Springfield Primary School

Science

EYFS		
Early learning goals • Explore the natural world around them, making observations and drawing pictures of animals and plants; • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class; • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	**Development matters statements** **Understanding the world** **Explore the natural world around them** What happens when: I dig? I pour water? What are plants like? **Describe what they see, hear and feel while outside** What can I hear? How can I make different sounds? What happens when: I put it in water? I touch it? What does it feel like? **Understand the effect of changing seasons on the natural world around them** What happens when: I heat it? I cool it? What's the weather like? How is it different? What is changing outside?	**Subject specific vocab** measure observe change group sort reason float sink Spring, summer, autumn, winter *Prepositions* *Size and comparators* *Colours* *Body parts* *Weather words:* sun, rain, cloud, snow, rainbow etc *Feeling words:* rough, smooth, dry, wet, moist, stiff, flexible, hard, soft *Hearing words:* loud, soft, quiet, high, low *Natural world words:* dig, plant, grow, leaf, root, flower, bee

Autumn	Spring	Summer
Year 1		
Scientific skills *A significant part of seasonal changes is 'Observing changes over time'. As a class, building a collection of pictures of the same location in the school grounds over the course of the year would be great. It's also revisited in the summer term... During the 'Animals including humans' work, take a series of pictures of children over the year.* *Children need to ask lots of simple questions. Observing closely using simple equipment (eg lenses) is important, whereas measuring accurately is not. They can gather and record data to help in answering their questions, along with performing simple tests. They can then use this to suggest answers to their questions, however recording using scientific language, labelled diagrams etc is to be avoided. Children should classify and find a variety of ways to group objects, considering their properties and also look for patterns.*		
<u>Autumn 1 – All About Me</u> *White Rose Science – see in pool for resource and plans that can be used* **What are the main body parts called?** What do I know about Dolphins/Sharks? What are the parts of my body called? Which part of my body is for which sense? What are the common animal groups? What do animals eat? **<u>Autumn 2 – What's the weather?</u>** **How are the seasons different?** What clothes do we wear in different weather and why?	**<u>Spring 1 – What's the weather?</u>** **What are houses made from?** **What are toys made from?** What materials are things made from? What do different materials feel and look like? How can I group materials based on their properties? **<u>Spring 2 – Spring</u>** **How are the seasons different?** What clothes do we wear in different weather and why? How do trees change throughout the year?	**<u>Summer 2 – How does your garden grow?</u>** **What are the parts of a plant?** Which plants can I find? Which parts of a plant can I name? Can I identify different types of plants? **How are the seasons different?** How do we record the weather? How can I stay safe in the sun? Why are clothes different in the summer? How do trees change throughout the year? *Links back to work in autumn term. Any photos taken this term would be useful in the following autumn term.*

How do trees change throughout the year? How does the sun help us to tell the time of the day? How do we record the weather? **What is it like in Autumn?** How are trees different in Autumn?		
Year 1 Vocab		
Autumn 1 – All about me: **Tier 2:** • Body • Head • Arms • Legs • Eyes • Ears • Nose • Mouth • Hands • Feet • Smell • Sniff • Animal • Fur • Pet **Tier 3:** • Sour • Bitter • Sweet • Salty • Savoury • Rough • Smooth • Hard • Soft • Scent • Stench • Mammal • Bird • Fish • Amphibian • Reptile • Herbivore • Carnivore • Omnivore **Autumn 2 – Weather:** **Tier 1:** • Autumn • Daylight • Night • Rainfall • Winter **Tier 3:**	**Spring 1 – What's the weather:** **Tier 2:** • Material • Soft • Hard • Heavy • Light • Object • Metal • Wood • Plastic • Glass • Wool • Melt • Freeze **Tier 3:** • Shiny • Dull • Rough • Smooth • Solid • Liquid • Float • Sink • Absorb • Transparent • Opaque **Spring 2 – Spring** **Tier 2:** • Spring • Daylight • Night • Sun • Cloud • Rain • Seed • Soil **Tier 3:** • Weather • season • sleet • seedling	**Summer 2 – How does your garden grow?** **Tier 2:** • Flower • Petals • Leaf • Stem • Roots • Trunk • Branch • Leaf • Summer • Measure **Tier 3:** • Wildflower • Deciduous Tree • Evergreen Tree • Needles • Trowel • Growth

• Weather • Season • Rain Gauge • Frosty • snowy		

Year 2		
Scientific skills *'Observing changes over time' is a type of scientific enquiry. Take a series of pictures of children over the year from September onwards. This could be a monthly class photo. This would be helpful for the growing together work. Children need to ask lots of simple questions. Observing closely using simple equipment (eg lenses) is important, whereas measuring accurately is less so. They can gather and record data to help in answering their questions, along with performing simple tests. They can then use this to suggest answers to their questions (before and after testing), however formal recording using scientific language, labelled diagrams etc is to be avoided.* *Children should classify and find a variety of ways to group objects, considering their properties and also look for patterns. WATC could involve descriptive writing of what they see.*		
Autumn subject foci: History Geography **How do the seasons change?** **What is the weather like?** Seasonal changes autumn to winter	**Spring 1 - What a load of rubbish** **What are the properties of different materials?** How can the shape of materials be changed? How are different materials used? **Spring 2 – Growing together** **How do humans and animals grow?** *Notice that humans and animals have offspring which grow into adults* **What do plants need to grow?** **How do seeds grow?** Accurate observations and some measurements of a growing seed *(eg bean / tomato) through to maturity. You could do the experiment with cress seeds on paper towels as a class. The results will be obvious. The children could then be given a choice of seeds to grow, nurture and enjoy.*	**Summer 1 – In the deep** **What do all creatures need?** Is it alive? **Where do creatures like to live?** **What are habitats and micro habitats?** **HOOK:** Moth creation and hunting 'game' Where do animals get their food from? What is a food chain? Can I find and name plants and creatures from a habitat? **Summer 2 – Staying alive** **How can I stay healthy?** What are the basic needs for humans? What is healthy eating? How does exercise help?
Year 2 Vocab		
	Spring 1 – What a load of rubbish: **Tier 2:** • Material • Natural • Man-made • Rock • Stone • Tough • Lightweight • Bend • Squash • Twist • Stretch **Tier 3:** • Recycle • Flexible • Rigid • Pebble	**Summer 1 – in the deep:** **Tier 2:** • Mammal • Bird • Deciduous Tree • Evergreen Tree • Living • Dead • Never Alive **Tier 3:** • Habitat • Hibernate • Desert • Ocean • Woodland • Microhabitats • Food Chains

	• Brick • Brittle • Transparent • Translucent • Opaque **<u>Spring 2 – Growing together</u>** **<u>Tier 2:</u>** • Mammal • Bird • Fish • Amphibian • Insect • Reptile • Herbivore • Carnivore • Omnivore • **<u>Tier 3:</u>** • Scales • Gills • Fin • Webbed feet • Shelter • Feathers • Wings • Beak • Offspring • <u>Adolescent</u>	**<u>Summer 2 – Staying alive</u>** <u>Tier 2:</u> • Heart • Diet • Healthy • Unhealthy • Meat • Vegetable • Sugar • Fruit • Germs Tier 3: • Exercise • Physical Health • Mental Health • Hygiene • Disease

Year 3

Scientific skills

Questions are now more focused, comparative and fair testing is used with more systematic and careful observations, possibly also including more accurate equipment (standard units, thermometers, maybe data loggers / tablet apps), however they do not need to recognise and control variables explicitly. Close observation and grouping (similarities and differences) remain important. Look for patterns both in data and when observing. Researching using secondary sources of information should be introduced. How could they present their findings? Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. They should begin to draw simple conclusions from their results.

Autumn 2 – Wacky Races

What is a magnet?
How do things move on different surfaces?
What is a force?
What are magnets?
Which materials are magnetic?
What happens when you put two magnets together?

Spring 2 – My local area inc plants

What is the point of each part of a plant?
How can I show what the roots do?
What happens inside a stem?
Why do plants have flowers?
How and why do plants spread their seeds?
Introduction to the relationship between structure and function – the idea that every part has a job to do for the plant.
What do plants require to live?

Spring 2 – Rocks

What are rocks and soils?
How are different types of rocks classified?
What are the physical properties of different types of rock?
How are fossils formed?
What is soil made of?

Summer 1 – Bones and Teeth

How do I look after my teeth?
How are human and animal teeth different?

What does a skeleton do?
How does my skeleton work?
What do muscles do?

What happens to my food?
Why is having the right amounts of foods important?
What is the digestive system?
Modelling the digestive system.

Year 3 Vocab

Autumn 2 – Wacky Races

Tier 2:

- Push
- Pull
- Force
- Contact force
- Friction
- Smooth
- Rough
- Magnet

Tier 3:

- Magnetic
- Poles
- Iron
- Attract
- Repel

Spring 1 – Local Area inc plants

Tier 2:

- Leaf
- Stem
- Roots
- Flower
- Soil
- Seed
- Seedling

Tier 3:

- Dissection
- Water Transportation
- Seed Coating
- Germination
- Petals
- Stamen
- Pistil
- Pollen
- Pollination
- Dispersal

Spring 2 – Rocks

Tier 2:

Summer 1 – Teeth and Bones

Tier 2:

- Teeth
- Bones
- Mouth
- Jaw
- Chew
- Smile
- Skull
- Body
- Face
- Eat
- Joint
- Muscles

Tier 3:

- Skull
- Ribcage
- Spine
- Pelvis
- Femur
- Exoskeleton
- Bicep
- Tricep
- Contract and Relax
- Carbohydrates
- Proteins

	• Rock • Stone • Hard • Float • Sink • Brittle • Reaction • Sandy • Clay • Chalky • Absorb **<u>Tier 3:</u>** • Granite • Pumice • Sandstone • Chalk • Marble • Gneiss • Crystals • Grains • Layers • Texture • Weathering • Fossil • Sediment • Fossilisation • Peat • Organic Matter • Nutrients	• Dairy • Fats • Sugars • Nutrition • Oesophagus • Intestines • Rectum • Digestion • Enamel • Decay

Year 4

Scientific skills

Questions should be more focused. Reasons given for predictions should include some reference to their scientific knowledge. Comparative and fair testing is used with more systematic and careful observations, also including more accurate equipment (standard units, thermometers, maybe data loggers / tablet apps), however they do not need to recognise and control variables explicitly. Close observation and grouping (similarities and differences) remain important. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. They should begin to draw simple conclusions from their results. Look for patterns both in data and when observing. Researching using secondary sources of information should be developed. How could they present their findings?

Autumn 1 – Buzz Light-ear

What is light? Where does light come from?
How does light travel?
How are shadows formed?
How do shadows change?

What is sound?
How does sound travel?
How are sounds made?
How do we hear?

How can sound be changed?
How can the pitch of a sound be changed?
How can the volume of a sound be changed?
How can I block sound?

Spring 1 – Frozen

What are the states of matter?
What are some common solids, liquids and gases?
How does matter change state?
How do I make accurate measurements of temperature?
How are changes of state involved in the water cycle?
How long does an ice cube take to melt?
How can we make an ice cube melt as quickly as possible?
How can we keep an ice cube for as long as possible?

Spring 2 – Under the sea

How can living things be classified and organised?
How do food chains work?
How have humans changed the environment?
What risks are there to the habitats of animals?
How do different food chains work?

Summer 1 – Inventions

How do I use electrical items safely?
What is electricity used for?
How does electricity make appliances work?
What is needed to make an electrical circuit?
How do I make a bulb light up?
What is the purpose of a switch in a circuit?
What materials conduct electricity?

Summer 2 – Hot Chocolate

Following on from of states of matter last term to include properties of chocolate

Year 4 Vocab

Autumn 1 – Buzz Light-Ear

Tier 2:

- Light Source
- Shiny
- Dull
- Ear
- Sound

Tier 3:

- Reflection
- Shadow
- Vibration
- Pitch
- Volume
- Decibels
- Insulate
-

Spring 1 – States of Matter

Tier 2:

- Solid
- Liquid
- Gas
- Volume
- States of matter
- Temperature
-

Tier 3:

- Flow
- Boiling
- Condensation
- Evaporation
- Water Cycle
- Precipitation

Spring 2 – Under The Sea

Tier 2:

- environment
- amphibian

Summer 1 – Inventions

Tier 2:

- Circuit
- Switch
- Battery
- Buzzer
- Metal

Tier 3:

- Appliances
- Plug
- Socket
- Cell
- Electrocuted
- Conductor
- Insulator

	• reptile • mammal • fish • bird • population **<u>Tier 3:</u>** • vertebrate • invertebrate • soft bodied invertebrate • Rural • Urban • Biodiversity • Classification Key • Deforestation • Natural Resources • Nature Reserve • Rewilding • Producer • Consumer • Predator • Prey	

Year 5

Scientific skills

Children should be introduced to the idea of variables that can be recognised and controlled. Their predictions should be justified with reference to their existing knowledge. Their measuring should be more precise and they may begin to take repeated measurements for increased accuracy.
MATC: converting measures and working up to three decimal places. They should use a greater range of mathematical tools to present their results. Their findings must include conclusions and start to suggest causal relationships and explanations of their results also including data reliability.

Autumn 2 – Magnificent Mountains

How can the properties of a material be used to classify them?
What is a solution? Can solutions be separated?
How can solutions be separated?
What are reversible and irreversible changes?
Working scientifically: mixing and dissolving solutions to demonstrate reversible changes
Sieving, filtering and evaporating to separate solutions

Spring 1 - Infinity & Beyond

What is the solar system like?
What are the main features of each planet?
How do planets move?
How do moons move?
Why do we have day and night?

Who was Katherine Johnson?
What did she do and why was she important?

Who was Mae Jemison?
What did she do and why was she important?

Spring 2 - Forces

What do forces do?
What is gravity?
What are the effects of air resistance?
What are the effects of water resistance?
What are the effects of friction?
How can different devices change the power of a force?

Summer 1 - Growing!

How are life cycles different?
What is the life cycle of a mammal?
What is the life cycle of an amphibian?
What is the life cycle of a reptile?
What is the life cycle of an insect?
What is the life cycle of a bird?
How do plants reproduce?

Year 5 Vocab

Autumn 2 – Magnificent Mountains
Tier 2:

- Hardness
- Magnetism
- Transparent
- Translucent
- Opaque
- Insulator
- Conductor
- Dissolve
- Mixture
- Filtering
-

Tier 3:

- Lifespan
- Soluble
- Insoluble
- Solution
- Substance
- Reversible
- Irreversible
- Chemical
-

Spring 1 – The Solar System
Tier 2:

- Planet
- Orbit
- Pluto
- Poles
- Earth
- Night
- Day
- Moon

Tier 3:

- Celestial Body
- Gravity
- Heliocentric
- Geocentric
- Rotate
- Axis
- Gravitational Force
- Satellite

Summer 1 – Growing!
Tier 2:

- Baby
- Adolescent
- Offspring
- Larva

Tier 3:

- Foetus
- Life Expectancy
- Gestation
- Monotreme
- Mammary Gland
- Metamorphosis
- Pupa
- Chrysalis
- Hatchling
- Nestling
- Fledgling

	Spring 2 – Forces **Tier 2:** • Force • Contact Force • Frictional Force • Motion • Weight • Lever • Gear • Machine **Tier 3:** • Air Resistance • Parachute • Surface Area • Streamlined • Water Resistance • Pulley	

Year 6

Scientific skills

Children should use the idea of variables that can be recognised and controlled. Their predictions should be justified with reference to their existing knowledge. Their measuring should be more precise and, where appropriate, they will need to take repeated measurements for increased accuracy.
MATC: converting measures and working up to three decimal places. They should use a greater range of mathematical tools to present their results. Their findings must include conclusions and start to suggest causal relationships and explanations of their results also including data reliability. They could also suggest future investigations.

Autumn 2 – Go with the flow

How can living things be classified?
How are common characteristics used to classify different organisms?
Why have organisms been classified the way they have been?

How have animals and plants adapted to suit their environment?

What is adaptation?
How do plants adapt to different environments?
How do animals adapt to different environments?

Spring 2 – Sound & Light

How do I change the brightness of a lamp?
How do I record electrical circuits?

How does light travel and how can it be changed?
How does light help us to observe things?
Why are shadows the same shape as an object?
How can the movement of light be changed?
Challenges like building a device to see around a corner could be helpful. Their explanations should include accurate diagrams and links to the eye's biology.

Summer 1 – Genetics

How have living things changed over time?
What do fossils tell us?
What do parents pass to their offspring?
How do humans change as they develop to old age?
This question is from the Y5 PoS and is especially related to puberty. Evolution is an opportunity to develop scientific attitudes by identifying evidence that has been used to support or refute ideas.

How do we help our bodies to function as well as possible?
What is the human circulatory system?
What are the names and purposes of different blood vessels?
How does the digestive system work?
What affects how human bodies function?
How can I collect accurate data?

Summer 2 – Volcanoes

Recap states of matter with volcano models

How do some materials change when heated or cooled?
At what temperature do changes occur?
Which changes are reversible / irreversible?

Year 6 Vocab

Autumn 2 – Go With The Flow: Classification –

Tier 2:

- Organism
- Vertebrate
- Invertebrate
- Deciduous
- Evergreen
- Fungi
- Classification key
- Classification

Tier 3:

- Mollusc
- Arachnid

Spring 2 – Sound & Light

Tier 2:

- Series circuit
- Cell
- Battery
- Bulb
- Switch
- Buzzer

Tier 3:

- Current
- Voltage
- Complete Circuit
- Incomplete Circuit
- Iris

Summer 1 – Genetics

Tier 2:

- Genetics
- Gene
- Trait
- Inherit
- Family
- DNA
- Chromosome
- Offspring
- Parent
- Fossil
- Ancient
- Remains
- Imprint

• Coniferous • Characteristics **Adaptation –** **Tier 2:** • Adaptation • Adapt • Change • Adjust • Fit • Survive • Environment • Habit • Natural • Behaviour **Tier 3:** • Evolution • Species • Natural selection • Theory • Common ancestor	• Pupil • Lens • Retina • Refraction • Medium • Prism • Spectrum of Light	**Tier 3:** • Allele • Heredity • Dominant • Recessive • Genotype • Phenotype • Mutation • Palaeontology • Petrification • Sediment • Fossilization • Palaeontologist • Extinct Summer 2 – Volcanoes Tier 2: • Particle • Molecule • Evaporation • Condensation Tier 3: • Tectonic plate • Volcanic activity • Vent • Pyroclastic flow • Caldera • Volcanic bombs • Seismic activity • Plume • Deposition • Kinetic energy • Thermal energy