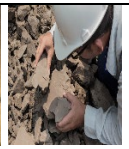
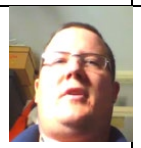
Science Knowledge and Skills Coverage. (Year 3)

INTENT

Content/ Knowledge	Rocks	Animals Including Humans	Forces and Magnets	Light	Plants
	To compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. To describe in simple terms how fossils are formed when things that have lived are trapped within rock. To recognise that soils are made from rock and organic matter.	I can identify that humans and some other animals have skeletons and muscles for support, protection and movement. I can 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.	I can compare how things move on different surfaces. I notice that some forces need contact between two objects, but magnetic forces can act at a distance. I can observe how magnets attract or repel each other and attract some materials and not others. I can compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet and identify some magnetic materials. I can describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing.	To recognise we need light in order to see things and that dark is the absence of light. Light is reflected from surfaces. Recognise that light from the sun can be dangerous and that there are ways to protect your eyes. Recognise that shadows are formed when light from a light source is blocked by an opaque object. Find pattens in the way that the shadows change.	I can identify and describe the functions of different parts of a flowering plant. I can explore the requirements of plant life and growth. I can investigate the way in which water is transported within plants. I can explore the part that flowers play in the lifecycle of flowering plants including pollination, seed formation and seed dispersal.
Book/ Science Capital	 Mary Anning  Geologist  Ground investigation engineer	 Physiotherapist	 Gigantic turnip  John McAdam  Sir Isaac Newton  Albert Einstein	 Darkest Dark  Charlie Dimmock	 George Washington Carver Carl Linnaeus Alexander Humboldt Oliver Rackham
Scientific Enquiry	Compare and group materials based on their properties. Classify rocks based on their properties. Carry out comparative tests to rank rock properties. Research and learn about Mary Anning. Use research and models to help demonstrate my learning. I can make careful and systematic observations over time.	Research the bones in the skeletal system. I can identify and classify parts of the skeletal system. Identify bones in the body and the hand. I can look for patterns in how each part of the hand moves and make adjustments. I can identify and classify animals into vertebrate and invertebrates. I can look for patterns in results. I can use secondary sources to find out about muscles. I can research the nutritional values of foods by reading data. I can look for patterns and compare nutritional values. I can identify and classify foods.	Group and identify forces based on observations Research John McAdam to create own road surfaces Sort and classify materials into magnetic and non-magnetic. I can carry out a fair test using magnets. I can spot patterns in my drawings and explain what is happening using magnetic fields. I can use research and secondary sources to aid my explanations.	I can compare how different materials react to light. I can identify patterns in my results to answer questions I can observe what happens over time. I can spot patterns in results to answer questions. I can look for patterns in results, I can observe a shadow over time. I can carry out a fair test and control variables. I can look for patterns in the size of the shadows.	I can identify parts of the plant I can carry out a comparative test. I can make observations over time. I can use research and my own scientific knowledge to explain the process. I can look for patterns I can identify and classify different seeds.
Working Scientifically	Make careful observations and identify similarities and differences. Record classifications in a table, Venn or Carrol diagram. I can record my results in a table Interpret the process of fossilisation using models and pictures. Ask questions to deepen my learning about rock formation. I can set up tests to answer questions.	Locate and label the bones in the body I can answer questions about the uses of our bones. Record using labelled drawings and scientific language. I can evaluate my design and suggest improvements. I can make careful observations to sort animals into groups. I can make predictions from questions raised. I can use scientific language to discuss ideas. I can record my results in a table. I can record my results in a bar chart. I can evaluate my learning using scientific language.	I can observe different forces Evaluate my choices and suggest further improvements. I can predict whether materials are magnetic or not. I can plan a fair test I can record my findings using scientific ngs I can use models to explain findings.	I can raise questions when exploring materials and light. I can make predictions based on scientific questions. I can set up practical comparative tests using my own ideas. I can record my results in a table. I can interpret my results and report on patterns found. I can evaluate my test and suggest improvements. I can observe what happens when an object is moved closer to a light source.	I can record my findings using scientific diagrams. I can plan a comparative test. I can interpret my findings using scientific knowledge. I can explain in detail what pollination is. I can evaluate my seed spinner. I can look carefully at seeds.

IMPLEMENTATION						
	Ideas/WOW moments.	1. Recap previous learning. Using chocolate to represent rocks. Rock drama. 2. Classifying rocks based on their characteristics. Rock cycle. Natural and manmade rock. 3. Rock drama- properties of rock. Rock tests (hardest, most durable, waterproof, does not react to acid) 4. Process of fossilisation. Mary Anning's work. Explore fossils. Make own fossil following the process. 5. How are rocks formed and how do they change? Rock cycle drama. Rock cycle practical. Learn about Geologist and ground investigation engineer. 6. Soils- investigation into what soil is made from. End of unit quiz.	1. Recap previous learning. Introduction to the skeletal system- label bones. 2. Build a skeleton- skeleton relay. Why do we need bones experiment? 3. What does a physiotherapist do? Close drawing of the hand and bones in the hand. Children plan their bionic hand design. 4. Children make their bionic hand. 5. Children classify animals into vertebrate and invertebrates. 6. Function of the skeleton- investigate how the skeleton protects the organs. 7- How do muscles work? Make a muscle model to explain the process. 8- What do humans need to stay alive? Explore food contents and classify using food wheel. 9- Record results in a table regarding how much of a particular category a food contains e.g. sugar. 10- Eat well plate game, balanced and unbalanced plates. End of unit quiz.	1. Recap previous learning. Read gigantic turnip, explain friction using rice in bottle. Children observe different forces. 2. Recap on vocabulary, investigate different road surfaces and find out about John McAdam. Use force metres and also recap on Sir Isaac Newton. 3. Explore magnetic and non-magnetic. 4. Explore magnetic materials and children plan their own fair test. 5. Investigate why magnets have two poles. Children will find out about magnetic fields. 6. Focus on the earths magnetic field and children make own compass. End of unit quiz.	1. Pre learning. Read the Darkest Dar as stimulus. Light investigation. Natural and artificial light sources. 2. Investigation into prisms, children to understand why light is reflected. Investigation into which materials reflect light. 3. Why is the sky blue? Investigation into UV light and sun cream. 4. Optical illusions. Investigation into shadows and how shadows change. 5. Investigation into how shadows change depending on where the sun is in the sky. 6. Application lesson making curtains with most opaque materials.	1. Pre learning. Labelling a plant. Functions of the plant. Labelling the male and female parts of the plant. Plant dissection and drawings. 2. What do plants need to grow? recap. Experiment into the requirements of plant growth using pansys. 3. Investigation on how water and nutrients transport through stem using carnations and celery. Photosynthesis. 4. Recap on sunflower lifecycle and what germination means. Focus on pollination and pollination drama. Why are bees important? 5. Fertilisation and seed dispersal. Focus on the different ways seeds are dispersed. Children make their own seed dispersed by wind. 6. What is a botanist? - children learn about different botanists. Children go on a seed hunt to see what they can find in their environment. End of unit quiz.
	Cross Curricular	**Maths**- Using keys and grouping. Creating recording tables and looking for patterns. Recording using Venn and Carrol diagrams. **English-** Drama, role play, improvisation, . **Geography-** rocks around the world and in different places e.g. Jurassic coast. **IT**- links with gaming and children's interest of Minecraft. **History**- learning about historical figures and fossilisation. **ART**- Make your own fossil.	**PSHE-** links to health and balanced diets. **Maths**- using tables to record and classify. Use bar charts to record results. Read scales. **DT-** to know how different foods help our bodies, use different materials to build models. **English**- spelling scientific words correctly and writing ideas in a logical way. **PE-** skeleton relay. **IT**- using apps and ICT to research.	**English**- Use of books to create a hook for the lesson. Children to write in full sentences when interpreting and use conjunctions to explain thinking. Spell scientific words correctly. **Maths**- to create tables, line graphs and sorting diagrams. Reading scales on force metres. Use measuring equipment accurately. **PSHE**- safety with ears and loud sounds. **History**- learning about historical scientists linked to friction.	**English**- interpreting results and using and spelling scientific words correctly. Darkest Dark book for stimulus. **Maths**- Using tables and Venn diagrams. Measuring accurately. Using angles. **DT**- evaluating the effectiveness of different materials. **PSHE**- Safety when in the sun. Protect eyes and skin. **IT**- Use of data loggers/apps to measure light.	**English**- interpreting results and using and spelling scientific words correctly. Using connectives to add details to predictions. **Maths**- Using tables and Venn diagrams. Bar and line graphs. Reading scales. **Geography**- Links to the water cycle. **ART**- careful observational drawings. **IT**- use of videos and online research to support learning. **History**- learning about historical figures and famous botanists and horticulturalists.
	Resources	• Post it notes, Bounty, dairy milk, aero/whisper, Maltesers/revels, kit kat, snickers/double decker (chocolate bars) • Plates. • Selection of rocks, magnifying glasses, microscopes. • Whiteboards (optional) • Selection of rocks, pipettes, small dishes, egg boxes, white vinegar, sandpaper, nail, golf tea or coin, Water. • Fossils, magnifying glasses. • Dog bones, plasticine or blu tack, candy floss or icing sugar, water, pipette, black food colouring, tissues. • Scissors, starburst, zippy wallet, foil trays, metal supports, tealight candles, small tray of sand (safety), • Camera, pots for samples, spades, white paper, magnifying glasses, pens. • 4 jars/beaker, 4 soil samples, magnifying glasses, water.	• Doll • Post it notes, Laptops/ICT • Cotton buds/Blu tac (optional) • Gloves, straws, post it notes. • Cardboard, string, elastic bands, straws, strong tape. • 2 glass jars per group, eggs, beaker if water, paper towels. • Strong card, elastic bands, split pins, stapler. • Range of foods/food labels. • Zip lock bags, sugar cubes	• Blu tac, car or ball, balloon. • Gigantic Turnip story or read along in the PP. • 2 bottles, long grain rice, Chop stick/skewer • Force metres • Cars. • Range of materials e.g., sand, mud, flour, marbles, stones, pebbles to make roads. • Pringles tube, Range of 10ps with different alloys of metal (check dates), 50p coin, Strong magnets. (This part of the lesson is optional) • Range of magnetic and non-magnetic materials e.g coke can, nail, foil, steel. Gold, keys. Coins, paper clip. • Magnetic materials • Magnets. • Tape. • 2x bar magnets and string. • Bar magnets • Plotting compasses • Iron filings (loose) • Cork or bottle top • Opened paperclips or needles. • Small dishes • Water.	• Bear cave or shoe box painted or covered black. • A range of materials such as mirrors, prisms, cds, reflective strips, coloured paddles, cellophane • Post it notes • Prisms, torches • Baking tray and bouncy ball • Data Logger, Lux measuring app. • Coloured card, foil, paper, corrugated card, carpet, sponge, laminated pouch, water. • UV beads, sun cream x 3 different UV factors, zip lock bags., • Coloured acetate, transparent materials • Torch, figure or object, whiteboard, ruler. • Semi circular sun shadow kit (Ogden) or protractor, filament torch, ruler, whiteboard. • Card, straws, pens, light	• Post it notes • Lilly flowers • Magnifying glasses/microscopes. • Pansies 6 per group, zip lock bags • Leafy celery, carnations, red or green dye (food colouring does not work as well) • Zip lock bags or bags with a tie handle. • Small dish, water, apple juice, straws, cheesy crisps. • Whiteboards • Range of seeds. • Paperclips • Range of resources for spinners e.g., feathers, paper card, tissue, acetate, tissue paper.

IMPACT		Can name some types of rock and give physical features of each. Can explain how a fossil is formed. Can explain that soils are made from rocks and also contain living/dead matter. Classify rocks in a range of ways using scientific vocabulary. Test properties of rocks. Can identify plant/animal matter in soil, test water retention of soils.	Can name the nutrients found in food. Can state that to be healthy we need to eat the right types of food to give us the correct amount of these nutrients. Name some bones that make up the skeleton giving examples that support, help them move or provide protection. Give similarities and differences between skeletons. Can describe how muscles and joints help them to move. Classify food groups (high/low nutrients), answer q's about nutrients in food, use data to look for patterns.	Give examples of forces in everyday life. Give examples of objects moving differently on different surfaces. Name a range of magnets and show how the poles attract and repel. Can draw diagrams using arrows to show the attraction and repulsion between the poles of magnets. Can use results to describe how objects move on different surfaces. Can use results to make predictions. Can use some classification to know some metals are not magnetic. Use test data to rank magnets.	Can describe how we see objects in lights and can describe dark as the absence of light. Know it is dangerous to look at the sun. Define transparent, translucent, and opaque. Can describe how shadows are formed. Predict what materials will be more/less visible.	Can explain the function of the parts of a flowering plant. Can describe the life cycle of flowering plants, including pollination, seed formation, seed dispersal and germination. Can give different methods of pollination and seed dispersal, including examples. Can explain observations made during investigations. Can look at features of seeds to decide on method of dispersal.