Science Curriculum

Intent

Why is Science important at The Federation of Holy Trinity Church of England Schools?

• Science is an important and valued subject because it is highly relevant; an integral part of daily life, from cooking and checking the weather, to recycling and nature walks.

•Through science, our lives are changed for the better. We believe all pupils should be taught about the role that science plays in positive advancements, as well as scientific knowledge, methods and processes.

•Advances in science are continuing to transform our world at lightning speed and we need to do our best to prepare our pupils for a future we can only imagine.

As Scientists at The Federation of Holy Trinity Church of England School we want…

- ✓ Pupils to be able to explain and understand how the world works.
- ✓ Pupils to think critically, solve problems, communicate ideas and ask ‘how’ and ’why’ questions, with the aim of hypothesising and finding out the answers.
- ✓ Pupils to learn about the importance of investigation, accuracy and problem solving, scientific evidence and how to make sense of it.
- ✓ To lead pupils on a journey of discovery, developing an understanding of historical contributions to science, as well as learning about contemporary science issues.
- ✓ To motivate pupils to explore the world around them and to change it for the better.

Meet Newton.

Today we are working with Newton who is a scientist. Scientists are curious! They investigate and explore to learn about the world, finding out what things are and why things happen. Scientists are so important as they can help to change the world and make life better for us all. Science can explain why the lightbulbs above our heads light up, why the carpet below us is a good material to walk on, and why my voice makes different sounds as I speak to you.

The Four 'C's

- Communication
- Conflict
- Conservation
- Culture

Knowledge building

- Processes and Change
- Methods
- Observing and Recording
- Scientific Vocabulary
- Uses and Implications
- Cross-Curricular (STEM)

Processes and change

Know that processes and changes occur

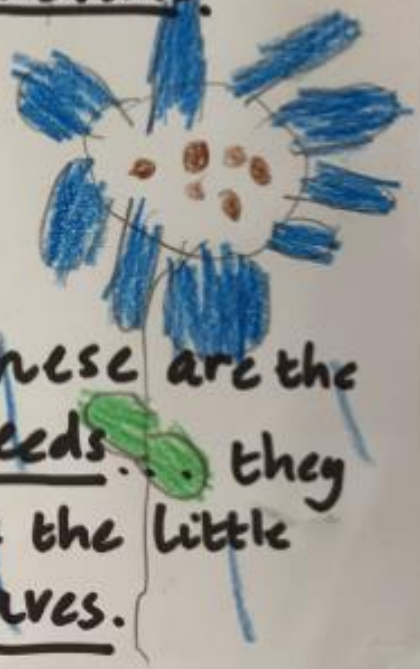
Identify simple processes and explain in basic terms how they happen

Understand more complex scientific processes and know some factors that can affect change

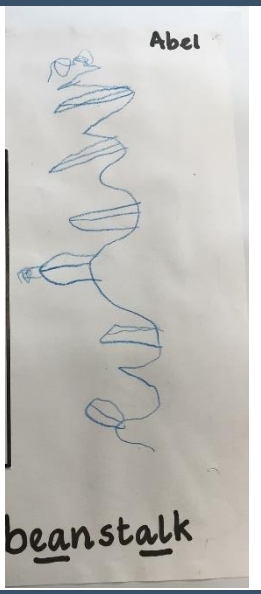
Understand that numerous factors can affect or prevent change

We need the rain to make it grow my flower

We need the sunshine.



These are the seeds... they are the little leaves.

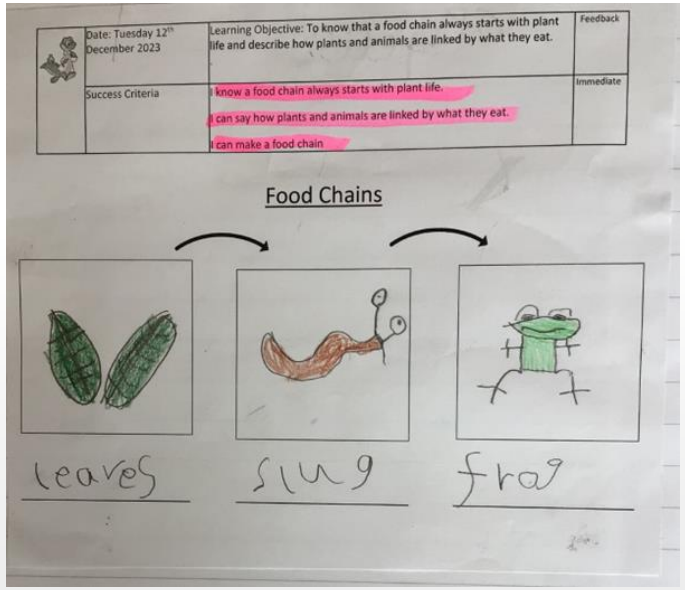


Know that processes and changes occur

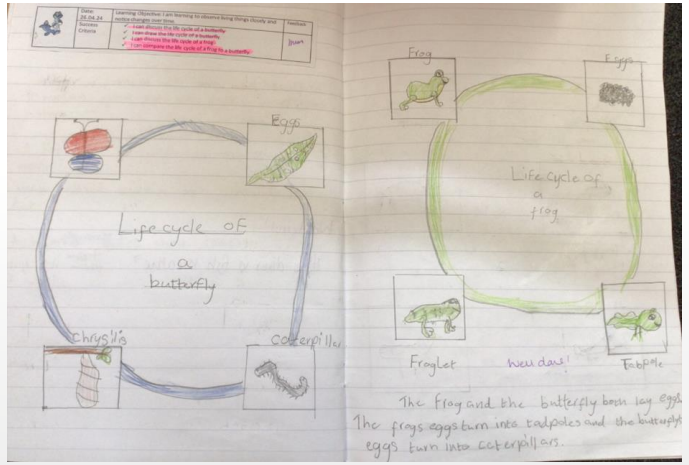
You observed the fact that the beanstalk was tall.

14.09


Identify simple processes and explain in basic terms how they happen

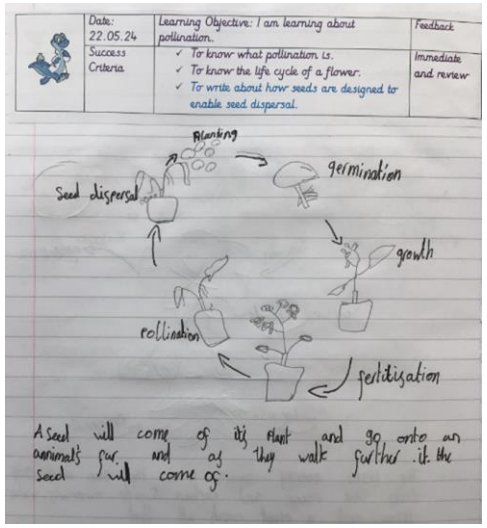

Date: Tuesday 12th December 2023
Learning Objective: To know that a food chain always starts with plant life and describe how plants and animals are linked by what they eat.
Feedback
Success Criteria
know a food chain always starts with plant life.
can say how plants and animals are linked by what they eat.
can make a food chain
Immediate
Food Chains
leaves
slug
frog

Y1

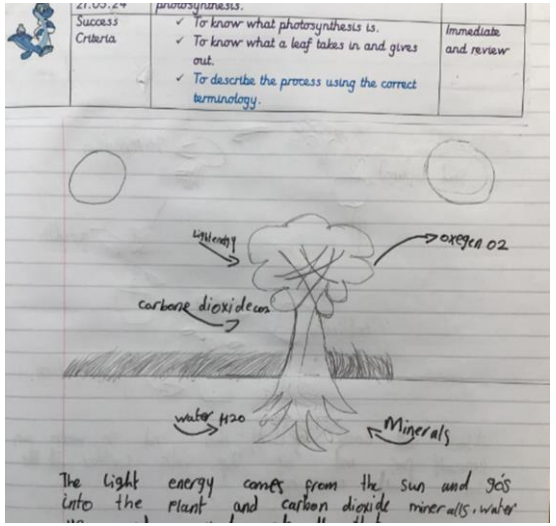

Egg
Life cycle of a butterfly
Chrysalis
Caterpillar
Frog
Eggs
Life cycle of a frog
Froglet
Froglet
The frog and the butterfly both lay eggs.
The frogs eggs turn into tadpoles and the butterfly eggs turn into caterpillars.

Y2

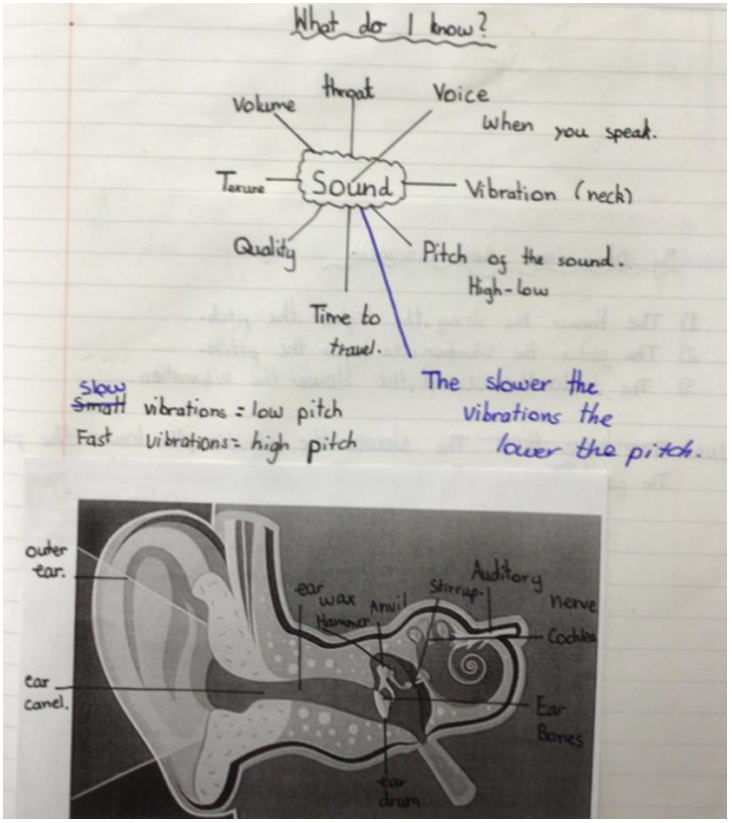
Y3



Y3

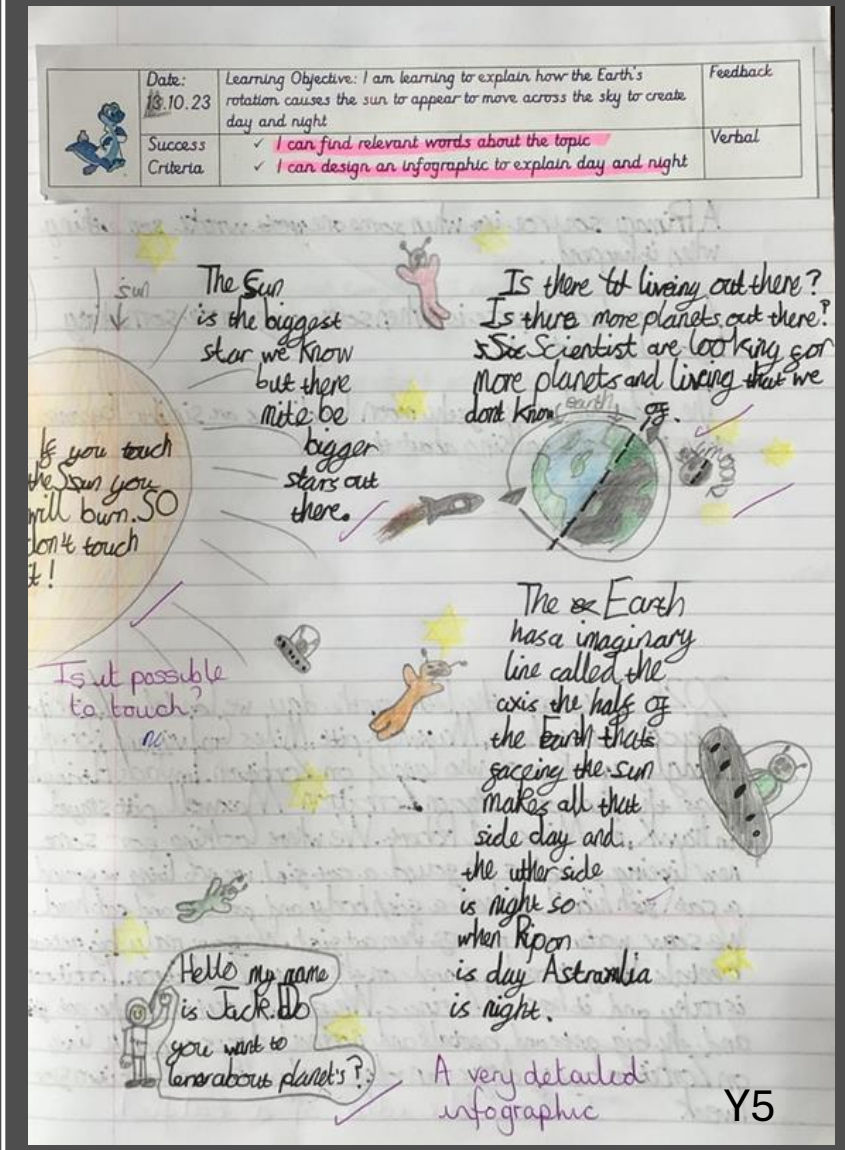


Understand more complex scientific processes and know some factors that can affect change



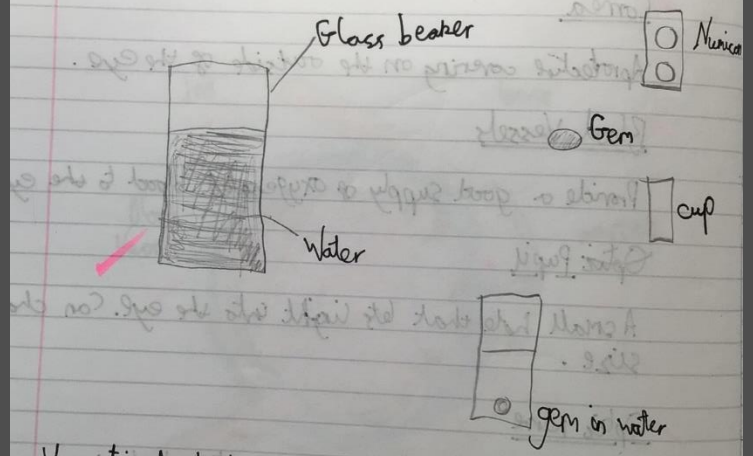
Y4

Date: 13.10.23	Learning Objective: I am learning to explain how the Earth's rotation causes the sun to appear to move across the sky to create day and night	Feedback
Success Criteria	✓ I can find relevant words about the topic ✓ I can design an infographic to explain day and night	Verbal



Y5

Date: 05.12.23	Learning Objective: I am learning to know that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes.	Feedback
Success Criteria	✓ Investigate how objects bend in water ✓ Research why objects appear to bend in water ✓ Explain our understanding of why objects appear to bend in water ✓ Understand the term refraction ✓ Use ideas to explain how a rainbow is formed.	



We noticed that when we dropped an object in water the object appeared to get bigger and sometimes changed shape.

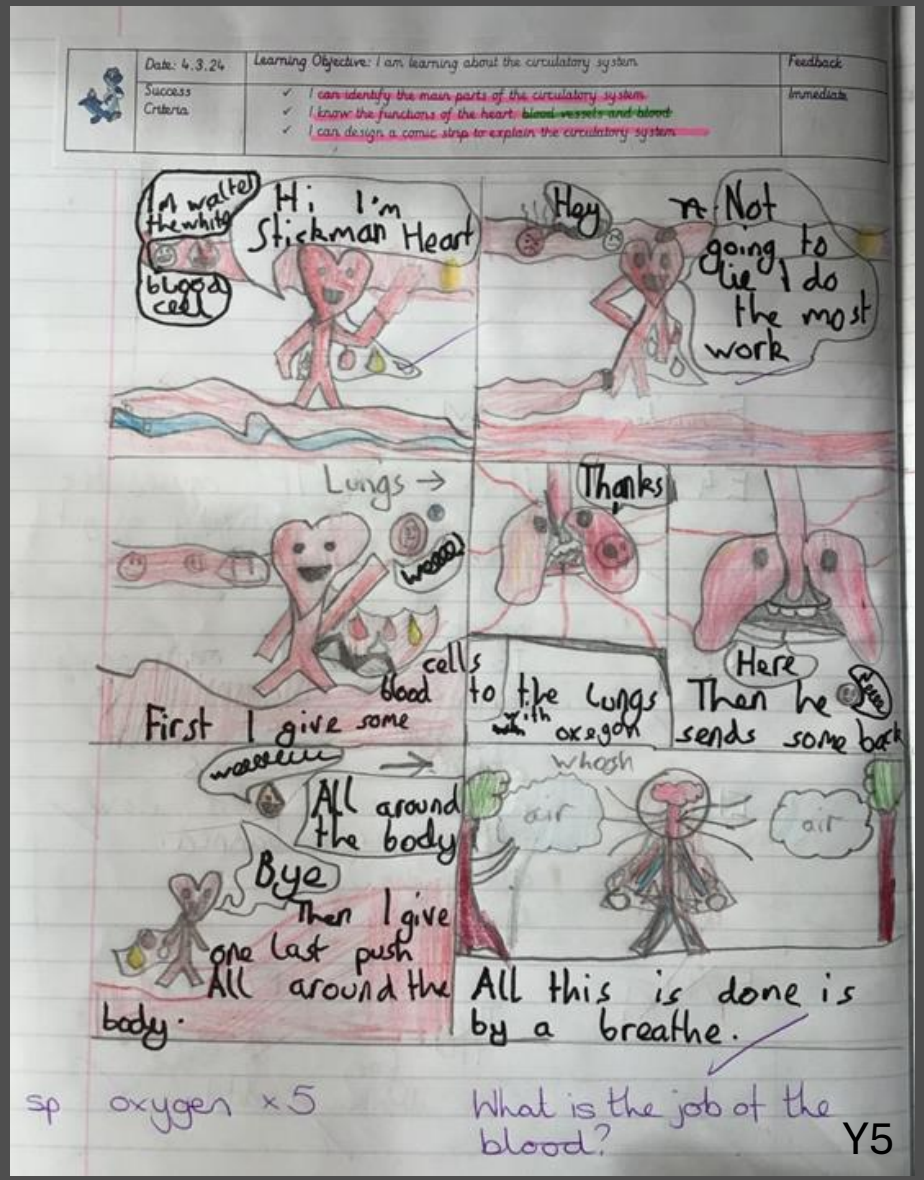
Why does this happen?

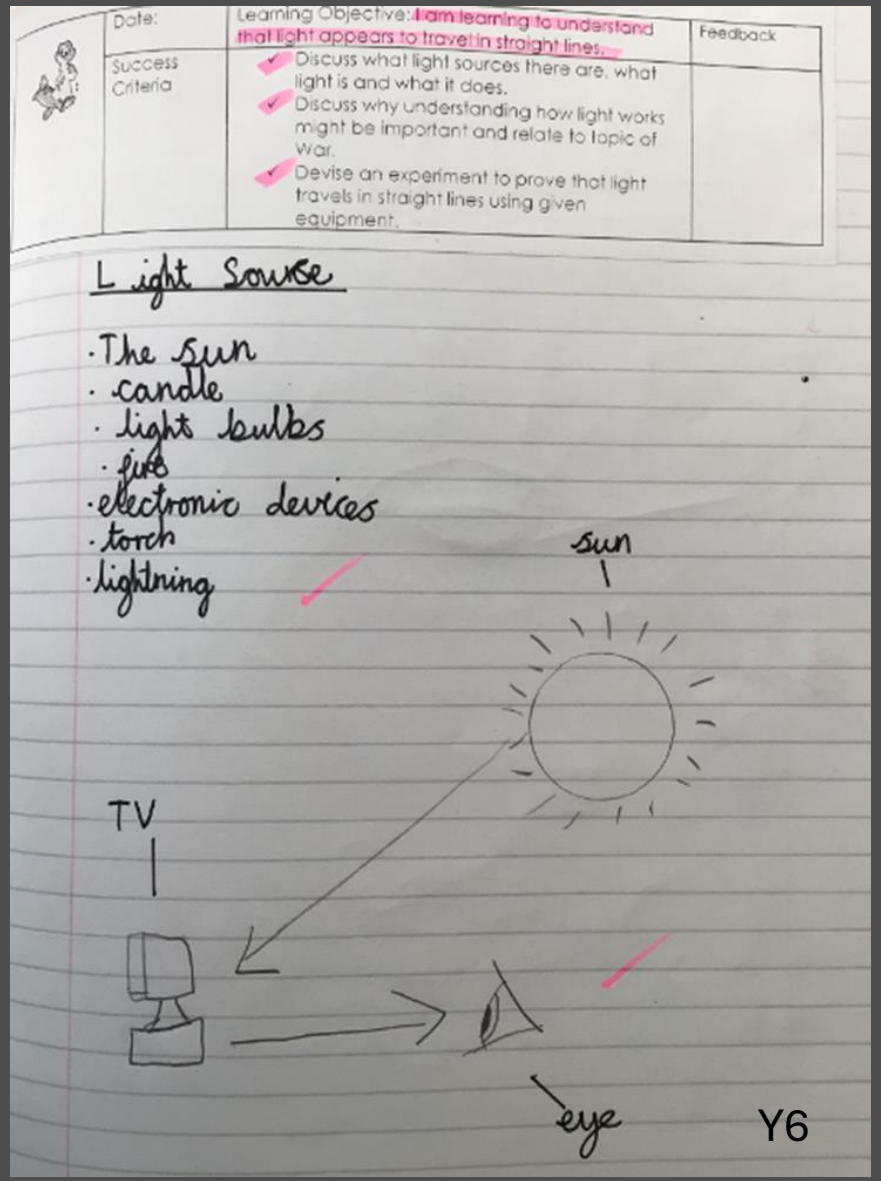
Objects slow down when they move through transparent materials like glass or water. When light slows down, it changes direction. This "refraction" of light is the reason a straw in water looks bent or broken and why objects

viewed through a glass bottle appears distorted. In the same way light reflects differently off different surfaces, it also ~~reflects~~ refracts differently on the shape of the material. This can make refraction very useful. For example the curve of eyeglasses directs light rays into the eye more effectively. Magnifying lenses also use refraction: the convex lens bends the light rays so the image appears larger.

A great explanation Wilf.

Y6


Date: 4.3.24
Learning Objective: I am learning about the circulatory system.
Feedback
Success Criteria
✓ I can identify the main parts of the circulatory system.
✓ I know the functions of the heart, blood vessels and blood.
✓ I can design a comic strip to explain the circulatory system.
Immediate
I'm waiting the white blood cell
Hi I'm Stickman Heart
Hey
Not going to lie I do the most work
Lungs →
Thanks
Here
Then he sends some back
First I give some blood cells to the Lungs with oxygen
All around the body
Bye
Then I give one last push All around the body.
whoosh
air
air
All this is done is by a breathe.
sp oxygen ×5
What is the job of the blood?
Y5


Date:
Learning Objective: I am learning to understand that light appears to travel in straight lines.
Feedback
Success Criteria
✓ Discuss what light sources there are, what light is and what it does.
✓ Discuss why understanding how light works might be important and relate to topic of War.
✓ Devise an experiment to prove that light travels in straight lines using given equipment.
Light Source
·The sun
· candle
· light bulbs
· fire
·electronic devices
·torch
·lightning
sun
TV
eye
Y6

Science Skills Map

N	'Happy to Be Me'	'Let's Play'	'Come and Join the Celebration'	'Jurassic Park'	'Animal Crackers'	'No Place Like Home'	'Under the Sea'
	Using senses/similarities and differences-materials	Forces – push/pull?		Dinosaurs	Animals and observations	Animals	Fish/sea creatures
R	'Tell Us a Story'	'Help is at Hand'	'Food Glorious Food'	'Way Back When…' Hats Had Brims	'If You Go Down to the Woods…'	'What On Earth…?'	'Come Fly With Me!'
	Animals/fruit and vegetables		Food		Animals, plants and observations	Using things	
Y1	'Happily Ever After'	'Unity in the Community'	'Royal Patrons'	'Never Eat Shredded Wheat'	'Children's Champion'	'Light Up the World'	'Come Fly With Me!'
	New life/habitats	Life processes/growing				The Sun/Light and Heat	Seasons/Materials
Y2	'Inter-Nation Media Station'	'Land Ahoy!'	'Dancing Spy'	'Paddington's Passport'	'Record Breaker'	'Going Wild!' All About Animals	'Zero to Hero'
		Speed, sound and motion				Living things	Light and electricity
Y3	'That's All, Folks!'	'Athens v Sparta'	'Lindow Man'	'Rocky the Finosaur'	Out and About	Under the Canopy'	'Come Fly With Me!'
		Forces		Rocks and Fossils		Plants and habitats	Animals including humans
Y4	'Lightning Speed'	'Law and Order'	'Viking Warrior'	'May the Force Be With You'	'Saxon King'	Picture Our Planet	'Cry Freedom'
	Electricity			Forces and magnets		Sound	
Y5	'Mission Control'	'You're Not Invited'	'Fighting Footballer'	'Go With The Flow'	'Pharaoh Queen'	'Global Warning'	'Come Fly With Me!'
	Earth and Space			Humans and Animals		Materials	Materials
Y6	'A World of Bright Ideas'	'Wars of the World'	'True Crime'	'In Your Element'	'Time Team'	'Full of Beans'	'I Have a Dream…'
	Forces	Light				Electricity	Living things and adaptation

'Happily Ever After'

Sc1 Suggest what might happen and perform simple tests
Sc2 Explore using senses and record findings in simple ways
Sc3 Collect evidence to try to answer a question
Sc4 Make simple comparisons through observation
Sc5 Identify and classify based on simple criteria

'Full of Beans'

Sc38 Plan different types of scientific investigations
Sc39 Make predictions based on scientific knowledge
Sc40 Carry out a range of scientific investigations
Sc41 Begin to recognise and control variables where appropriate during investigations
Sc43 Carry out a fair test explaining why it is fair
Sc47 Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs

Session 5: 19/4/24 Drama/ Science						
			Big Questions Answered	Juicy Jargon Spoken	Assessment Notes	Evidence
LO: I am learning to name and observe a variety of sources of light. Know what a light source is. Name a variety of sources of light. Sort light sources and non-light sources. Sort sources into natural and artificial.	 Today we are working with Newton who is a scientist. Scientists are curious! They investigate and explore to learn about the world, finding out what things are and why things happen. Scientists are so important as they can help to change the world and make life better for us all. Science can explain why the lightbulbs above our heads light up, why the carpet below us is a good material to walk on, and why my voice makes different sounds as I speak to you. As *Scientists* last lesson you shared what you already know about the sun. This lesson we are going to learn about light sources.	**DRAMA** **Phase 1: What's That Noise? (15 mins) ? Big space required - hall?** Play a range of sound effects (Tracks 1- 6) in ppt and ask the children to guess what the noises are. Track 1 - Sound FX - Creaking floorboards, Track 2 - Sound FX - Clock chiming Track 3 - Sound FX - Dripping tap, Track 4 - Sound FX - Carrier bag rustling Track 5 - Sound FX - Someone snoring, Track 6 - Sound FX - Text message alert Replay the sounds and ask children to identify them. Discuss the idea that at night we sometimes imagine familiar sounds to be something else. Ask the children to imagine what the noises could be instead e.g. the creaking floorboard could be a robot's rusty knee, or the clock chiming could be a giant's mother ringing a bell to call him in for dinner etc. For each sound, ask children to act out what it might be. Freeze frame the take responses. *Introduce LO, and use Curriculum Creature script.* Resources: torch, lights in class, candle (collective worship), picture of the sun, reflectors needed, red herrings, sorting hoops. **Light Sort (45 mins)** Watch: https://www.youtube.com/watch?v=d65mdTJaJTI (May need to clarify that light sources emit their own light, non-light sources may reflect light - e.g. reflective clothing, the moon) Have a variety of objects, some of which are light sources and others not. With pupils sat in a circle, pass each object round. Have two hoops, one for light sources and one for non-light sources. Ask chd to choose where to put their object and give reasons why. Ask them if they can explain what makes each one light up> (LINK - electricity in PE) Show the class the picture of the sun and ask them to shade their eyes to look at it, leading into the next concept. **In books - children draw and label light sources, non-light source.** **Subheading: light source - draw and label examples** **Non-light source -draw and label examples** **LA/SEN - print light source examples on a single sheet - cut stick.** Extending: show https://www.bbc.co.uk/programmes/p019yjp8 and discuss difference between natural and artificial - resort light sources as natural/ artificial.	What is a light source? What is the difference between natural and artificial light sources?	Light source Natural Artificial Reflective Absence (of light)		Table completed in books

KS1 **National Curriculum Objectives** Pupils should be taught to		Happily Ever After	Inter-Nation Media Station	Unity in the Community'	'Land Ahoy	Royal Patrons'	Dancing Spy'	Never Eat Shredded Wheat'	Paddington's Passport'	'Children's Champion'	Record Breaker'	Light Up the World'	'Going Wild!'	'Come Fly With Me!'	'Zero to Hero'	PSHE
Plants	identify a variety of common wild and garden plants, including deciduous and evergreen trees															
	identify and describe the basic structure of a variety of common flowering plants															
	observe and describe how seeds and bulbs grow into mature plants															
	find out and describe how plants need water, light and a suitable temperature to grow and stay healthy															
Animals, Including Humans	identify and name a variety of common animals including birds, fish, amphibians, reptiles 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)															
	identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense															
	notice that humans and other animals can produce offspring and that these offspring can grow into adults															
	find out about the basic needs of animals, as well as humans, for survival (which are food, water and air)															
	describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene															

KS2 **National Curriculum Objectives** Pupils should be taught…		"That's All, Folks!"	'Lightning Speed'	'Mission Control'	'A World of Bright Ideas'	'Athens v Sparta'	'Law and Order'	'You're Not Invited'	'Wars of the World'	'Lindow Man'	'Viking Warrior'	'Fighting Footballer'	'True Crime'	'Rocky the Findosaur'	'May the Force Be With You'	'Go With The Flow'	'In Your Element'	'Out and About'	'Saxon King'	'Pharaoh Queen'	'Time Team'	Under the Canopy'	'Picture Our Planet'	'Global Warming'	'Full of Beans'	'Come Fly With Me!'	'Cry Freedom'	'Come Fly With Me!'	'I Have a Dream…'	PSHE
Plants	identify and describe the functions of different parts of flowering plants: roots, stem / trunk, leaves and flowers																													
	explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant																													
	investigate the way in which water is transported within																													
	explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal																													
Animals, Including Humans	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																													
	identify that humans and some other animals have skeletons and muscle for support, protection and movement																													
	describe the simple functions of the basic parts of the digestive system																													
	identify the different types of teeth on humans and their simple functions																													
	construct and interpret a variety of food chains, identifying producers, predators and prey																													

Subject Leadership

- Structure and oversight – big picture

- Monitoring:
  - Books
  - Planning
  - Pupil voice

Pupils	AR	CO	DE	DR	GE	HI	MU	SC
Year Five Average	3.9	3.8	3.8	3.8	3.7	3.7	3.8	3.7

Next steps:

Further personalise and develop

Exploit opportunities for enrichment activities

Refine and adapt planning to focus on key knowledge

Develop use of Kahoot quizzes to embed this

Challenge for greater depth and scaffolding/adaptations