THE LEARNING STANDARDS - GRADE 5 - 6

CONTENT STANDARDS

STRAND: EARTH AND SPACE SCIENCE (ESS)

Sub-Strand: Earth's Weather (EW)

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

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

Sub-Strand: Earth's Resources (ER)

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

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

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

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

Sub-Strand: Solar System (SS)

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

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

STRAND: LIFE SCIENCE (LS)

Sub-Strand: Diversity and Classification (DC)

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

Sub-Strand: Ecosystems (ECS)

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

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

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

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

Sub-Strand: Structure and Function (SF)

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

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

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

STRAND: PHYSICAL SCIENCE (PS)

Sub-Strand: Energy (EN)

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

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

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

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

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

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

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

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

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

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

Sub-Strand: Matter and Materials (MM)

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

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

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

PERFORMANCE STANDARDS - GRADE 5

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

STRAND: EARTH AND SPACE SCIENCE (ESS)

Sub-Strand: Earth's Weather (EW)

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

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

Sub-Strand: Earth's Resources (ER)

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

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

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

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

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

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

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

STRAND: LIFE SCIENCE (LS)

Sub-Strand: Diversity and Classification (DC)

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

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

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

Sub-Strand: Ecosystem (ECS)

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

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

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

Sub-Strand: Structure and Function (SF)

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

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

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

STRAND: PHYSICAL SCIENCE (PS)

Sub-Strand: Energy (EN)

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

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

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

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

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

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

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

Sub-Strand: Matter and Materials (MM)

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

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

STRAND: TECHNOLOGY (TE)

Sub-Strand: Technological Methods (TM)

At the end of Grade 4 activities pupils should:

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

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

Sub-Strand: Nature of Technology (NT)

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

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

Sub-Strand: Use of Technology (UT)

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

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

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

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

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

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

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

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

PERFORMANCE STANDARDS - GRADE 6

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

STRAND: EARTH AND SPACE SCIENCE (ESS)

Sub-Strand: Earth's Weather (EW)

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

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

Sub-Strand: Earth's Resources (ER)

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

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

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

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

Sub-Strand: Solar System (SS)

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

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

STRAND: LIFE SCIENCE (LS)

Sub-Strand: Diversity and Classification (DC)

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

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

Sub-Strand: Ecosystem (ECS)

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

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

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

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

Sub-Strand: Structure and Function (SF)

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

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

STRAND: PHYSICAL SCIENCE (PS)

Sub-Strand: Energy (EN)

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

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

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

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

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

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

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

Sub-Strand: Matter and Materials (MM)

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

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

STRAND: TECHNOLOGY (TE)

Sub-Strand: Technological Methods (TM)

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

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

Sub-Strand: Nature of Technology (NT)

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

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

Sub-Strand: Use of Technology (UT)

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

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

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

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

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

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

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

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

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

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

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