

Infant 1	Infant 2	Std 1	Std 2	Std 3	Std 4	Std 5
Individual and groups: Living things						
Identification and description of body parts	Characteristics living and non-living.	Vertebrates and invertebrates	Classes of vertebrates	Life cycles with complete metamorphosis	Growth and development maturity, differences between adults and young, measurement of observable physical traits.	
	Seeds, seedlings and seedling growth		Plants need light and water	Distinguishing features of plants and adaptation: bark, leaves etc. Distinguishing features of animals and adaptation – via camouflage, predation, etc	Growth and development in plants; experimental investigations.	
Food as a source of energy. Hygiene – personal cleanliness	Healthy and unhealthy foods				Eating healthy foods – preparation and ingredients.	

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Form and function:	Structures. Matter Machines Plants minerals					
The structure of an object is related to its function.		Materials and function.		External Parts of flower and its function	Materials and function: transparency, absorbency etc.	
			Soil types –water retention and percolation. Minerals: characteristics and function			
Simple machines - efforts, speed, direction.		Types of machines, levers, pulleys, wheel and axle etc.			Stability of structures – centre of gravity	Load, effort, fulcrum of levers. Weighing devices. Errors of parallax, zero error. Using IDEATE to make simple machines
	Characteristics of solids – colour, shape, size	Separation of mixtures: sieving and handpicking	3 states of matter – characteristics. Separation by filtration and magnetism.	Solubility. Separation of soluble solids from solutions. Using Thermometers.		

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SYSTEMS AND INTERACTIONS PHYSICS - forces Earth Sciences – weather, climate Ecosystems – habitats and relationships.						
Effects of forces – push, pull, change	Effects of forces	Effects of forces – twists and turns				Vector diagrams to illustrate forces. Identifying forces as effort and load.
Habitats aquatic and terrestrial	Habitats – aquatic and terrestrial			Types of aquatic habitats. Effects of pollution, non-native species, over-exploitation, on aquatic habitats. Protection of aquatic habitats, wetlands.		
		Food chains		Food webs		
		Daily cycles Wet and Dry seasons	Water cycle		Weather and Climate: preparation for extreme weather	

					conditions/natural disasters	
Conservation & Sustainability						
Forms of energy – light and heat	Energy conversion	Wind as a source of energy	Fossil fuels Alternative Energy – fossil, solar, hydroelectric	Solar energy as an alternative fuel	Renewable energy	Energy efficient devices Alternative energy sources and materials.
Types of Litter – paper, can, glass			Conserving potable water	Effects of land, air, and water pollution.		Decreasing the carbon footprint – Reduce, reuse and recycling
					Greenhouse effect and global warming	Predicting the effects of global warming (climate change). Reducing global warming.
	Local Scientists Popularisation					

Unifying concepts in SCIENCE

Big Ideas in Science are unifying concepts that cross all the Science Disciplines – Earth, Life and Physical. They are sometimes called Umbrella Concepts. We can't teach every Science concept, but we can introduce students to these unifying concepts, which will allow them to understand how Scientific knowledge is organized, and how Science makes sense of the natural and man-made world. Topics are the vehicles by which these big ideas are developed. The big ideas provide a focus or lens for the topic which allows the student to understand the topic as more than a collection of facts, but as concepts that can be used to organize and manage information, solve problems and make sense of their world. The revised MOE syllabus has classified topics under specific unifying concepts, however any topic can be taught through almost anyone of the big concepts.

The revised MOE syllabus 2014 is organized around four unifying concepts or umbrella ideas:

Form and Function – The form/structure of an object, is related to its function. A useful object is one in which form and function are related. We see this idea in adaptation of animals to their ecosystems. The form of an organism allows it to function effectively and survive in a particular ecosystem. Cacti survive in the desert because their leaves have been reduced to spines which prevent water loss, and mangroves survive the brackish water of the Caroni swamp because their leaves can secrete salt. Similarly machines and other man-made objects are efficient depending on how well their structure and materials suit their function.

Systems and Interactions – a system is a whole, made up of several interacting parts which work together to carry out a particular function. There are natural systems such as ecosystems and physical systems such as forces. In each case we can recognize different components interacting to allow the system to function. Ecosystems are made up of living and non living components which interact with each to develop a self-perpetuating system. Forces can be understood as a system of pushes and pulls, load and effort which interact to produce changes in the material world, such as a change in direction, speed or form of an object. Understanding systems allows us to determine how different parts intersect to produce certain functions, and how human beings disrupt or perpetuate systems in nature.

Individuals and Groups – living systems are made up of individuals with particular characteristics which define them. There millions of individual organisms on the planet, which can be classified by shared characteristics. Understanding the characteristics of living things helps us to maintain their biodiversity which is essential for the provision of ecosystem services and the survival of the planet.

Conservation and sustainability: Conservation is the management of our natural resources to produce the greatest sustainable benefits – that is benefits for present and future generations. Conservation involves preservation, maintenance, sustainability, restoration and enhancement of the natural environment (RBA -Rights based approach to conservation: community.icun.org/rba1/Pages/conservation.aspx). Two of the most important threats to conservation of the environment is the over exploitation of our environment for energy, and the production of non-biodegradable products and by products which act as pollutants. The earth is facing an extinction crisis of species and ecosystems which makes this focus one of key importance. It is a focus which also unites the three umbrella concepts of Individuals and Groups, Form and Function and Systems and Interactions.

References:

Singapore Ministry of Education Curriculum Planning & Development Division (2013) . [Singapore Science Syllabus Primary 2014](#).

NYUSteinhardt –Steinhard School of Culture, Education and Human Development (nd). [Science Education Resources – Big Ideas](#). Retrieved June 6th 2014 from Steinhardt.nyu.edu/teachlearn/science/resources/ideas.

RBA -Rights based approach to conservation: community.icun.org/rba1/Pages/conservation.aspx).