Tywardreath School

Science Overview
Key Knowledge, Skills and Vocabulary
Year A

What makes Tywardreath Curriculum unique? A clear focus on local, national and global communities, raising multi-cultural awareness, highlighting aspirational female role models, developing skills for life, promoting a respect for our environment, celebrating responsible citizens and providing opportunities to debate and reflect.

	EYFS	Year 1 and 2	Year 3 and 4	Year 5 and 6
Autumn 1	Marvellous Me! Celebrations	Amazing Discoveries, Amazing People	Romans – Helpful Invaders?	How Mysterious were the Maya?
		Animals including Humans (Y2) Basic needs, offspring **Human Body (Y1)**	**Forces and Magnets (Y3)**	**Animals Including Humans – Circulatory System (Y6)**
National Curriculum Objectives	<u>Development Matters</u> To become an **Exceptional Explorer** who can show curiosity about the world around them. To become a **Compassionate Citizen** who can help look after their community and care for the environment.	Pupils should be taught to: - find out about and describe the basic needs of animals, including humans, for survival (water, food and air) -identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	Pupils should be taught to: - compare how things move on different surfaces - notice that some forces need contact between two objects, but magnetic forces can act at a distance - observe how magnets attract or repel each other and attract some materials and not others - compare and group together a variety of everyday materials on the basis on whether they are attracted to a magnet, and identify some magnetic materials - describe magnets as having two poles - predict whether two magnets will attract or repel each other, depending on which poles are facing.	Pupils should be taught to: -identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood -recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function -describe the ways in which nutrients and water are transported within animals, including humans
Assessment	**Tapestry**	**TAPS:** Set Up Enquiry (hand spans)	**TAPS:** Ask Questions and Plan Enquiry (shoe grip, strongest magnet)	**TAPS:** Ask Questions and Plan Enquiry (liquid flow through blood vessels)
Working Scientifically	Pupils should be taught to: -choose the resources they need for their chosen activities and	Pupils should be taught to: --perform simple tests	Pupils should be taught to: -ask relevant questions and use different types of scientific enquiries to answer them	Pupils should be taught to: -Plan different types of scientific enquiries to answer questions, including recognising and

	say when they do or don't need help		set up simple practical enquiries, comparative and fair tests	controlling variables where necessary
Key Knowledge	Look at pictures of themselves and talk about changes that have happened	-Name and draw our own bodies and label the basic external parts. -Name the 5 senses and discuss our preferences around them. -Describe the basic needs of animals (water food and air). - -Notice that animals have offspring and match adult with their offspring (focus on animals local to us). Notice and describe how our body changes with exercise (timing exercises).	-Identify forces such as push and pull -Describe friction as a force that slows objects down -Feel the pulling force of a magnet -Sort materials according to whether they are magnetic or not -Identify the different poles of a bar magnet -Use a magnetic compass with four points	-Demonstrate prior knowledge of systems within the human body. -Identify the main parts of the circulatory system. -Explain the main functions of the heart, lungs and blood vessels in the circulatory system, including the specific functions of the lungs - Explain what constitutes a healthy lifestyle. -Describe how drugs, alcohol and cigarettes can impact negatively on the body. -Understand the processes of how water and nutrients are transported in the body.
Sequence of Learning	Led by children's interests and ongoing AFL. Sequenced to build upon prior knowledge with a clear end point.	Prior Learning: parts of the body 1.Can I name and label parts of the body? 2.Can I name the 5 senses & their organs? 3.Can I describe what humans and animals need to live? 4.Can I describe why exercise is good for us? (PE) 5.Can I describe how our bodies change when we exercise?	Prior Learning: Y1/2 Materials 1.Can I identify the forces acting on objects? 2.Can I explore how objects move over different surfaces? 3.Can I sort magnetic and non-magnetic objects? 4.Can I investigate the strength of magnets? 5.Can I explore magnetic poles?	Prior Learning: function of skeleton, how muscles work in pairs to support movement, digestive system 1.Can I identify main parts of circulatory system? 2.Can I describe how the circulatory system works? 3.Can I explain how water and nutrients are transported in the body? 4.Can I describe the impact of drugs, alcohol and cigarettes on our bodies? 5.Can I explain what a healthy lifestyle is?

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	EYFS	Year 1 and 2	Year 3 and 4	Year 5 and 6
Autumn 2	Marvellous Me! Celebrations	Where Are We?	How Can I Find My Way?	How Amazing are The Americas?
		Living things and Habitat (Y2) UK/Cornwall	**Animals including Humans (Y3)** Nutrition	**Evolution and Inheritance (Y6)**
National Curriculum Objectives	<u>Development Matters</u> To become an **Exceptional Explorer** who can show curiosity about the world around them. To become a **Compassionate Citizen** who can help look after their community and care for the environment.	Pupils should be taught to: Explore + compare differences between things that are living, dead, things that have never been alive -Identify that most living things live in habitats to which they are suited -Describe how different habitats provide for the basic needs of different kinds of animals + plants, how they depend on each other -Identify and name a variety of plants and animals in their habitats, including microhabitats. -Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.	Pupils should be taught to: -Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat	Pupils should be taught to: -recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago -recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents -identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution
Assessment	**Tapestry**	**TAPS:** Ask Questions + Plan Enquiry (woodlice habitats)	**TAPS:** Set Up Enquiry (Is it safe to eat?)	**TAPS:** Set Up Enquiry (fossil habitats/egg strength)
Working Scientifically	Pupils should be taught to: choose the resources they need for their chosen activities and say when they do or don't need help	Pupils should be taught to: - ask simple questions and recognise that they can be answered in different ways	Pupils should be taught to: -set up simple practical enquiries, comparative and fair tests	Pupils should be taught to: -use test results to make predictions to set up further comparative and fair tests
Key Knowledge	-Learn how to look after our body -Oral hygiene -Importance of eating fruit and vegetables	Name animals that live in Cornwall. Know the names of land types and habitats that we have around us- farmland, industry, leisure, beach	**-**Basic needs of animals inc humans. -Describe the importance of exercise, eating the right amounts of different types of food, and hygiene.	-Know the difference between inherited traits and adaptive traits. -Know that adaptations are random mutations.

		Know which animals live there and why. Name the microhabitats that we have in our school grounds. Name the animals that live there. Know why they are suitable for them. Know what these animals eat. Explore and order food chains of local animals using appropriate scientific vocabulary	-Understand that plants and animals obtain food in different ways. -Identify the right types and demonstrate they understand the right amounts of nutrients for animals including humans.	-Examine fossil evidence supporting the idea of evolution. -Know and identify the difference between selective and cross-breeding -Develop an understanding of the development of evolutionary ideas and theories over time. -Know how human evolution has occurred know Darwin's theory for natural selection
Sequence of Learning	Led by children's interests and ongoing AFL. Sequenced to build upon prior knowledge with a clear end point.	Prior Learning: EYFS similarities and differences between contrasting environments 1.Can I identify some plants and animals in the local environment? 2.Can I name the different habitats around us? 3.Can I name the microhabitats that we have in our school grounds? 4.Can I name the animals that live there and why? 5.Can I order a food chain of local animals? *Link with St. Andrew's Wetland Reserve Par?*	Prior Learning: Y1/2 what do humans need to survive? 1.Can I classify food into the main food groups? 2. Can I explain how animals and humans obtain their food? 3.Can I explore nutritional values of different foods? 4. Can I describe the nutrients animals and humans require to maintain health?	Prior Learning: what do children know about evolution? 1.Can I explain the concept of inheritance? 2.Can I explore adaptation? 3.Can I explore the theories of evolution? 4.Can I identify evidence for evolution? 5.Can I explain how human beings have evolved? 6.Can I examine how adaptation results in both advantages and disadvantages?
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	EYFS	Year 1 and 2	Year 3 and 4	Year 5 and 6
Spring 1	Our Wonderful World Let's Go On An Adventure	The Lights of London	What did the Anglo-Saxons do for us?	Were the Vikings Victorious?
		Everyday Materials (Y1 + Y2) Physical Properties	Animals Including Humans (Y4) Food Chains and webs	Forces (Y5)
National Curriculum Objectives	<u>Development Matters</u> To become an **Exceptional Explorer** who can show curiosity about the world around them. To become a **Compassionate Citizen** who can help look after their community and care for the environment.	Pupils should be taught to: (Y1)-distinguish between an object and the material from which it is made -identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, rock -describe the simple physical properties of a variety of everyday materials (Y2) identify and compare the suitability of a variety of everyday materials -	Pupils should be taught to: -construct and interpret a variety of food chains, identifying producers, predators and prey	Pupils should be taught to: -explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object -identify the effects of air resistance, water resistance and friction, that act between moving surfaces -recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect
Assessment	Tapestry	**TAPS:** Observe and Measure (houses –Great Fire of London)	**TAPS:** Observe and Measure (What do owls eat?)	**TAPS:** Observe and Measure (aqua dynamics)
Working Scientifically	Pupils should be taught to: -know about similarities and differences in relation to places, objects, materials and living things -make observations	Pupils should be taught to: -Observe closely, using simple equipment	Pupils should be taught to: -Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	Pupils should be taught to: -take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
Key Knowledge	Changes of State - ice	Identify and name materials in our classroom, school grounds etc. Focus on house- Identify and name materials used to make houses. Use	Know how to use the terms producers, predators and prey to describe a food chain.	Know that the force of gravity acts between the Earth and the falling object

		observation of houses in the village (make comparisons to those in The Great Fire and links to spread of fire) Begin to discuss which materials are most suitable for houses – links to Great Fire of London	Be able to name food chains in the savannah, Tundra, woodland, ocean To begin to know that humans have a responsibility to care about their impact on food chains -know that food chains need to be balanced and what the effects are if they are disturbed -Know how micro plastics have entered the food chain	-Know the effects of air resistance, water resistance and friction, that act between moving surfaces -Know that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect
Sequence of Learning	Led by children's interests and ongoing AFL. Sequenced to build upon prior knowledge with a clear end point.	Prior Learning: EYFS differences between materials and changes they notice 1.Can I identify and name materials in our classroom? 2.Can I identify materials used to make houses in our village? 3.Can I describe the properties of materials ? 4.Can I say which materials are most suitable for the different parts of a house and why?	Prior Learning: Y1/2 Food Chains 1.Can I describe a range of food chains? 2.Can I construct food chains for different ecosystems? 3.Can I explain how humans might affect food chains? 4.Can I explore the impact of micro-plastics in our food chains?	Prior Learning: Y3/4 Forces and Magnets 1.Can I explore balanced and unbalanced forces? 2.Can I explain the effects of gravity? 3.Can I investigate the effects of air resistance? 4.Can I explore the effects of water resistance? 5.Can I identify the effects of friction? 6.Can I apply my knowledge to create a mechanism?
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	EYFS	Year 1 and 2	Year 3 and 4	Year 5 and 6
Spring 2	Our Wonderful World Let's Go On An Adventure	Does It Rain In Kenya?	Why Do People Live Near Volcanoes?	Does Alaska Need Saving?
	Groups	**Animals Including Humans (Y1)** Classification, Herbivore, Carnivore, Omnivore	**Rocks (Y3)**	**Living things and Habitats (Y6)** Classification
National Curriculum Objectives	<u>Development Matters</u> To become an **Exceptional Explorer** who can show curiosity about the world around them. To become a **Compassionate Citizen** who can help look after their community and care for the environment.	Pupils should be taught to: -identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals -identify and name a variety of common animals that are carnivores, herbivores and omnivores -describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)	Pupils should be taught to: -Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties -Describe in simple terms how fossils are formed when things that have lived are trapped within rock -Recognise that soils are made from rocks and organic matter	Pupils should be taught to: -describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals -give reasons for classifying plants and animals based on specific characteristics
Assessment	**Tapestry**	**TAPS:** Record (animal classification)	**TAPS:** Record (rock reports)	**TAPS:** Record (outdoor keys)
Working Scientifically	Pupils should be taught to: -explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function -select and use technology for particular purposes	Pupils should be taught to: -Gather and record data to help in answering questions	Pupils should be taught to: -Gather, record and classify and present data in a variety of ways to help in answering questions -Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables	- record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
Key Knowledge	Sort toys according to material	Name animals that live in the local environment and explain why they live there Name / classify groups of animal's fish, amphibian, reptile, bird and mammal. Know what they have in common.	-name the three different types of rocks and group by their properties -handle and examine rocks to identify their properties, particularly granite -give examples of natural and human-made rocks -explain the difference between a bone and a fossil.	-Build on knowledge from Y4. -Know that the broad groupings of micro-organisms, plants and animals can be subdivided. -Know how to classify animals into commonly found invertebrates and vertebrates

		Make links to local animals and classify. Know the meaning of omnivore, carnivore and herbivore. Use this to explain what different animals eat. Make comparisons with animals that live in Kenya.	describe the importance of granite in Cornwall and links to mining -state four different types of matter that make up soil -explain, using simple scientific language, how soil is formed. - Know why there are different soil types and how this might affect plant life.	-Discuss reasons why living things are placed in one group and not another. -Know about the work of scientists such as Carl Linnaeus
Sequence of Learning	Led by children's interests and ongoing AFL. Sequenced to build upon prior knowledge with a clear end point.	Prior Learning: EYFS names of animals in different environments 1. Can I identify and classify a variety of common animals? *(including fish, amphibians, reptiles, birds and mammals)* 2. Can I explain what they have in common including with humans? 3. Can I identify and name a variety of carnivores, herbivores and omnivores? 4. Can I describe nocturnal animals? 5. Can I classify animals found in Kenya?	Prior Learning: Y1/2 Materials 1. Can I compare and group different types of rocks? *(link to local mining)* 2. Can I explain how igneous, sedimentary and metamorphic rocks are formed? 3. Can I explain how fossils are formed? 4. Can I explain Mary Anning's contribution to palaeontology? 5. Can I describe how soil is formed? *(link to sand on our beaches)* 6. Can I investigate different types of soil and which plants grow in them?	Prior Learning: Y3/4 classification 1. Can I classify different types of animals? 2. Can I explore the classification of plants and animals? 3. Can I explore the Linnaean System? 4. Can I investigate micro-organisms? 5. Can I record observations of micro-organisms?
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	EYFS	Year 1 and 2	Year 3 and 4	Year 5 and 6
Summer 1	The Great Outdoors Fun at the Seaside	Do I Know the History On My Doorstep?	Who Had the Power?	Crime and Punishment – Who Done It?
		Animals including Humans (Y2) Offspring, Importance of Exercise	**Sound (Y4)**	**Animals including Humans (Y5)** Body Changes Over Time
National Curriculum Objectives	<u>Development Matters</u> To become an **Exceptional Explorer** who can show curiosity about the world around them. To become a **Compassionate Citizen** who can help look after their community and care for the environment.	Pupils should be taught to: -describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	Pupils should be taught to: -identify how sounds are made, associating some of them with something vibrating -recognise that vibrations from sounds travel through a medium to the ear -find patterns between the pitch of a sound and features of the object that produced it -find patterns between the volume of a sound and the strength of the vibrations that produced it -recognise that sounds get fainter as the distance from the sound source increases	Pupils should be taught to: -describe the changes as humans develop to old age
Assessment	**Tapestry**	**TAPS:** Interpret and Report (heart rate)	**TAPS:** Interpret and Report (investigating pitch/string telephones)	**TAPS:** Interpret and Report (growth survey)
Working Scientifically	Pupils should be taught to: represent their own ideas, thoughts and feelings through design and technology, art, music, dance, role play and stories	Pupils should be taught to: -identify and classify, using scientific language to communicate ideas	Pupils should be taught to: -report on findings from enquiries, including oral and written explanations, displays or presentations and conclusions -identify differences, similarities or changes related to simple scientific ideas and processes	Pupils should be taught to: Report and present findings from enquires, including conclusions and casual relationships, in oral and written forms such as displays and other presentations, using appropriate scientific language

Key Knowledge	- Understand the key features of the life cycle of a plant or animal (plant, frog, butterfly)	-Know that animals and humans have offspring and the names of these -Know that we are humans and that we have basic needs to survive. -Discuss our own opinion and needs and how that may differ to others. -Know what it means to be healthy. -Know about different types of food and how they impact our weight and health. -Know the importance of hygiene and begin to take responsibility for own hygiene. -Know the importance of exercise and it impact on our physical and mental health.	Describe sounds around us -Observe how different sounds are made. -Explain how sound sources vibrate to make sounds. -Explain how vibrations change when the loudness of a sound changes. -Explain how sounds travel to reach our ears. -Describe how sounds change over distance. -Describe the pitch of a sound. -Describe patterns between the pitch of a sound and the features of the object that made the sound. - Explain how sound travels through a string telephone. -Identify the best material for absorbing sound. -Create a musical instrument that can play high, low, loud and quiet sounds	- draw a timeline to indicate stages in the growth and development of humans. -describe the changes experienced in puberty. -research the gestation periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows
Sequence of Learning	Led by children's interests and ongoing AFL. Sequenced to build upon prior knowledge with a clear end point.	Prior Learning: EYFS basic personal hygiene, healthy food choices, names of animals 1.Can I name animals and their offspring? 2.Can I explain basic human needs? 3.Can I describe a healthy diet? 4.Can I explain the importance of hygiene? 5.Can I explain the importance of physical exercise on our physical and mental health?	Prior Learning: what do children already know about sound? 1.Can I explain how sounds are made and how they travel? 2,Can I describe the parts of the ear? *(including function)* 3.Can I explore pitch? 4.Can I explore volume? 5.Can I investigate vibrations using a string telephone?	Prior Learning: Y3/4 Lifecycles 1.Can I describe the human life cycle? 2.Can I explore gestation periods? 3.Can I describe changes experienced during puberty? 4.Can I explore strategies to deal with emotional changes? 4.Can I explore changes that occur during later life?

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	EYFS	Year 1 and 2	Year 3 and 4	Year 5 and 6
Summer 2	The Great Outdoors Fun at the Seaside	Fire and Ice	Is Iceland a Frozen Land?	What Journey Does a River Take?
		Seasonal Changes (Y1)	States of Matter (Y4)	Properties and Changes of Materials (Y5) Compare, group and use of materials
National Curriculum Objectives	<u>Development Matters</u> To become an **Exceptional Explorer** who can show curiosity about the world around them. To become a **Compassionate Citizen** who can help look after their community and care for the environment.	Pupils should be taught to: -Observe changes across the four seasons -Observe and describe weather associated with the seasons and how day lengths vary	Pupils should be taught to: -compare and group materials together, according to whether they are solids, liquids or gases -observe that some materials change state when they are heated or cooled, measure or research the temperature at which this happens in degrees Celsius (°C) -identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	Pupils should be taught to: -compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets -give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic
Assessment	Tapestry	**TAPS:** Evaluate (Seasonal Change)	**TAPS:** Evaluate (drying materials)	**TAPS:** Evaluate (insulation layers)
Working Scientifically	Pupils should be taught to: -talk about the features of their own immediate environment and how environments might vary from one another -explain why some things occur and talk about changes	Pupils should be taught to: -Use their observations and ideas to suggest answers to questions	Pupils should be taught to: -Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions , Use straightforward scientific evidence to answer questions or to support their findings	Pupils should be taught to: Explain degree of trust in results Identify and evaluate scientific evidence (their own and others) that has been used to support or refute ideas and arguments
Key Knowledge	- Comment on what they notice about the environment where they live and understand the effect of the changing	-Name the four seasons -Name the changes across all four seasons -Use weather vocabulary to describe weather in each season	-Sort materials into solids, liquids and gases and describe their properties -Explain that heating causes melting, and cooling causes freezing.	Know how to compare and group together everyday material including by hardness, solubility, transparency, conductivity and response to magnets

	seasons on the natural world around them. Describe what they see, hear, and feel outside Explore the natural world around them by taking part in weekly forest school inspired 'Nature School' sessions and making observations and drawing pictures of animals and plants. Understand the need to respect and care for the natural environment and all living things	-Describe the different lengths of day throughout the year	- Identify the melting and freezing point of water. - Describe evaporation and condensation using practical examples -Describe the effect of temperature on evaporation referring to their investigation. - Identify the stages of the water cycle and explain what happens at each stage	-Know how to use different methods to separate materials by filtering, sieving and evaporating. -Discuss the uses and needs for different materials in today's world
Sequence of Learning	Led by children's interests and ongoing AFL. Sequenced to build upon prior knowledge with a clear end point.	Prior Learning: EYFS seasonal changes 1.Can I name the four seasons and change in weather? 2.Can I describe the different length of daylight in each season? 3.Can I explore how shadows change shape throughout the day? 4.Can I collect data about the weather in Summer? *(use of thermometers?)* 5.Can I use what I have learnt to create a weather forecast? *(for website?)*	Prior Learning: Y1/2 Materials concept of materials having the ability to change 1.Can I sort materials into solids, liquids and gases and describe their properties? 2.Can I describe what happens when heating and cooling occurs? 3.Can I describe evaporation and condensation? *(ref. to melting and freezing point of water)* 4.Can I describe the effect of temperature on evaporation? *(use investigation)* 5.Can I describe the stages of the water cycle?	Prior Learning: Y3/4 Properties of Materials 1.Can I compare and group objects? 2.Can I justify the use of different materials? 3.Can I investigate how materials can be separated? 4.Can I use different methods to separate mixtures? 5.Can I explore reversible and irreversible changes?
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