Explore and describes the relationship between the different external features/structures to their survival

Indicators:

This is evident when the student:

a. Observes external structures of different animals and identify the use of observed structures. (e.g., appendages, hair and antenna.)

b. Observes external features of selected animals and relates them to their habitat/nutrition/movement (e.g., webbed feet in ducks for movement/long neck in herons for feeding/fish live in water etc)

c. Observes and records external features of plants and reasons out their observations.

Outcome:

LL 1.6: Identifies the main internal body parts and ways to care for it.

Indicators:

This is evident when the student:

a. Identifies the locations of major internal organs of the human body (e.g. lungs, heart, stomach etc.)

b. Examines body’s physical responses in relation to various activities such as, (e.g. chest going up and down when breathing, heart beat rate related to various physical activities, eyes blinking).

c. Relates the internal organs to specific bodily functions (e.g. stomach stores food temporarily heart to pump blood, lungs for breathe)

d. Discusses some activities that could harm our body organs (e.g., taking in too much of junk of food, inhalation of smoke, dust, lack of exercise)

Sub-strand: Interdependence of Life

Outcome:

LL 2.1: Explore the different habitats of living things and relates how basic needs of living things are met.

Indicators:

This is evident when the student:

a. Describes that many living things have common basic needs (e.g., food, water, air, and shelter).

b. Examines living things in different environments to identify how they meet their basic needs.

c. Identifies various plants that are found in different environments (e.g. beach, mangroves, etc.)

d. Creates a diorama for a selected habitat showing plants and animals life.

Outcome:

LL 2.2: Explore and analyses healthy eating practices in relation to food groups.

Indicators:

This is evident when the student:

a. Identifies the food groups and foods that fit into each category (cereal group, milk group, meat group, fruits and vegetables).

b. Records the types of food taken at different meal times and identifies foods that make up a healthy diet.

c. Discusses a variety of eating practices to identify healthy eating practices.
d. Analyses the current eating habits of students and compares it with a healthy diet.

**Sub-strand: Reproduction and Change**

**Outcome:**
**LL3.1:** Identifies the differences among same kinds of plants and animals.

**Indicators:**

This is evident when the student:

a. Identifies some of the ways in which young ones differ from their parents.

b. Describes differences between humans (e.g. Skin color, height, hair color, type of hair etc.)

c. Collects and organises data about the observable features of themselves, (e.g. eye colour, size of feet, hair colour)

d. Observes and compares features of a selected plant species.

**Outcome:**
**LL3.2:** Explore and relates how living things change as they grow.

**Indicators:**

This is evident when the student:

a. Measures and records the height of different students and uses the collected data to make inferences regarding growth.

b. Identifies growth and change patterns in familiar animals.

c. Investigates the changes that occur as a seed grow into a seedling.
**Strand – 2: Earth and Beyond**

**Sub-strand: Earth, Solar System and Universe As Dynamic Systems**

**Outcome:**

**EB 1.1:** Identifies and locates features of the Earth (from globes, maps and other means) in relation to natural and built environments.

**Indicators:**

This is evident when the student:

a. Locates major features (land, water, built environment) of the Earth through the use of globes, maps and other means.

b. Locates at least three atolls/islands from a map of Maldives.

c. Discusses and identifies at least three natural features that are protected in the Maldives (e.g. Eadhigali kilhi at S. Hithadhoo)

d. Describes natural and built environment around them using appropriate terminology (e.g., rocky beaches, sandy beach)

e. Appreciates the natural features

**Outcome:**

**EB 1.2:** Describes the composition and features of the Sun and the Earth.

**Indicators:**

This is evident when the student:

a. Identifies Earth as a sphere in space.

b. Compares the shapes and sizes of the Sun and Earth.

c. Recognises that the energy from the Sun is essential for life on Earth.

d. Identifies basic pattern to the Sun’s movement (e.g., the sun rises in the morning, is overhead in the middle of the day, sets in the evening).

e. Describes the composition of the Sun and the Earth (e.g. Sun as a ball of gas, Earth consists of land and water).

**Outcome:**

**EB 1.3:** Explores and describes natural features and phenomena and its relation to humans.

**Indicators:**

This is evident when the student:

a. Poses questions regarding natural phenomena.

b. Observes and describes some natural phenomena (e.g. rain, rainbow, thunderstorms, wind)

c. Discusses and identifies how various events/phenomenon help us (e.g., rain gives us water)

d. Appreciates natural phenomena (e.g., rainbow)
Outcome:

EB 1.4: Describes the phases of the Moon.

Indicators:

This is evident when the student:

a. Describes the changing position of the Moon in the sky.

b. Observes, draws, and describes the apparent shape of the Moon from week to week.

c. Appreciates the creations of Allah and its beauty.

Outcome:

EB 1.5: Describes the processes involved in water cycle.

Indicators:

This is evident when the student:

a. Describes the process of evaporation and condensation in relation to water cycle.

b. Explains evaporation and condensation using everyday examples.

c. Recognises that only Allah has the power to change the state of matter.

d. Describes clouds and precipitation as forms of water.

Outcome:

EB 1.6: Recognises local weather patterns and weather experienced at various parts of the world.

Indicators:

This is evident when the student:

a. Examines weather patterns over a week at different times and communicates them appropriately.

b. Makes instruments and record weather data using the instruments (e.g., wind vane, rain gauge).

c. Recognises that we experience two monsoons in the Maldives (e.g., Iruvai and Hulhan’gu).

d. Discusses weather conditions people experience in different parts of the world.

Outcome:

EB 1.7: Recognises the impact of weather on society and the environment.

Indicators:

This is evident when the student:

a. Discusses ways weather affects everyday life (e.g., rescheduling our activities due to heavy rain).

b. Recognises that plants and animals respond to weather changes (e.g., some animals change colour, migration patterns, some plants lose leaves in the cold season).
Outcome:

EB 1.8: Begins to understand that changes occur to the Earth and some of the changes are cyclical.

Indicators:

This is evident when the student:

a. Identify some cyclical changes (e.g. changing position of the Sun, sunrise and sunset)

b. Monitors changes in shadows over a period of time to show change in position of the Sun.

c. Observes and recounts changes in the natural environment over a day (e.g. features of the Sun, sky colour, and shadows.)

d. Constructs a sundial and uses it to tell the time.

Sub-strand: Events On Earth And Beyond Occur On Different Scales Of Time And Space

Outcome:

EB 2.1: Describes and reasons out the changes in their locality

Indicators:

This is evident when the student:

a. Describes the changes in their island/nearby island.

b. Predicts likely changes in the future in relation to current changes

Outcome:

EB 2.2: Observes and describes the physical properties of soil.

Indicators:

This is evident when the student:

a. Identifies the main types of soil (e.g., sand, clay)

b. Observes and sorts soil samples according to one or more physical characteristics such as texture, ability to retain water, particle size and colour.

c. Uses appropriate vocabulary in relation to soil (E.g. Soil, humus)

Outcome:

EB 2.3: Identifies natural things found in soil and how they are used by living things.

Indicators:

This is evident when the student:

a. Observes and sort the various items that are found in soil samples (e.g. roots, critters, leaves, gravels)

b. Classifies the natural and artificial things found in the soil samples.

c. Discusses about the use of natural things found in the samples and how they have broken down into pieces.
Sub-strand: Living Things Use The Resources of The Earth, Solar System And Universe to Meet Their Needs

Outcome:
EB 3.1: Analyses how Earth’s environment is used by living things and identify the impacts of the overuse of resources.

Indicators:
This is evident when the student:

a. Observes and describes ways humans use Earth’s material in daily life (e.g. Water used for drinking, rock and sand for building houses, wood for making furniture).

b. Discusses the impact on the environment when resources are over used (e.g. scarcity of water)

Outcome:
EB 3.2: NA

Outcome:
EB 3.3: Investigates the observable physical properties of air and water.

Indicators:
This is evident when the student:

a. Observes physical properties of water and air. (E.g. air takes up shape of the container, water is, tasteless, clear and odourless)

b. Measures amounts of water using non-standard measurements (E.g. dropper, spoonful, container, empty bottle, can, straw)

c. Investigates that air has mass.

Outcome:
EB 3.4: Recognises types of pollution and identify ways to minimize these.

Indicators:
This is evident when the student:

a. Explains how land, air, water in the environment can become polluted.

b. Suggests ways that individuals can contribute to protecting and improving the quality of land, air and water in the environment

c. Proposes ways to use resources wisely at home and at school (E.g. using both sides of the paper, repairing leaky taps).
## Strand – 3: Energy and Change

### Sub-strand: Energy and Its Impact

**Outcome:**
EC 1.1: Recognises various effects of energy in our lives and investigates how the sun affects the environment.

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

a. Recognises some effects of heat energy from the Sun (e.g. Making shadows, sun tan, feeling hot.)

b. Discusses the positive and negative effects of energy (e.g. destruction made by wind).

c. Identifies that energy is used in everything that people do (e.g. petrol for a car, lights in our homes, walking, sleeping)

d. Investigates how the Sun affects the various components of the environment (e.g. measuring temperature of air, land, and/or water.)

### Sub-strand: Wise Use of Energy

**Outcome:**
EC 2.1: Researches on ways on how energy is used at home and explains different ways energy can be used wisely.

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

a. Researches on energy use at home (e.g. sitting room, bedroom, and kitchen) and record their findings.

b. Reports their findings and explains to the class and their parents about the ways energy can be saved.

c. Discusses ways to save energy and identifies similarities and differences in energy use at home among students.

### Sub-strand: Force and Motion

**Outcome:**
EC 3.1: Investigates motion of objects and describe ways to change the motion of an object.

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

a. Identifies that a push or a pull can make an object speed up or slow down.

b. Investigates to find out that greater the force applied to an object, the greater the change in speed of the object.
### Sub-strand: Electricity

**Outcome:**
EC 4.1: Explains the use of electricity at home and the safety measures taken in using electrical appliances.

**Indicators:**

**This is evident when the student:**

a. Identifies ways in which we use electricity at home.

b. Identifies the potential hazards at home while using electric appliances (e.g. wires with no insulation)

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### Sub-strand: Magnets

**Outcome:**
EC 5.1: Examines the effects of magnets on different materials and classifies magnetic and non-magnetic material.

**Indicators:**

**This is evident when the student:**

a. Identifies that magnets can push or pull magnetic materials.

b. Predicts and test their predictions to determine what a magnet will attract.

c. Investigates that magnets attract certain materials through other materials (e.g. magnets attract materials through water, glass, plastic).

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### Sub-strand: Sound Energy

**Outcome:**
EC 6.1: Explores and identifies different objects which make sounds and recognize that it is a form of energy.

**Indicators:**

**This is evident when the student:**

a. Observes and identifies that different materials produce different sounds.

b. Recognises that sound is a form of energy.

c. Recognizes that loud sounds are harmful to human ears and a disturbance to other living things (e.g. noise pollution by construction, shipping and sea sports is a threat to whales and dolphin that rely on sound energy to communicate)

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### Sub-strand: Light Energy

**Outcome:**
EC 7.1: Recognises the relationship between light and materials

**Indicators:**

**This is evident when the student:**

a. Investigates different materials and sorts them according to whether or not they allow light to pass through (transparent/opaque)

b. Recognizes that opaque materials do not allow light to pass through and thus form shadows.

c. Surveys how opaque and transparent materials are used in everyday life.

d. Designs and make a model that will allow light to pass through using everyday materials. (e.g. Sun glass)
Strand – 4: Matter Materials

Sub-strand: Materials and Their Properties

Outcome:

MM 1.1: Becomes aware that materials can be changed by different means and this change can happen faster or slowly and makes simple statements about the causes.

Indicators:

This is evident when the student:

a. Observes and describes ways in which materials can be changed (e.g. cooking changes the smell and texture of ingredients of a food, painting rough wood makes it smoother).

b. Predicts how different things change in different conditions (e.g. ice-cream melts in the sun, melted wax becomes hard when it’s cooled).

c. Recognizes that changing the properties of a material can change its use. (e.g. melted ice cannot be used to keep things cold, burnt paper cannot be written on).

d. Identifies that changes in materials can be fast or slow (e.g. toasting bread is fast, rust in metals is slow).

e. Selects a material for its durability in different weather conditions (e.g. plastic outdoor furniture).

Sub-strand: Materials and Their Uses

Outcome:

MM 2.1: Group objects according to their uses, properties and material types.

Indicators:

This is evident when the student:

a. Sorts objects and describes the different materials from which the objects are made.

b. Identifies properties of materials and relates to the purpose of the objects (e.g. the flexibility of plastic makes plastic useful for covering food in order to keep it fresh).

c. Investigates various materials in relation to their use (e.g. test materials to determine which ones insulate more efficiently, test different fabrics to determine which are water proof).
Strand – 5: Science and Technology

Sub-strand: Science As Human Endeavour

Outcome:
ST 1.1: Makes observations about science experiences and identifies how they solve problems.

Indicators:
This is evident when the student:
- Demonstrates curiosity and poses questions.
- Recognises that scientists work together to solve problems.
- Discusses how scientists find out things (e.g. use of senses, instruments).

Outcome:
ST 1.2: Begins to explore how science has contributed to our way of life.

Indicators:
This is evident when the student:
- Links everyday knowledge to scientific ideas through investigations (e.g. TV will not work without electricity)
- Recognises that science is part of daily life of all people in the community (e.g. fisherman use knowledge of science: engines, weather)

Sub-strand: Design and Making

Outcome:
ST 2.1: Begins to formulate ideas and implement their own designs.

Indicators:
This is evident when the student:
- Manipulates a range of materials and objects.
- Identifies different characteristics of objects and give reasons for the preferences.
- Designs and make a plan to create a new or revised product.
- Uses a range of tools and equipment to make a product/object.
- Evaluates own work and the work of others to improve.

Sub-strand: Using Science Wisely

Outcome:
ST 3.1: Begins to make informed decisions

Indicators:
This is evident when the student:
- Makes inferences using their observations and makes appropriate decisions (e.g. the presence of mosquitoes just after rain - uses mosquito repellants, check and remove water from places where water could collect)
# Strand – 6: Working Scientifically

## Sub-strand: Observation and Communication

**Outcome:**

**WS 1.1:** Develops observational skills and communicates their observations in various means and methods.

**Indicators:**

**This is evident when the student:**

a. Makes observations using their senses and other appropriate tools.

b. Describes through the use of diagrams with simple labels to communicate their observation to others.

c. Communicates their observations and ideas to others.

d. Uses vocabulary related to investigations and practical work (e.g. observe, measure, investigate)

e. Keeps simple records based on their investigations appropriately (e.g. pictures, diagrams, pictograms)

## Sub-strand: Investigation

**Outcome:**

**WS 2.1:** Conducts investigations with teacher guidance.

**Indicators:**

**This is evident when the student:**

a. Follows procedures to carry out simple investigations.

b. Measures using appropriate instruments.

c. Classifies objects/events based on their observations.

d. Makes simple inferences based on their observations/data.

e. Makes conclusions based on their investigations.

f. Listens and respects the ideas and consider them.

## Sub-strand: Using Science Wisely

**Outcome:**

**WS 3.1:** Begins to take care of themselves, others and respects others viewpoints.

**Indicators:**

**This is evident when the student:**

a. Practices safety procedures while carrying out practicals (e.g. wear goggles while heating)

b. Takes responsibility when doing practicals (e.g. taking care of equipment, using resources wisely)
Grade 3 Syllabus Details
GRADE 3

Strand – 1: Life and Living

Sub-strand: Living Things, Their Structure And Function

Outcome: LL 1.1: Describes the characteristics of living things using basic scientific vocabulary.

Indicators:

This is evident when the student:

a. Distinguishes between living from non-living things using basic scientific vocabulary. e.g. (Nutrition, sensitivity, reproduce)

b. Identifies the common term for all living things as organisms.

Outcome: LL 1.2: Classifies living things and uses simple keys in classification.

Indicators:

This is evident when the student:

a. Classifies animals into vertebrates and invertebrates based on their observation.

b. Uses simple keys to classify vertebrates according to the characteristics observed.

c. Studies the characteristics of mammals and birds to compare them.

d. Classifies plants into to two main groups: flowering and non-flowering using their own observations.

e. Investigates variety of plants through field trips to natural habitats, to classify plants in to grass, shrubs and trees.

f. Recognizes that there are many different types of animals and plants and appreciates the creations of Allah

Outcome: LL 1.3: Demonstrate that people need to care for themselves plants and other animals in their locality.

Indicators:

This is evident when the student:

a. Investigates how people care for plants and animals and explains why humans should protect animals and the places they live.

b. Communicates using various means how caring for environment and other living things contributes on maintaining a healthy environment.

c. Follows established safety procedures and humane practices while handling living things.

d. Appreciates the blessings of Allah (e.g. good health, five senses etc.)
Outcome:
LL 1.4: Identifies animals with amplified senses and explore use of some devices which could enhance the senses in humans.

Indicators:
This is evident when the student:

a. Identifies that some senses are amplified in certain animals (e.g., Echolocation in bats, vomeronasal organ in insects, ability to use ultraviolet rays below 300nm, electro reception)
b. Identifies some of the devices that are used to help our senses and explain how these devices assist us. (e.g. magnifying glass, ordinary glasses, hearing aid, red lights on hot stoves, stop lights, horns on cars etc.)
c. Reflects on how people care and show empathy towards people who are deprived of one or more of the senses and appreciates the blessings of having five senses.

Outcome:
LL 1.5: Explore the external structures of different plants and animals in relation to their survival needs.

Indicators:
This is evident when the student:

a. Associates specific body parts to a specific groups of animals (e.g. fish have fins, and birds have wings).
b. Studies how structural features help marine/land/air organisms to survive in water/land/air respectively (e.g., gills, wings, fins, webbed feet, talon etc.)
c. Relates different parts of a plant to its function (e.g. a trunk or stem for strength and for water to move up, a flower is colored or scented to attract insects.)

Outcome:
LL 1.6: Identifies the main organs of the body and their uses and identifies organs that make up the digestive systems.

Indicators:
This is evident when the student:

a. Identifies that all organisms are made of internal organs that help them carry out the basic functions of life.
b. Identifies positions of the main organs of human body.
c. Identifies the organs that make up the digestive system.
d. Identifies good habits that have to be practiced to keep digestive system in good condition. (e.g. Eating in moderation, drinking plenty of water, avoiding too spicy foods, avoiding too much of oily foods)
### Sub-strand: Interdependence of Life

**Outcome:**
LL 2.1: Examines various environments to study how living things meet their basic needs.

**Indicators:**

- **This is evident when the student:**
  - a. Studies a variety of environments to identify different habitats within each environment (e.g., the ocean can have reefs, a sandy beach bottom and seagrass meadows).
  - b. Observes different habitats to identify some of the ways that living things depend on their environment (e.g., reef provides food for many fishes, seashore provide living space for many other organisms).
  - c. Selects a favourite animal and communicates observations of how the animal meet their needs (e.g., habitat, ways of gathering food, ways of protecting themselves from danger). (RP.KS1.19)
  - d. Compares different animals in terms of the habitat, food and shelter in any particular environment.
  - e. Observes different plants (adaptive features) in terms of the different places where they can be found (e.g., plants that grow in water, rocky area, in shade in full sun).
  - f. Investigates to identify plants need water to survive.

**Outcome:**
LL 2.2: Explores and analyses healthy eating practices in relation to food pyramid.

**Indicators:**

- **This is evident when the student:**
  - a. Studies the location of the food groups on the food pyramid.
  - b. Applies food pyramid as an outline for healthy eating.
  - c. Discusses how proper nutrition is related to good health.
  - d. Creates a menu for a healthy meal.

### Sub-strand: Reproduction and Change

**Outcome:**
LL 3.1: Explore the differences among same kinds of plants and animals.

**Indicators:**

- **This is evident when the student:**
  - a. Examines a selected species of plants to identify the differences among them. (e.g., leaf size, height, root shape and size etc.)
  - b. Studies a variety of populations in humans to identify ways that individual members of that population are different from one another.
**Outcome:**

**LL 3.2:** Explore and explains how living things change as they grow and develop.

**Indicators:**

This is evident when the student:

a. Observes and communicates the changes that have taken place in them since birth. (e.g., height, teeth, etc.)

b. Examines life cycles of different animals and plants to identify different stages (e.g., life cycle of a butterfly or a frog).

c. Experiments with seeds to describe its growth patterns using the relevant data.
## Strand – 2: Earth and Beyond

### Sub-strand: Earth, Solar System And Universe As Dynamic Systems

#### Outcome:
**EB 1.1:** Identifies major land and water forms on Earth and recognizes that large proportion of the Earth is ocean.

#### Indicators:

**This is evident when the student:**

- a. Identifies the major landforms and water forms on Earth (e.g. mountains, plains, oceans, river, valleys, coastlines, islands)
- b. Identifies and locates various oceans and continents using maps, atlases, globes and other means.
- c. Recognises the vastness of the sea and that large proportion of the Earth is ocean.
- d. Compares land/sea area of Maldives using atlases, globes, maps and other means.
- e. Names some large seas/channels in the Maldives and identifies the locations of the seas/channels from a map (e.g., Huvadhoo Kandu, Kaashidhoo Kandu)
- f. Discusses measures that could be taken to protect natural environment (e.g. do not throw rubbish into the sea)

#### Outcome:
**EB 1.2:** Describes features of the Sun, Earth and Moon and makes comparison between Sun, Moon and the Earth.

#### Indicators:

**This is evident when the student:**

- a. Recognises that Earth revolves itself (rotation) and also moves around the Sun (revolution).
- b. Recognises the Moon orbits the Earth
- c. Recognizes the moon as a reflector of light.
- d. Examines the changing position of the Moon and its apparent shape.
- e. Creates a model of the Earth, Sun and Moon system.
- f. Recognises that Allah created the Sun, Moon and Earth, all with unique features.

#### Outcome:
**EB 1.3:** Explore the characteristics that make the Earth a suitable environment for life to exist.

#### Indicators:

**This is evident when the student:**

- a. Recognises that the natural features and phenomena contribute to the Earth being a suitable place for life to exist (e.g., rain helps plants and animals to get water, the presence of day and night contribute to temperature differences which allow certain organisms to survive).
- b. Discusses that the presence of air, water and suitable temperature makes Earth, a suitable place for life to exist.
- c. Recognises that it is our responsibility to use the Earth’s resources wisely (e.g. Use energy saving devices, save water, plant more trees)
- d. Appreciates that Allah created the Earth with all the unique features where life could flourish.
Outcome:

**EB 1.4:** Describes the phases of the Moon and recognize the importance of Moon in our lives.

**Indicators:**

**This is evident when the student:**

a. Relates the rotations and revolution of the Moon to identify dates and timings of various religious activities. (e.g. Lunar calendar, sighting of the Moon for Ramazan and Eid)

b. Uses models of the Earth, Sun and Moon to explain the phases of the Moon.

c. Recognises that Sun, Earth, and Moon work as a system.

Outcome:

**EB 1.5:** Describes processes of water cycle and its importance to life.

**Indicators:**

**This is evident when the student:**

a. Identifies and sequences the events of the water cycle.

b. Explains the importance of water cycle.

c. Recognises that condensed water does not come down only as rain but takes many other forms (E.g., snow, hail, fog and mist).

Outcome:

**EB 1.6:** Observes, predicts, records and describes elements of weather and describes features of seasons.

**Indicators:**

**This is evident when the student:**

a. Describes the elements of weather (rain, clouds, wind, temperature)

b. Observes draws and describes the various types of clouds.

c. Records local weather changes over a week using appropriate tools (temperature, rainfall, cloud, wind).

d. Discusses recorded local weather changes and makes comparison with actual data.

e. Identifies and names the two monsoons experienced and describes the features of these monsoons.

f. Recognises that there are various nakai’s within each monsoon.

g. Identifies and names various seasons and describes the features of these seasons.

h. Recognises what is meant by the term climate

Outcome:

**EB 1.7:** Researches the impact of weather on society and the environment.

**Indicators:**

**This is evident when the student:**

a. Researches the impact of weather to our daily lives. (e.g. sowing seeds on a particular season)

b. Recognises that plants and animals adapt to weather changes (e.g., some animals change colour, migration patterns, some plants lose leave in the cold season, animals hibernate during the cold season)
**Outcome:**

**EB 1.8:** Describes that life on Earth has changed over time.

**Indicators:**

**This is evident when the student:**

a. Recognizes that Earth is very old and populations of animals and plants have changed over time.

b. Describes and talks about prehistoric animals and plants (e.g., dinosaurs)

c. Makes a model of a prehistoric animal to infer that Earth is very old.

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**Sub-strand: Events On Earth And Beyond Occur On Different Scales of Time and Space**

**Outcome:**

**EB 2.1:** Describes and reasons out the changes in their locality and how it impacts their life.

**Indicators:**

**This is evident when the student:**

a. Compares changes in their immediate environment and discusses the possible reasons for the changes.

b. Describes the impact of the changes to their life (e.g. New houses/buildings constructed. changes to the natural environment)

c. Predicts likely changes in the future in relation to current changes.

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**Outcome:**

**EB 2.2:** Observes and compares composition of soil from various locations.

**Indicators:**

**This is evident when the student:**

a. Observes and describes physical characteristics of soil such as particle size, texture, colour from different locations.

b. Classifies soils according to location and type (e.g., silt, clay, sand and loam)

c. Investigates the ability to retain water in different soil samples.

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**Outcome:**

**EB 2.3:** Recognises that living things depend on soil for various purposes.

**Indicators:**

**This is evident when the student:**

a. Studies how soil is used by plants and animals (e.g. provides living space for animals and plants, provides shelter for some living things, plants get nutrients in the soil)

b. Recognises that soil contributes to life (e.g. Provides a medium to grow food, filters water and waste)
Sub-strand: Living Things Use The Resources of The Earth, Solar System and Universe to Meet Their Needs

Outcome: EB 3.1: Analyses how Earth’s environment is used by living things for various purposes.

Indicators:
This is evident when the student:

a. Relates how Earth’s environment is used for human recreation- aesthetics, parks, built environments
b. Recognizes that the Earth provides many resources for humans.

Outcome: EB 3.2: Identifies that Earth’s resources can be classified into renewable and non-renewable.

Indicators:
This is evident when the student:

a. Distinguishes between renewable and non-renewable resources.
b. Classifies materials into renewable and non-renewable.
c. Recognises that earth’s resources are limited (e.g., fossil fuel)

Outcome: EB 3.3: Investigates physical properties of air and water within the environment and recognizes that it is an essential component of the Earth System

Indicators:
This is evident when the student:

a. Investigates physical property of water (e.g., melting and boiling of water)
b. Investigates that air takes up space, and has mass and can be felt when it moves
c. Recognizes the physical properties of water that make it an essential component of the Earth system (e.g. exist in three states, universal solvent)
d. Explain how the properties of air and water are used for various purposes (e.g., sea bed is inflated with air for floating, inflated tyres are used in vehicle.)

Outcome: EB 3.4: Develops a sense of responsibility for taking care of and improving the environment.

Indicators:
This is evident when the student:

a. Assesses the use of certain resources and considers ways that we could reduce the overuse of resources (E.g. paper, water, energy)
b. Proposes ways to solve simple environmental problems that result from human activity (E.g. over consumption of energy- use of energy saving devices)
c. Participates in taking care of a local beach, park or school yard.
**Strand – 3: Energy and Change**

**Sub-strand: Energy and Its Impact**

**Outcome:**
EC 1.1: Recognises various effects of energy and its impacts on our lives.

**Indicators:**

This is evident when the student:

a. Describes various effects of energy (e.g. an oven needs to be hot enough to cook food, a car needs petrol or it will stop, gain energy from food)

b. Appreciates and thanks Allah for providing food for their survival.

c. Discusses and compares about how they feel standing in the sun and standing in the shade.

d. Identifies sun safe practices and describes the importance of adhering to these habits.

e. Studies on how people used energy in earlier times when they didn’t have access to various energy sources (e.g. no electricity at home, no fuel for transport)

f. Discusses and communicates how different people use various type of energy at work. (E.g. fishing uses electric energy for transport, mechanical energy to catch fish, / Ultra sonic sound waves is used to clean jewelry and teeth/Welders use high voltage electricity)

**Sub-strand: Wise Use of Energy**

**Outcome:**
EC 2.1: Explores different ways in which energy can be used wisely.

**Indicators:**

This is evident when the student:

a. Surveys the general type of energy saving devices available in Maldives and communicates the information (E.g. Energy saving bulbs, eco-friendly air conditioners, washing machine)

b. Designs labels to represent energy saving devices.

c. Recognise the limitations of the resources we have and uses them wisely.

**Sub-strand: Force and Motion**

**Outcome:**
EC 3.1: Investigates various effects of forces on movement of objects and explain them.

**Indicators:**

This is evident when the student:

a. Investigates movements of objects on various surfaces / inclinations (E.g. study the movement of a toy on a rough/smooth surface/on a ramp)

b. Designs and make a device that can move in water or on land (e.g. boat or raft/ or truck) using a variety of materials and tools.
Sub-strand: Electricity

**Outcome:**
EC 4.1: Explore and explains electric circuits and circuit components.

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

a. Makes a simple circuit using a battery, bulb, and a wire.
b. Experiments to identify open and close circuit to identify between open and closed circuits.
c. Infers that if the continuous circuit is broken, electricity will not flow and the bulb will not light.
d. Visits a powerhouse and collects information on electricity /circuits and circuit components.

Sub-strand: Magnets

**Outcome:**
EC 5.1: Recognises the relationship between magnets and compass.

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

a. Identifies that magnets have two poles (north and south) and that like poles repel each other while unlike poles attract each other.
b. Discusses and explains how a compass works.
c. Applies the knowledge of how a compass works to design and construct a simple compass.

Sub-strand: Sound Energy

**Outcome:**
EC 6.1: Recognises that sound is a form of energy which travels as vibrations from a source.

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

a. Identifies various sounds and their source of vibrations in everyday life (e.g. wind blowing, string plucking)
b. Identify the ear as a receiver of vibrations that produce sound (i.e., sound vibrates eardrum)
c. Applies the knowledge of how sounds are produced to design and develop an instrument to produce sounds.
### Sub-strand: Light Energy

**Outcome:**

**EC 7.1:** Recognises that light can be split into many different colours.

**Indicators:**

**This is evident when the student:**

a. Creates rainbows, using a light source such as the sun, and a prism or mirror and water.

b. Records each experiment with drawings of the objects and the spectrum created.

c. Researches the science of rainbows.
Strand – 4: Matter and Materials

Sub-strand: Materials and Their Properties

Outcome:

**MM 1.1:** Becomes aware that uses of materials are determined by their properties and some things can be changed.

Indicators:

This is evident when the student:

- a. Identifies that objects are made from a variety of materials.
- b. Compares the properties (e.g. texture, colour, hardness) of natural materials and that of constructed objects.
- c. Investigates and discusses how familiar objects are designed to meet a human need. (e.g. use of raincoats)
- d. Evaluates the suitability of materials for a specific function (E.g. rain coats are made from water proof materials)
- e. Designs and constructs a useful object that meets a student specified function.

Sub-strand: Materials and Their Uses

Outcome:

**MM 2.1:** Group objects according to their uses, properties and material types.

Indicators:

This is evident when the student:

- a. Classifies materials into two groups: natural and processed.
- b. Sorts materials into groups based on what materials are used for (e.g. groups as building, sewing, cooking materials).
- c. Selects a suitable material for a particular purpose and explains the reasons for the selection.
Strand – 5: Science and Technology

Sub-strand: Science As Human Endeavour

Outcome:
ST 1.1: Explores and identifies the use of science in everyday life

Indicators:

This is evident when the student:

a. Talks about how people make sense of the world (e.g. questioning, observe phenomena).

b. Recognises that work or hobbies can involve science (e.g. doctors, plumbers, mechanics, gardener, chef).

c. Discusses about significant adults whose work involves science (e.g. nurse, agriculture, electrician, and homemaker).

Outcome:
ST 1.2: Explores how science has contributed to our way of life.

Indicators:

This is evident when the student:

a. Describe some ways in which products of science assist people (e.g. glasses to assist vision)

b. Recognises that scientific information plays a major role in our daily lives (e.g. composting, pollution, safe use of electricity)

Sub-strand: Design And Making

Outcome:
ST 2.1: Formulates ideas and implement their own designs.

Indicators:

This is evident when the student:

a. Explains how everyday materials and objects work.

b. Identifies different characteristics of 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:
ST 3.1: Begins to make informed decisions

Indicators:

This is evident when the student:

a. Poses questions and makes predictions in relations to everyday events/experiences (e.g. tides and moon, nakai, appearance of dark clouds and rain)

b. Makes inferences using their observations and makes appropriate decision (e.g. adopting hygienic practices prevents spreading of germs)
**Strand – 6: Working Scientifically**

**Sub-strand: Observation and Communication**

**Outcome:**

**WS 1.1:** Develops observational skills and communicates their observations in various means and methods.

**Indicators:**

This is evident when the student:

a. Makes observations using their senses and other appropriate tools.

b. Describes observations through various means (e.g. diagrams, charts, graphs).

c. Identifies differences and similarities based on the recorded work among the class.

d. Justifies their ideas based on evidence collected.

**Sub-strand: Investigations**

**Outcome:**

**WS 2.1:** Conducts simple investigations with guidance.

**Indicators:**

This is evident when the student:

a. Follows procedures to carry out simple investigations.

b. Poses questions and makes predictions related to their experiences.

c. Classifies objects/events based on their observations and gives reasons.

d. Selects and uses appropriate tools for specific purposes (e.g. a particular size of measuring cylinder for measuring different volumes).

e. Records, organizes and interprets data/information (e.g. tallying the type of vehicles, sketch of specimens observed, reading graphs, tables).

f. Makes precise measurements and reasons out why things need to be measured while observing (e.g. The container has 200ml of water rather than saying the container has more water).

g. Reflects on procedure, results obtained and the conclusions made.

h. Proposes ways to improve a particular investigation.

i. Respects the view of others, considers them and justifies one’s own ideas.

**Sub-strand: Safety and Responsibility**

**Outcome:**

**WS 3.1:** Begins to take care of themselves, others and respects others viewpoints.

**Indicators:**

This is evident when the student:

a. Interprets the symbols/messages displayed in the laboratory and other work stations (e.g. labels on bottles, areas).

b. Practices safety procedures given by the teacher while doing practical work (e.g. wear gloves while using a particular chemical).

c. Takes responsibility for one’s own safety (e.g. following laboratory ground rules).
### Sample Lesson Plan

<table>
<thead>
<tr>
<th>Subject: Science</th>
<th>Grade: 1</th>
<th>Duration: 2 periods of 45 mins.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strand:</strong> Earth and Beyond</td>
<td><strong>Sub-strand:</strong> Earth, Solar system and universe as dynamic systems</td>
<td></td>
</tr>
<tr>
<td><strong>Key Competencies:</strong></td>
<td><strong>Shared Values:</strong></td>
<td></td>
</tr>
<tr>
<td>• Relating to people</td>
<td>• Values relating to self, others and environment</td>
<td></td>
</tr>
<tr>
<td>• Using Sustainable practices</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Prior Knowledge:</strong></td>
<td><strong>Materials Needed:</strong></td>
<td></td>
</tr>
<tr>
<td>• They would identify places like beach, land and sea/ mosque, parks etc.</td>
<td>• Resource sheet: How we worked together</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Sample questions to ask when observing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Rubric to assess how students worked in groups</td>
<td></td>
</tr>
</tbody>
</table>

**Learning Outcomes:**

Describes the features of their immediate environment and shows interest towards the environment.

**Indicators:**

- Shows interest, curiosity and respect towards their surroundings.
- Creates a model of their immediate environment.
- Shows interest, curiosity and respect towards their surroundings.

**Learning Intentions**

- We are learning to identify the features of our surrounding and care for the environment.

**Success Criteria**

We would be successful if we are able to

- Identify three natural features of our surrounding
- Identify three human made features
- Observe the surrounding without harming any living things
- Put our rubbish into the bin without littering.

<table>
<thead>
<tr>
<th>Duration</th>
<th>Teaching &amp; Learning</th>
<th>Resources / Material needed</th>
<th>Differentiated Instruction</th>
</tr>
</thead>
</table>
| 10 mins  | **Introduction:** Role play: Getting to know the neighbourhood  
  - Students work in pairs to generate some questions which an outsider to the environment would ask and allocate roles to them. Following are examples of some questions for students to think of:  
    - Are there lots of trees?  
    - Is it very green?  
    - How many houses are there?  
    - Can we get clean air?  
    - Is it noisy?  
  - The outsider to the neighborhood would be asking questions to the other. The other student would be giving answers and explaining various features in their neighborhood. | Sample questions to ask when observing | |
| 70 mins  | **Developmental Activity 1:** Observing the environment  
  **Observing the environment**  
  - In this activity students would be working in small groups. They would be observing and recording various things that they see. For instance, students can record features of the land and sky. They may note natural features (such as the blue sky, clouds, birds, flowers and trees that they saw) as well as human made features (such as houses, roads, shops etc). In addition students will also identify the kind of activities that people are involved in.  
  - Note down the various features that they have seen.  
  - Next, let students evaluate the group work using resource: How we worked together  
  - While working in the small group, here are some roles and tasks that could be divided among the group members.  
    - **Group observers:** This set of students will be observing their surrounding specifically looking into natural, human-made, and the kind of activities people are involved in. | Rubric | Students who are unable to write can draw their observations in the form of sketches. Some can describe their observation. |
### Duration

<table>
<thead>
<tr>
<th>Teaching &amp; Learning</th>
<th>Resources / Material needed</th>
<th>Differentiated Instruction</th>
</tr>
</thead>
</table>
| - **Group recorders:** The recorders will be recording the details by discussing with the group observer  
- **Group time keeper:** The time keeper will ensure that all groups are working in a given time  
- **Group leader:** Observe and allocate tasks for others and check for the smooth running of the team.  
- **Group photographers:** These students will be taking pictures of various locations and features and should be done with consultations from others in the group. |                             |                           |

### Developmental Activity 2:

**Discussion on what they have observed**

- Each group will present their ideas to the rest of the students. The other students will give feedback based on the following criteria:
  - Success criteria
  - Accuracy of the information
  - Clear and confident in presenting
  - Able to answer questions from the audience
- Teachers could discuss the criteria with the students and add other elements to it.

### Closure:

- Students will be identifying one aspect that they have learnt during the day and would be explaining it to their peer.

### Assessment:

- Assessing the group record sheets for scientific skills such as:
  - accurate observation
  - collecting information
  - using the information to convince others
- Assessing the students during presentations
- Assessing how students work within groups
Extension option:

- N/A

Links to other key learning areas:

- Dhivehi and English

Teacher reflection:

- Personal note of what went well and what needs to be improved. This is to be filled by the respective teacher soon after the lesson.
<table>
<thead>
<tr>
<th>Glossary</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adaptation</td>
<td>The development during evolution of an organism, of structures or processes which make it more efficient in its environment.</td>
</tr>
<tr>
<td>Appendages</td>
<td>A part or organ, such as an arm, leg, tail, or fin that is joined to the axis or trunk of a body.</td>
</tr>
<tr>
<td>Atmosphere</td>
<td>The blanket of air surrounded by the Earth</td>
</tr>
<tr>
<td>Balanced diet</td>
<td>Diet that contains the correct amount of foods from all the food groups which enable a person to be healthy.</td>
</tr>
<tr>
<td>Camouflage</td>
<td>Survival adaptation which enable organism to blend in with the environment</td>
</tr>
<tr>
<td>Carnivore</td>
<td>Organism which feed on other animals</td>
</tr>
<tr>
<td>Compass</td>
<td>A device used to locate directions – the four points of the compass – north, east, south and west</td>
</tr>
<tr>
<td>Condensation</td>
<td>The process of change from a gas to a liquid</td>
</tr>
<tr>
<td>Conservation</td>
<td>Careful preservation and protection of something (wise use of energy, protecting wildlife etc.)</td>
</tr>
<tr>
<td>Constellation</td>
<td>A pattern of stars which appear close together in the sky. This means only that they are in the same direction from Earth</td>
</tr>
<tr>
<td>Continent</td>
<td>One of Earth’s main land masses. The seven continents are Europe, Asia, Africa, North America, South America, Australia, and Antarctica</td>
</tr>
<tr>
<td>Digestion</td>
<td>The breaking down of food into chemically simpler forms that can be absorbed and used by the body.</td>
</tr>
<tr>
<td>Dissolving</td>
<td>The process of a substance becoming part of a liquid – this is a reversible change.</td>
</tr>
<tr>
<td>Echolocation</td>
<td>The determination of the position of an object by the emission of sound waves which are reflected back to the sender as echoes.</td>
</tr>
<tr>
<td>Endangered</td>
<td>Species of organisms that will likely become extinct</td>
</tr>
<tr>
<td>Energy</td>
<td>Ability to do work</td>
</tr>
<tr>
<td>Environment</td>
<td>The overall conditions (physical, chemical, and biological) of the region in which an organism lives.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Erosion</td>
<td>The wearing away of land forms by the removal of soil and other weathered products by natural forces as water, wind and gravity</td>
</tr>
<tr>
<td>Evaporation</td>
<td>Change of state from liquid to gas</td>
</tr>
<tr>
<td>Extinction</td>
<td>The elimination of all members of a particular species.</td>
</tr>
<tr>
<td>Fair test</td>
<td>A test where only one factor changes and all other factors are kept the same.</td>
</tr>
<tr>
<td>Food chain</td>
<td>A sequence of feeding relationships which begins with a producer.</td>
</tr>
<tr>
<td>Force</td>
<td>A push or pull tending to cause movement of a body, for example, the force of gravity.</td>
</tr>
<tr>
<td>Fossil</td>
<td>The remains or traces of once living organism preserved in a rock.</td>
</tr>
<tr>
<td>Germination</td>
<td>The process by which a plant grows from a seed.</td>
</tr>
<tr>
<td>Glaciers</td>
<td>An extended mass of ice formed from snow falling and accumulating over the years and moving slowly.</td>
</tr>
<tr>
<td>Gravity</td>
<td>The force of attraction that moves or tends to move bodies towards the centre of Earth.</td>
</tr>
<tr>
<td>Greenhouse effect</td>
<td>The phenomenon whereby the earth's atmosphere traps heat, caused by the presence greenhouse gases.</td>
</tr>
<tr>
<td>Habitat</td>
<td>An ecological or environmental area that is inhabited by a particular species of animal, plant, or other type of organism.</td>
</tr>
<tr>
<td>Hail</td>
<td>A form of solid precipitation</td>
</tr>
<tr>
<td>Herbicides</td>
<td>A toxic material used to get rid of unwanted plant life</td>
</tr>
<tr>
<td>Herbivore</td>
<td>An animal that feeds on plant material</td>
</tr>
<tr>
<td>Hibernation</td>
<td>A time when animals ‘sleep’ through cold weather.</td>
</tr>
<tr>
<td>Humidity</td>
<td>The degree of water vapour in the atmosphere.</td>
</tr>
<tr>
<td>Hypothesis</td>
<td>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</td>
</tr>
<tr>
<td>Invertebrates</td>
<td>Animals without backbones.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Landfills</td>
<td>Area filled with municipal solid waste.</td>
</tr>
<tr>
<td>Lever</td>
<td>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.</td>
</tr>
<tr>
<td>Luminous</td>
<td>Radiating or reflecting light; shining; glowing</td>
</tr>
<tr>
<td>Machine</td>
<td>A device permitting force to be applied in an advantageous manner to accomplish mechanical work.</td>
</tr>
<tr>
<td>Magnet</td>
<td>An object made usually from iron, nickel or cobalt materials which attracts other objects made from these materials</td>
</tr>
<tr>
<td>Observation</td>
<td>A science process skill that calls for using all the senses where appropriate</td>
</tr>
<tr>
<td>Omnivore</td>
<td>Animals which feeds on both animal and plant materials</td>
</tr>
<tr>
<td>Opaque</td>
<td>Not transmitting light, neither transparent nor translucent</td>
</tr>
<tr>
<td>Organism</td>
<td>A living thing.</td>
</tr>
<tr>
<td>Phenomena</td>
<td>Any observable event or fact</td>
</tr>
<tr>
<td>Planet</td>
<td>A large body that travels in an orbit around the Sun</td>
</tr>
<tr>
<td>Pollution</td>
<td>Introduction of contaminants into the natural environment that cause adverse change.</td>
</tr>
<tr>
<td>Precipitation</td>
<td>Water released from clouds in the form of rain, freezing rain, sleet, snow, or hail.</td>
</tr>
<tr>
<td>Predators</td>
<td>An organism that feeds on its prey.</td>
</tr>
<tr>
<td>Predicting</td>
<td>Forecasting what will appear on the basis of patterns and regularities observed in the past. Predicting is a science process skill.</td>
</tr>
<tr>
<td>Prism</td>
<td>A piece of translucent glass or crystal used to form a spectrum of light separated according to colors.</td>
</tr>
<tr>
<td>Solar eclipse</td>
<td>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</td>
</tr>
<tr>
<td>Solar System</td>
<td>The Sun and the planets and other bodies that orbit about it. Comets, asteroids, meteoroids, and planets' moons therefore also belong to the</td>
</tr>
<tr>
<td>Sound</td>
<td>A longitudinal wave form of energy of a frequency and intensity that is capable of being detected by the human ear</td>
</tr>
<tr>
<td><strong>Species</strong></td>
<td>Class of individuals having some common characteristics or qualities; distinct sort or kind.</td>
</tr>
<tr>
<td><strong>Tide</strong></td>
<td>A wave caused by Sun and Moon’s gravity</td>
</tr>
<tr>
<td><strong>Translucent</strong></td>
<td>Transmitting light but causing sufficient diffusion to prevent perception of distinct images</td>
</tr>
<tr>
<td><strong>Transparent</strong></td>
<td>Capable of transmitting light so that objects or images can be seen as if there were no intervening material</td>
</tr>
<tr>
<td><strong>Variables</strong></td>
<td>The factors that can be changed or measured in a fair test</td>
</tr>
<tr>
<td><strong>Variation</strong></td>
<td>Divergence in one or more characteristics of an organism</td>
</tr>
<tr>
<td><strong>Vegetation</strong></td>
<td>All the plants or plant life of a place, taken as a whole</td>
</tr>
<tr>
<td><strong>Vertebrates</strong></td>
<td>Organisms with backbones</td>
</tr>
<tr>
<td><strong>weathering</strong></td>
<td>Breaking down of rocks into smaller pieces by natural processes</td>
</tr>
</tbody>
</table>