

Grade 3

In the Primary Years Programme (PYP) Science curriculum, students engage in hands-on, inquiry-based learning to explore the world around them through transdisciplinary themes. They investigate the natural world and human-made systems, developing an understanding of key concepts like change, connection, and responsibility. Through experiments, observations, and critical thinking, students build scientific knowledge, learn how to ask questions, and work collaboratively to solve real-world problems. The focus is on understanding how living and nonliving things interact, how systems work, and how humans can contribute to the sustainability of the environment and resources.

Science is divided into three strands which are taught progressively.

- ☐ **Living Things:** Students will explore how all living things are connected and depend on each other to live. They will learn how plants, animals, and people grow, change, and adapt to the environment over time. Students will also discover the different patterns and characteristics of living things, such as how they behave and how they are organized. They will investigate the relationships between different species, including humans, and how we all rely on each other to survive and thrive. By understanding how living things are connected, students will learn how to care for the planet and all the life around us.
- ☐ **Earth and Space:** Students will learn about Earth's structure and its place in the solar system. They will explore how Earth changes over time, including different ecosystems, natural cycles, and how we use resources from the planet. Students will investigate how Earth's systems are connected and how natural events and human actions affect the planet. They will also learn how living things, including humans, adapt to changes in the environment. Students will reflect on the importance of taking care of Earth and keeping it healthy for future generations. They will discover how scientists use tools and models to help us understand the Earth, space, and how the universe has developed over time
- ☐ **Physical and Chemical Science:** Students will explore different materials and how they behave. They will learn about the properties of matter—like how solids, liquids, and gases are different—and how these properties can change. Students will experiment with how materials can be combined or changed to create new things. They will also discover how people use science to explain and predict how substances behave, and how this helps us create new materials or products. Students will explore how technologies are designed and think about how these inventions can impact society and the environment.

LIVING THINGS/EARTH AND SPACE

Balanced choices

Central Idea

Making balanced choices about daily routines enables us to have a healthy lifestyle

I can identify some of the different types of daily activities e.g. rest, work, play, exercise, and explain why balance is important

I can investigate how energy levels change depending on what I eat and how much I rest or move
I can observe and record some patterns in my daily routines and how they make me feel, and use those patterns to explain cause and effect to make predictions
I can explain what a healthy lifestyle looks like using facts about food, exercise, and hygiene
I can identify nutrients in different foods and describe how they help my body
I can make a model or diagram of a balanced meal or daily routine
I understand how a scientific idea can be tested and the evidence used to support the idea e.g. sailors developing scurvy at sea
I can investigate how exercise affects my heart rate and body temperature and explain why
I can simply explain that the heart is a muscle that pumps blood faster when I exercise to give my body more oxygen
I can measure my pulse rate and explain how it is related to my heart beat
I am beginning to understand that pulse rate is measured in beats per minute
I can suggest some reasons why my pulse rate might be different each time I measure it and explain why it's important to take several measurements in science
I can organise pulse rate data into a bar chart and read and interpret the results
I can draw and label how the heart pumps blood to the body, and explain that exercise makes the heart pump faster to help my muscles and lungs
I can predict some of the effects of unhealthy habits e.g. too much screen time, not enough sleep, or poor eating
I can create a fair test to show how poor sleep, food or screen time habits can affect me
I can explain how some of my lifestyle choices affect my moods - both positively and negatively
I can explain that some harmful substances e.g. tobacco, alcohol, and drugs, can affect how the body works
I can reflect on how my habits have changed and what I've learned about wellbeing

PHYSICAL AND CHEMICAL SCIENCE
The power of machines

Central Idea	Machines play a central role in society
I can identify six types of simple machines	
I can name real-world examples of each simple machine	
I can simply explain what a compound machine is	
I can identify some compound machines in my home, school, or community	
I can group and sort machines into simple or compound categories	
I can simply explain how each simple machine helps us do work	
I can describe how some simple machines make tasks easier by reducing effort, changing direction, or increasing speed	
I can match tasks with the most useful type of simple machine	
I can create or design a simple machine to solve a problem	
I am beginning to be able to demonstrate how a compound machine combines simple machines to do work	
I can identify some different types of forces e.g. magnetism, friction and gravity	
I understand that there are forces between magnets and that magnets can attract (pull towards) and repel (push away from) each other	
I can make and test predictions about whether materials are magnetic or not	
I can plan and carry out a fair test to compare the strength of different magnets	
I understand that the force between two moving surfaces in contact is called <i>friction</i>	
I am beginning to use a forcemeter to measure forces, reading the scale accurately	
I can investigate how different surfaces affect how easily an object slides	
I can plan and carry out a fair test by changing one variable e.g. testing on different surfaces, and keeping others the same	
I can record my results in a bar chart and explain what they show about friction	
I can describe how water resistance affects objects moving through water	

I can investigate how the shape of an object affects water resistance
I can design a fair test by changing only the object's shape and keeping other factors the same
I can record my results and explain which shapes move best through water and why
I can simply describe what air resistance is and how it affects moving objects
I can simply explain how air resistance makes it harder to move when holding a large object or moving into the wind
I can investigate how the shape or size of an object affects how fast it falls through the air
I can draw and label a diagram to show how air pushes against moving objects
I can compare how different shapes or surfaces are affected by air resistance

PHYSICAL AND CHEMICAL SCIENCE	
When Art speaks	
Central Idea	The Arts can influence our thinking and behaviour
I can identify some common materials used in art and describe their characteristics e.g. clay is a type of natural soil that becomes soft and mouldable when wet, and hard when heated or dried	
I can sort and describe materials according to their properties	
I can investigate how heating or drying changes materials to make them hard, shiny or permanent e.g. clay, wax, or paint	
I can explore how artists bend, carve, or smooth materials to create texture in their work e.g. using tools to roughen or smooth clay surfaces to create different visual or tactile effects	
I can test various materials by bending, stretching, or heating/cooling to create art e.g. melting wax to create batiks	
I can explain simple physical reactions e.g. sprinkling salt on a wet watercolour painting to create a particular effect such as a sparkly sky	
I can explain simple chemical reactions e.g. by boiling plants like red cabbage, and turmeric to release natural dyes that can be used to create art	
I understand that local environments influence the materials that artists use e.g. natural ochres and sticks are used in Aboriginal art	

I can explore how some artists have used technology to enhance their work e.g. David Hockey's ipad paintings

I can create my own artwork using technology e.g. digital drawing, music software or video

PHYSICAL AND CHEMICAL SCIENCE

Life on the grid

Central Idea

Electricity systems are organised to power communities

I can name different ways electricity is made e.g. using wind, sunlight, or burning fuel

I can build a simple wind turbine and count and record how many objects spin when it makes 'electricity'

I understand that a circuit needs a power source e.g. batteries

I understand that a complete circuit is needed for a device to work

I can simply explain that a switch can be used to make or break a circuit to turn things on or off using both batteries or mains

I can simply explain how electricity travels from power stations to homes

I can identify some sources of electricity around me

I can build a circuit with support, to test which materials allow electricity to pass through

I can simply explain how electricity flows through a circuit

I can show how electricity changes into other types of energy e.g. lighting a bulb

I can suggest which materials conduct electricity e.g. metals letting electricity pass and plastics not letting electricity pass

I can simply explain why metals are used for cables and wires because they conduct electricity well, and why plastics are used for plugs because they act as insulators

I can list some ways to stay safe when using electricity

I can explain why it is important to use electricity carefully

I can suggest ways to save electricity and protect the environment

LIVING THINGS/ EARTH AND SPACE/PHYSICAL AND CHEMICAL SCIENCE

Ancient civilizations

Central Idea

Ancient civilizations help shape the way people live

I can identify some of the materials ancient people used and explain why they used them

I can simply describe how ancient people used natural resources to survive

I can compare the diets of ancient people to those of people today

I can explore how ancient farming practices helped people grow food

I can describe how ancient people observed the sky and used it to track time

I can investigate some of the types of shelters ancient people built and what materials they used

I can investigate how ancient civilizations used materials in different ways e.g. for tools, buildings, art

I can describe some similarities and differences in how ancient civilizations used the environment e.g. Ancient Egyptians used the sun to design their calendars whilst Ancient Chinese farmers used seasonal weather patterns to time planting of crops

I can identify how ancient people used energy sources like fire, wind, or water

I can investigate how an invention like the wheel or pulley made life easier for ancient people

I can test how simple machines e.g. levers, pulleys and ramps work

I can simply explain how an ancient invention changed the way people lived

I can ask some questions and carry out experiments to learn how things work e.g. *how does a ramp help to move objects more easily?*

I can describe how inventions spread and improved life in other communities

LIVING THINGS/ PHYSICAL AND CHEMICAL SCIENCE/ EARTH AND SPACE

Natural resources	
Central Idea	Humans depend on natural resources, some of which are limited
I can identify some natural resources that I use in everyday life and explain how they are used to make products	
I can simply describe where some natural resources come from and how they are collected	
I can sort some resources into renewable and non-renewable categories and begin to describe the difference	
I can identify and name different some types of rocks e.g. sedimentary, igneous, metamorphic, and begin to explain how and why they are used by humans	
I can compare the properties of different rocks, such as hardness, texture, and permeability	
I can simply describe how soil is made from rocks and organic matter, and compare different types of soil e.g. clay, sand and loam	
I can simply explain why soil is important for growing food and how it can be damaged through overuse or pollution	
I can use tools e.g. magnifying glass to observe soil and record findings using scientific methods	
I can record my observations on rocks and soil and present my findings using charts or diagrams	
I can give some examples of how renewable energy like solar or wind is used today	
I can simply explain why we need to protect natural resources and what happens when they are overused e.g. pollution, deforestation, loss of wildlife	
I can suggest some ways I can reduce, reuse, and recycle in daily life	
I can simply describe how people in the past used natural materials and compare how different cultures manage resources	
I can ask questions and make predictions about how we use natural resources	
I can carry out a simple investigation to find out how quickly some resources are used or wasted e.g. <i>How much water do we use when brushing our teeth?</i>	
I can share my scientific findings using charts, diagrams, and labeled drawings.	