TRIMLEY ST. MARTIN

Science Policy

Trimley St Martin Primary School
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Science Policy

We have the power to develop pupils' enjoyment and interest in science and make them realise how it contributes to all areas of everyday life.

We have the power to help children explore science through a range of enquiry based and investigative learning.

We have the power to encourage children to ask scientific questions and to introduce them to the vocabulary of science.

Teaching and Learning Styles

We aim to develop children's knowledge, skills and understanding in science.

This may be done through….

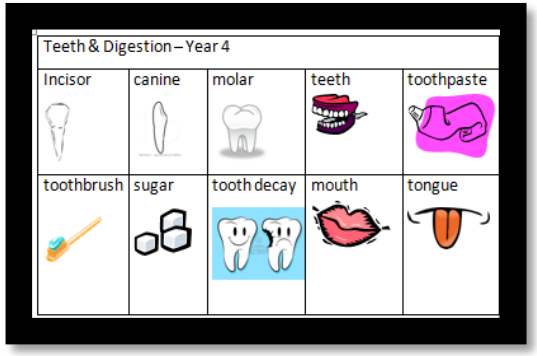
- Whole-class teaching;
- Enquiry-based research activities;
- Encouraging children to ask, as well as answer, scientific questions;
- Using a variety of data, such as statistics, graphs, pictures and photographs;
- Using ICT, where it enhances the children's learning;
- Taking part in role-play and discussions and presenting reports to the rest of the class;
- Problem-solving activities;
- Wherever possible, we involve the pupils in real scientific activities, for example, investigating the local environment, or carrying out a practical experiment and analysing the results.
- Encouraging the use of key scientific vocabulary. Children are introduced to the key vocabulary and encouraged to learn them through a range of activities used during science lessons.

We recognise that in all classes children have a wide range of scientific abilities, and ensure we provide suitable learning opportunities for all children through….

- Setting tasks which are open-ended;
- Setting tasks of increasing difficulty;
- Providing resources of different complexity, matched to the ability of the child;
- Using classroom assistants to support the work of individual children or groups of children.

Activities for developing the use of Scientific Vocabulary

Vocabulary Check



Which words can you already describe?
Which words don't you know?

Articulate

Can you describe one of the words?

Can you describe one of the words without saying some key related words?

Dominoes

Using vocabulary cards, start by laying one card down. Then place another one next to it if you can explain a link between the two. Repeat, adding other vocabulary cards.

Sort and Classify

Using vocabulary cards, can you sort them in to 2 piles e.g. words you know/words you don't know; names of rocks/not names of rocks (y3).

Can you explain how you have sorted them?

Pictionary

Take one of the vocabulary cards and draw it.

Can someone guess what the key word is?

Bingo

Choose 4 or 5 scientific words. Listen to the descriptions and mark off a word if it matches the description.

Splat (p83) of Science Enquiry Games Book

An Example of an overview sheet for Years 1-6
This is completed at the end of a topic and informs data input into Target Tracker.

Electricity

Learning objectives for the unit of work:	Pupil	Teacher
Use recognised symbols when representing a simple circuit in a diagram.		
Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuits.		
Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.		

Y6 Topic *(materials used for planning)*	Key Vocabulary	Working Scientifically	Links to English	Links to Maths	Links to other subjects
Electricity ***(Plan materials, TAPs, Explorify, Ogden Trust)***	Circuit, complete circuit, circuit diagram, symbol, cell, battery, bulb, buzzer, motor, switch, voltage		Scientist research and verbal presentation.	Data collection Line or bar graph from own investigation.	Computing – Data loggers PSHE – recycling batteries
Evolution and inheritance ***(Rising Stars, Plan materials, Standing on the Shoulders of Giants, Explorify)***	Sexual reproduction, characteristics, environment, offspring, fossils, vary, species, inherited, suited, adapted		Desert animal adaptation poster or factfile. Charles Darwin/Alfred Wallace research and presentation. *Moth by Isabel Thomas*	Fraction of class with inherited features. Data collection/analysis Line graph	PSHE – evolution of life
Classifying Critters ***(Carl Linneaus Society, Rising Stars)***	Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering, non-flowering		Animal and plant characteristics research and factfile to present.	Venn diagram	Computing – Use of computers for research
Let it shine ***(TAPs, Rising Stars, Explorify, Plan materials)***	Light, straight lines, light rays, see Y3 for rest of light vocabulary		Expert scientific video presentation.	Angles – mirrors/periscopes	
Staying Alive ***(Plan materials, Rising Stars,***	Circulation, blood vessel, pump, vein, capillary, artery, carbon dioxide, oxygen, blood group, muscle, exercise, pulse rate, lungs, respiration, heart	 Data provided	Circulatory system research.	Calculating averages Bar charts Using data to complete line graph and answer questions	PSHE – effects of smoking, keeping healthy

Y5 Topic *(materials used for planning)*	Key Vocabulary	Working Scientifically	Links to English	Links to Maths	Links to other subjects
Out of this World	Earth, Sun, Moon, Mercury, Venus, Mars, Jupiter, Saturn, Neptune, Uranus, spherical, solar system, rotates, star, orbit, planets		Reading, writing and grammar skills.	Comparing numbers. Reading and writing numbers up to 6-digits.	Art, history, geography
Circle of life	Life cycle, reproduce, sexual, sperm, fertilizes, egg, live young, metamorphosis, asexual, plantlets, runners, bulbs, cuttings		Reading, writing and grammar skills.	Comparing numbers, measuring, collecting data, lines graphs, Venn diagrams	Geography, art, drama, sex education, ICT
Growing up and growing old	Puberty, the vocabulary to describe sexual characteristics **(see PSHE)**				
Material world	Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material				
Let's get moving	Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears				

Y4 Topic *(materials used for planning)*	Key Vocabulary	Working Scientifically	Links to English	Links to Maths	Links to other subjects
Teeth and eating Rising Stars Twinkl- digestive system, types of teeth	Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, incisor, canine, molar, premolar, herbivore, carnivore, omnivore, producer, predator, prey, food chain		Instructions – Looking after My Teeth. Persuasion – Advertisement for New Toothpaste	Pie charts for food groups and percentages of amounts.	PSHE Personal hygiene, looking after ourselves.
What's that sound? Rising Stars	Sound, source, vibrate, travel, pitch (high/low), volume, faint, loud, insulation		Non-Chronological report- How The Ear Works.	Measurements- Lengths	Musical instruments, sound and pitch.
Power it up Rising Stars	Electricity, electrical appliance, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol		Story-The Lost Thing- How it works. Class Guided Reading Text- The Iron Man/ The Wild Robot	Data Collection Line Graphs	DT – Circuit game.
Looking at states Rising Stars	Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle		*Recount- Travelling to the North Pole.*	Temperatures- negative numbers. Measuring. Data collection.- Temperatures and times.	Geography The Frozen Planet. Geography The Water Cycle
Living things The Association For Science Education	Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate		Story- Desserts and The North Pole.	Venn Diagrams Bar Charts	

Y3 Topic *(materials used for planning)*	Key Vocabulary	Working Scientifically	Links to English	Links to Maths	Links to other subjects
Food and our bodies ***Rising Stars & Twinkl***	Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine		Recording findings using correct sentence structure	Tables showing foods and what they contain	PSHE keeping healthy
Rocks ***Rising Stars & Twinkl***	Rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorb water, soil, fossil, marble, chalk, sandstone, granite, slate, soil, peat, sandy/chalk/clay soil		Stone Age Boy Recording findings using correct sentence structure	Catergorising different rocks using a table or Venn diagram	Guided reading – Pebble in my pocket
Light ***Rising Stars & Twinkl***	Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous		Paddington – story at the seaside for sun protection Recording findings using correct sentence structure		STEM activities using reflection
Plants ***Rising Stars & Twinkl***	Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal, wind dispersal, animal dispersal, water dispersal		Recording findings using correct sentence structure Poster to show the needs of plants	Use bar charts to show findings in plant experiments	STEM activity why do leaves change colour
Forces and magnets ***Rising Stars & Twinkl***	Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole		Recording findings using correct sentence structure	Tally chart when testing magnetic properties	

Y2 Topic *(materials used for planning)*	Key Vocabulary	Working Scientifically	Links to English	Links to Maths	Links to other subjects
1. Material Monster Rising stars **Move it!** Rising stars	Wood, metal, plastic, glass, brick, rock, paper, cardboard, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, opaque, transparent, translucent, reflective, non-reflective, flexible, rigid, shape, push, pull, twist, squash, bend, stretch		Writing questions about material properties. Sharing findings- verbal & written presentations. Following & writing instructions. Predictions – what will happen. Writing conclusions	Research to find out about different materials and recycling. Measuring Tally chart Transferring data to graphs and answering questions about it. Estimating distances	PSHE – recycling materials and the need to be responsible citizens. Geography – material walk around local area. Computing – Use tablets to take photos of the materials.
2. Healthy me Rising stars **Young masterchef**	Offspring, reproduction, growth, child, young/old stages (chicken/hen, baby/child/adult, caterpillar/butterfly, exercise, heartbeat, breathing, hygiene, germs, disease, food types (meat, fish, vegetables, bread, rice, pasta).	  	Writing a keep fit routine. Sharing questions on how we can keep fit. Writing menus. Researching healthy foods – simple texts.	Length of time given to each keep fit activity. Pictogram and answering questions about it. Measuring/weighing ingredients	PE – carrying out keeping fit activities. Art – drawing life cycle of human. PSHE – what happens to our bodies as we grow.
3. Mini worlds Rising stars	Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, pond, woodland, grass, garden, under logs, in bushes, in trees **others?**		Researching what different animals eat – read through simple texts.	Measuring Venn diagram – sorting objects/living things.	Geography – using a simple map PSHE – caring for the around them. Art – drawing food chains.
4. Young gardeners Rising stars	As year 1 plants + light, shade, sun, warm, cool, water, grow, healthy		Reading and writing instructions – how to sow seeds. Writing action plan for tallest sunflower.	Measuring – how much soil, how tall are the sunflowers?	Computing – internet research how to grow tallest sunflower.

Y1 Topic *(materials used for planning)*	Key Vocabulary	Working Scientifically	Links to English	Links to Maths	Links to other subjects
Celebrations Treasure Island	Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud **(trees and plants in our local area)**				
Who am I? Polar adventures, On Safari and Holidays (animals)	Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, paw, fur, beak, hooves, touch, see, smell, taste, hear, fingers, nose, tongue (**body parts linked to PSHE)**	 	Research information about body parts *Funnybones by Janet and Allan Ahlberg*	Tally Chart Pictogram Read and write numbers	
Celebrations and Holidays (materials) **Polar adventures, Treasure Island and Holidays (properties of materials)**	Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through	 			
Seasonal Changes	Weather, sunny, rainy, snowy, cloudy, seasons, winter, spring, autumn, summer, sun, sunrise, sunset, day length				

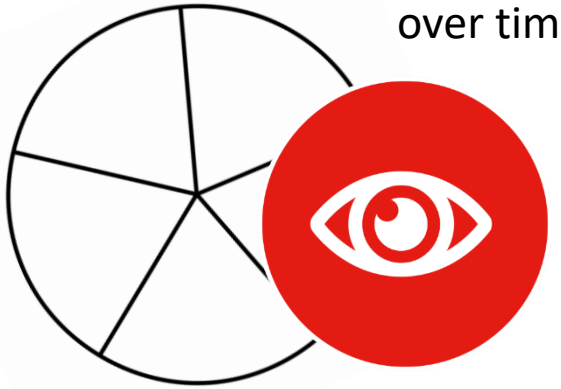
Summary of Science in EYFS

Topic	
Animals, excluding humans (Spr 1-Amazing animals,)	Learn about the life cycle of animals Compare adult animals to their babies Observe how baby animals change over time Name and describe animals that live in different habitats Describe different habitats
Humans (Aut 1-All about me,)	Learn about the life cycles of humans Learn about how to take care of themselves Learn about their senses Describe people who are familiar to them Learn about how to take care of themselves
Living things and their habitats (Spr 1-Amazing animals,)	Explore the plants and animals in the surrounding environment Explore natural objects from the surrounding environment
Plants (Spr 1 –Planting Spr 2 – Come Outside)	Grow plants Watch and observe plants at their different stages of growth. Observe features of plants
Seasonal Changes Year round	Play and explore outside in all seasons and weathers Observe living things throughout the year
Materials, including changing materials (Aut 1 – Biscuit investigation) (Sum 2 – Fun at the seaside)	Explore a range of materials including natural materials Make objects from different materials, including natural materials Observe, measure and record how materials change when heated and cooled (including cooking) Compare how materials change over time and in different conditions
Electricity	Identify electrical devices Use battery operated devices
Light (Aut2-Fireworks/Divalli,Light and Dark)	Explore light sources Shine lights on different materials Explore shadows Explore rainbows
Forces	Feel forces Explore how things work Explore how objects/ materials are affected by forces Explore how to change how things work Explore how the wind can move objects Explore how objects move in water
Sound	Listen to sounds (including outside) and identify the source Make sounds in different ways
Earth and Space (Sum 1 – Ticket to Ride)	Learn about the solar system and stars Learn about space travel

Scientific Enquiry

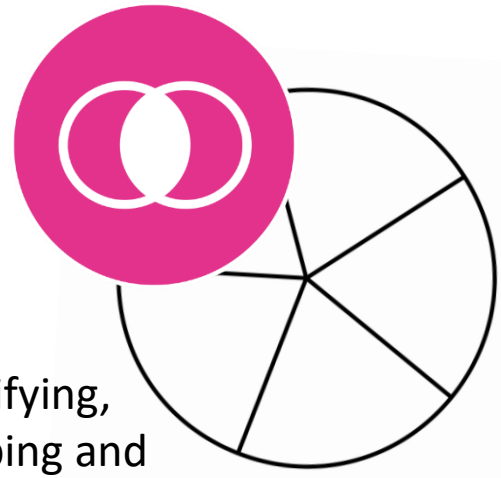
Comparative and fair testing

Observing over time

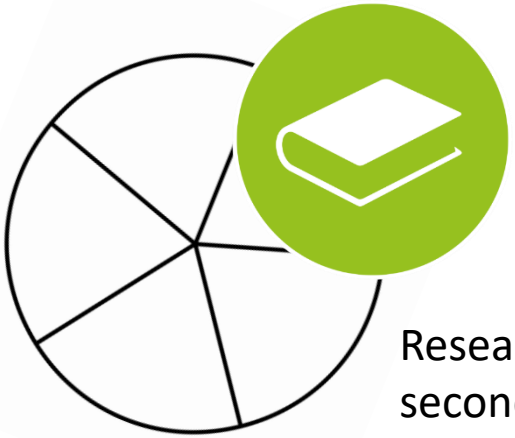


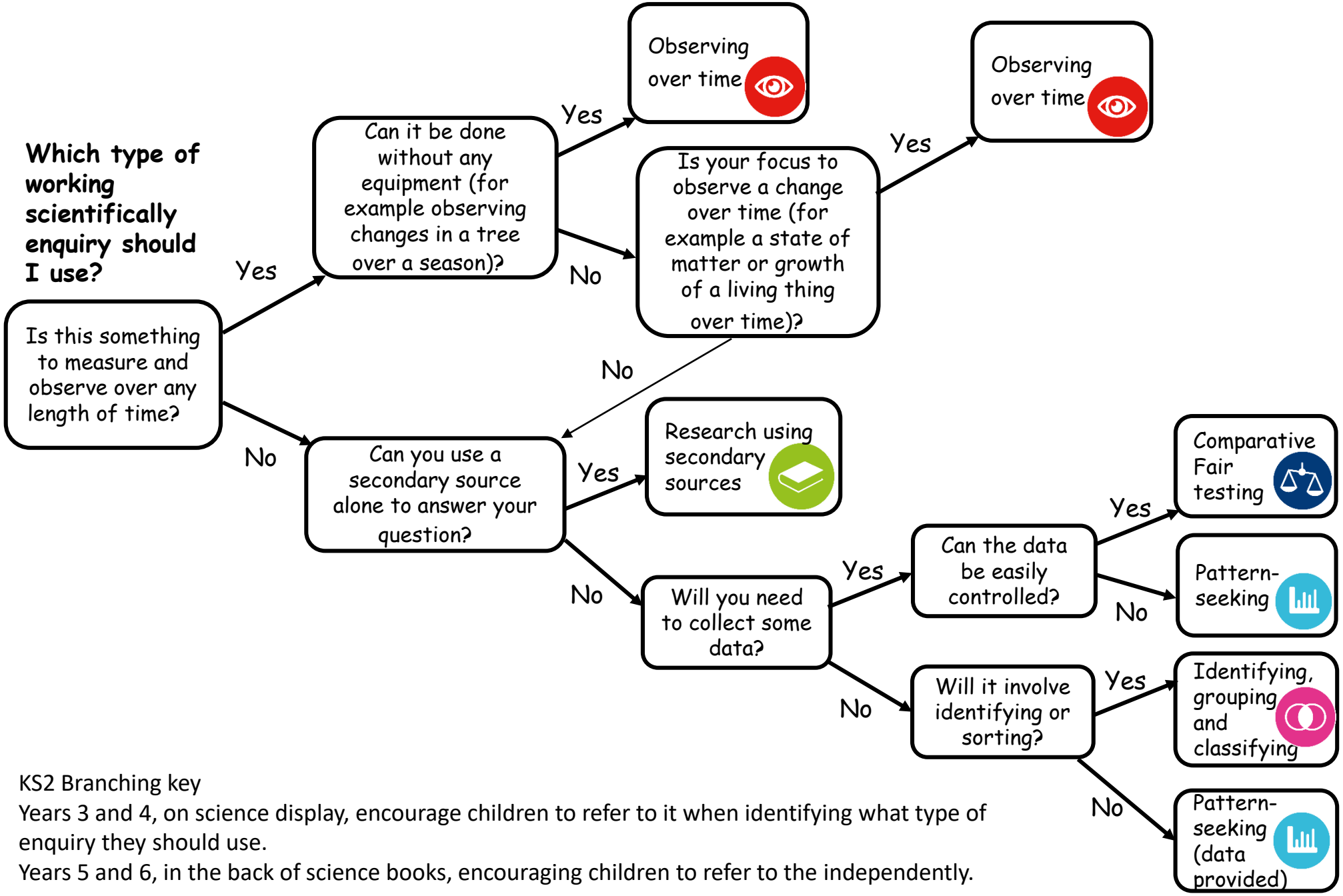
Pattern-seeking

Identifying, grouping and classifying



Researching using secondary sources



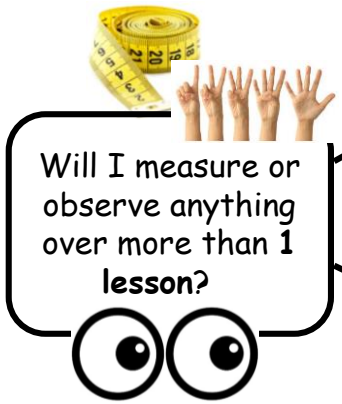


KS2 Branching key

Years 3 and 4, on science display, encourage children to refer to it when identifying what type of enquiry they should use.

Years 5 and 6, in the back of science books, encouraging children to refer to the independently.

Which type of working scientifically enquiry should we use?



Will I measure or observe anything over more than **1 lesson?**

Yes

Do I need to use any equipment (for example observing changes in a tree over a season)?

Yes

Observing over time

No

Is your focus to observe a change over time (for example a state of matter or growth of a living thing over time)?

Yes

Observing over time

No

No

Can you just use a secondary source to answer your question?

Yes

Research using secondary sources

No

Will you need to collect some data by measuring or observing something?

Yes

Can the data be easily controlled? (Most things can be kept the same)

Yes

Comparative Fair testing

No

Pattern-seeking

No

Will you need to identify or sort things?

Yes

Identifying, grouping and classifying

No

Pattern-seeking (data provided)

KS1 Branching key

On science display, go through steps as a class to identify the enquiry type they should be using.

How can we use the Learning Gems in Science?

Look back on own work and see where it can be improved.

Work with others during research, investigation and presentation tasks.

Make decisions about the best way to investigate a scientific question. Carry out investigations.

Focus and concentrate on both written tasks and investigations.

Use scientific vocabulary accurately in lessons. Make predictions and take calculated risks.

Ask further questions about the topic of work. Find creative solutions.

Work on a range of aspects of an investigation, including tables, graphs and conclusions. Repeat investigations and parts of write-up when necessary.