ISÄ PYP SCIENCE SCOPE AND SEQUENCE

LIVING THINGS

The study of the characteristics, systems and behaviours of humans and other animals, and of plants; the interactions and relationships between and among them, and with their environment.

Sample Related concepts: adaptation, animals, biodiversity, biology, classification, conservation, ecosystems, evolution, genetics, growth, habitat, homeostasis, organism, plants, systems (digestive, nervous, reproductive, respiratory).

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Overall Expectations: **Age 3-5** Develop their observational skills by using their senses to gather and record information, and they will use their observations to identify simple patterns, make predictions and discuss their ideas. They will explore the way objects and phenomena function, and will recognize basic cause and effect relationships. Examine change over varying time periods and know that different variables and conditions may affect change. They will be aware of different perspectives, and they will show care and respect for themselves, other living things and the environment. Communicate their ideas or provide explanations using their own scientific experience and vocabulary. **Age 5-7** Develop their observational skills by using their senses to gather and record information, and they will use their observations to identify patterns, make predictions and refine their ideas. 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Name parts of the plants and describe its role	Explain plant and animal adaptations in specific ecosystems	Name and identify different body systems (form)	Make connections between different species	
Observe plants and animals	Create models to demonstrate understanding of interdependence of ecosystems	Explain how different body systems work (function)	Understand different ways that nature changes over time	
Make predictions on what plants need to grow and stay healthy	Explain how organisms are interconnected in nature	Identify and explain the interdependence between body systems	Distinguish between science and religion	

Edited in September 2019, by PYPC and GLTLs

Describe the life cycles of a variety of living things (for example, a range of a plants)		Explain how you can contribute to a healthy body	Familiarize with various models on nutrition and diets	
Compare the life cycles of different plants			Identify the impact of nutrition on health	
Identify the parts of plants that are used by other living things (for example, for food, shelter, tools)			Discuss the idea of malnourishment as a health violation for children	
Be aware of the role of plants in sustaining life (for example, providing oxygen, food)				
Show responsibility when caring for plants				
Investigate the responses of plants or animals to changes in their habitats				

EARTH AND SPACE

The study of planet Earth and its position in the universe, particularly its relationship with the sun; the natural phenomena and systems that shape the planet and the distinctive features that identify it; the infinite and finite resources of the planet.

Sample Related concepts: atmosphere, climate, erosion, evidence, geography, geology, gravity, renewable and non-renewable energy sources, resources, seasons, space, sustainability, systems (solar, water cycle, weather), tectonic plate movement, theory of origin.

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Compare activities that occur during the seasons	Explain how earth's position in the solar system affects time (function)	Identify examples of how technology is used to save resources	Ability to collect data from online sources	Understand the effects of pollution on the Earth through research and analyzing data
Make connections between the weather and people's choices of food, clothing and other lifestyles	Name and describe planets and other celestial bodies (form)	Understand what a sustainable life-style means	Present scientific findings to an audience, use appropriate vocabulary	Evaluate how global warming affects the Earth
Compare activities that occur during the seasons	Formulate relevant inquiry questions	Be able to take appropriate action leading to a sustainable life	Realise cause and effect relationships between natural forces and humans	Research how recycling can have a positive effect on the Earth's resources and

				apply ideas to own life
Compare activities that occur in different parts of the world				Scientific illustrations, botanical drawings, biological drawings, nature, illustrator, ink and pencil, sketch
Investigate the 8 continents				
Investigate how daily and seasonal changes in our environment affect everyday life				

MATERIALS AND MATTER

The study of the properties, behaviours and uses of materials, both natural and human-made; the origins of human-made materials and how they are manipulated to suit a purpose.

Sample Related concepts: changes of state, chemical and physical changes, conduction and convection, density, gases, liquids, properties and uses of materials, solids, structures, sustainability.

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Recognize that imagination contributes to scientific developments	Describe how materials' properties change	Be able to collect and analyse weather data	Make connections between art and science, for example maps, scientific illustrations	Understand how inventors designed and created their inventions. Consider how things were before these inventions
Explore the use of imagination as a tool to solve problems (for example, particular inventions, scientific discoveries)	Conduct an experiment using the scientific method	Make reasonable predictions using weather data	Experience how the combination of different materials changes their attributes	Analyze how inventors designed and created their inventions. Consider how things were before these inventions
Use senses to describe observable properties of familiar materials (including solids, liquids, gases)	Analyze and evaluate whether a change is physical or chemical	Explain different weather patterns		Evaluate ow things were before these inventions
		Explain how technology is used to help people deal with different weather conditions		Create a personal invention in planning or actual form
		Be able to explain the difference between weather and climate		Understand what solids, liquids and gasses are.
				Apply knowledge of different states of matter through presentation, experimentation and notes
				Analyze and Evaluate matter in its different forms

FORCES AND ENERGY

The study of energy, its origins, storage and transfer, and the work it can do; the study of forces; the application of scientific understanding through inventions and machines.

Sample Related concepts: conservation of energy, efficiency, equilibrium, forms of energy (electricity, heat, kinetic, light, potential, sound), magnetism, mechanics, physics, pollution, power, technological advances, transformation of energy.

PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5
Overall Expectations: **Age 3-5** Develop their observational skills by using their senses to gather and record information, and they will use their observations to identify simple patterns, make predictions and discuss their ideas. They will explore the way objects and phenomena function, and will recognize basic cause and effect relationships. Examine change over varying time periods and know that different variables and conditions may affect change. They will be aware of different perspectives, and they will show care and respect for themselves, other living things and the environment. Communicate their ideas or provide explanations using their own scientific experience and vocabulary. **Age 5-7** Develop their observational skills by	**Overall Expectations:** **Age 5-7** Develop their observational skills by using their senses to gather and record information, and they will use their observations to identify patterns, make predictions and refine their ideas. They will explore the way objects and phenomena function, identify parts of a system, and gain an understanding of cause and effect relationships. Examine change over varying time periods, and will recognize that more than one variable may affect change. They will be aware of different perspectives and ways of organizing the world, and they will show care and respect for themselves, other living things and the environment. Communicate their ideas or provide explanations using their own scientific experience. **Age 7-9**	**Overall Expectations:** **Age 5-7** Develop their observational skills by using their senses to gather and record information, and they will use their observations to identify patterns, make predictions and refine their ideas. They will explore the way objects and phenomena function, identify parts of a system, and gain an understanding of cause and effect relationships. Examine change over varying time periods, and will recognize that more than one variable may affect change. They will be aware of different perspectives and ways of organizing the world, and they will show care and respect for themselves, other living things and the environment. Communicate their ideas or provide explanations using their own scientific experience. **Age 7-9**	**Overall Expectations:** **Age 7-9** Develop their observational skills by using their senses and selected observational tools. They will gather and record observed information in a number of ways, and they will reflect on these findings to identify patterns or connections, make predictions, and test and refine their ideas with increasing accuracy. Explore the way objects and phenomena function, identify parts of a system, and gain an understanding of increasingly complex cause and effect relationships. They will examine change over time, and will recognize that change may be affected by one or more variables. They will examine how products and tools have been developed through the application of science concepts. They will be aware of different perspectives and ways of organizing the world, and they will be able to consider	**Overall Expectations:** **Age 7-9** Develop their observational skills by using their senses and selected observational tools. They will gather and record observed information in a number of ways, and they will reflect on these findings to identify patterns or connections, make predictions, and test and refine their ideas with increasing accuracy. Explore the way objects and phenomena function, identify parts of a system, and gain an understanding of increasingly complex cause and effect relationships. They will examine change over time, and will recognize that change may be affected by one or more variables. They will examine how products and tools have been developed through the application of science concepts. They will be aware of different perspectives and ways of organizing the world, and they will be able to consider

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They will examine change over time, and they will recognize that change may be affected by one or more variables. Reflect on the impact that the application of science, including advances in technology, has had on themselves, society and the environment. They will be aware of different perspectives	how these views and customs may have been formulated. Consider ethical issues in science-related contexts and use their learning in science to plan thoughtful and realistic action in order to improve their welfare and that of other living things and the environment. Communicate their ideas or provide explanations using their own scientific experience and that of others. **Age 9-12** Develop their observational skills by using their senses and selected observational tools. They will gather and record observed information in a number of ways, and they will reflect on these findings to identify patterns or connections, make predictions, and test and refine their ideas with increasing accuracy. 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Scientific Skills: • *Observe carefully in order to gather data* • *Use a variety of instruments and tools to measure data accurately* • *Use scientific vocabulary to explain their observations and experiences* • *Identify or generate a question or problem to be explored* • *Plan and carry out systematic investigations, manipulating variables as necessary* • *Make and test predictions* • *Interpret and evaluate data gathered in order to draw conclusions*	**Scientific Skills:** • *Observe carefully in order to gather data* • *Use a variety of instruments and tools to measure data accurately* • *Use scientific vocabulary to explain their observations and experiences* • *Identify or generate a question or problem to be explored* • *Plan and carry out systematic investigations, manipulating variables as necessary* • *Make and test predictions* • *Interpret and evaluate data gathered in order to draw conclusions*	**Scientific Skills:** • *Observe carefully in order to gather data* • *Use a variety of instruments and tools to measure data accurately* • *Use scientific vocabulary to explain their observations and experiences* • *Identify or generate a question or problem to be explored* • *Plan and carry out systematic investigations, manipulating variables as necessary* • *Make and test predictions* • *Interpret and evaluate data gathered in order to draw conclusions*	**Scientific Skills:** • *Observe carefully in order to gather data* • *Use a variety of instruments and tools to measure data accurately* • *Use scientific vocabulary to explain their observations and experiences* • *Identify or generate a question or problem to be explored* • *Plan and carry out systematic investigations, manipulating variables as necessary* • *Make and test predictions* • *Interpret and evaluate data gathered in order to draw conclusions*	**Scientific Skills:** • *Observe carefully in order to gather data* • *Use a variety of instruments and tools to measure data accurately* • *Use scientific vocabulary to explain their observations and experiences* • *Identify or generate a question or problem to be explored* • *Plan and carry out systematic investigations, manipulating variables as necessary* • *Make and test predictions* • *Interpret and evaluate data gathered in order to draw conclusions*

ISÄ PYP SCIENCE SCOPE AND SEQUENCE

• *Consider scientific models and applications of these models (including their limitations).*	• *Consider scientific models and applications of these models (including their limitations).*	• *Consider scientific models and applications of these models (including their limitations).*	• *Consider scientific models and applications of these models (including their limitations).*	• *Consider scientific models and applications of these models (including their limitations).*
Describe how a push or a pull affects how an object moves or changes shape			Conduct simple experiments, recording their steps	Understand the effects of pollution on the Earth through research and analyzing data
Identify and describe different forms of forces			Familiarize with different measuring tools	Evaluate how global warming affects the Earth
Name simple machines and describe how they work			Identify basic principles of force and motion which supported exploration	Research how recycling can have a positive effect on the Earth's resources and apply ideas to own life
Investigate the effect of a force on different materials				
Observe objects movement and describe factors that make it move e.g size and shape				