Brough Primary School – Curriculum Intention Plan 2022 - 2023

Subject: Science **Year Group:** Year 3/4		**Area of learning:** Light
Links to previous work/Remember when	• In Year 1&2, children worked through two units on materials and their properties. During this work they learnt how to group materials and how the uses of materials are dependent on their properties. • In Years 3&4 children learn about electricity, simple circuits and electrical conductors and insulators. This cohort should have received this teaching in cycle B, which they have done first. <u>Working Scientifically</u> • Asking relevant questions and using different types of scientific enquiries to answer them. • setting up simple practical enquiries, with knowledge of fair testing • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • recording on their findings using simple scientific language	
Term	**Year 3&4**	**Key Skills to be taught**
Summer 2023 What the children should know at the end of this series of lessons		• Recognise that they need light in order to see things and that dark is the absence of light. • Notice that light is reflected from surfaces • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes • Recognise that shadows are formed when the light from a light source is blocked by an opaque object • Find patterns in the way that the size of shadows change <u>Working Scientifically</u> • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, (not including thermometers and data loggers) • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

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		• identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings

Vocabulary Light, beam, darkness, illuminate, straight lines, investigate, light source, reflector, reflect, predict, fair test, reflective materials, reflection, image, angle, line of reflection, concave, convex, symmetrical, transparent, translucent, opaque, shadow, screen, block, measure, distance, plot, graph, data, results, rainbow, white light, spectrum, prism, refraction, dispersion.

Sequence of learning	**Objectives and suggested details provided by subject leader.**
1	i). Recognise that they need light in order to see things and that dark is the absence of light. ii). Ask relevant questions and use different types of scientific enquiries to answer them. iii). Making systematic and careful observations. iv). Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. • Actively investigate the nature of darkness, light and sight with a torch, a cardboard box and pencil holes. • Use their findings to draw conclusions on how light travels and our dependence on light to see. • Consider how these findings explain what we see, for example, not round corners etc. (see available resources (ppt))
2	i). Recognise that they need light in order to see things and that dark is the absence of light. ii) Notice that light is reflected from surfaces. iii). Gather, record, classify and present data in a variety of ways to help answer questions. iv). Identify differences, similarities or changes related to simple scientific ideas and processes. • Predict and then investigate which colours show up best and least in the dark. • Investigate the shining of a torch on various objects, including reflective materials. • Discover why shiny and reflective materials appear to glitter or shine in torchlight. (see available resources (ppt))

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3	i). Notice that light is reflected from surfaces. ii) Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. iii). Gather, record, classify and present data in a variety of ways to help answer questions. iv). Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • Investigate how light is reflected back mirrors and other shiny surfaces to give a clear reflection or 'image'. (Y3) • Investigate how writing is reflected back to front and how back to front writing looks normal when viewed in a mirror. (Y4) • Experiment with angles of reflection using string attached to a mirror. (see available resources (ppt))
4	i). Recognise that shadows are formed when the light from a light source is blocked by an opaque object. ii). Identify differences, similarities or changes related to simple scientific ideas and processes. iii). Use straightforward scientific evidence to answer questions or to support their findings. • Investigate how objects made from different materials cast shadows. • Understand how a shadow changes depending on the object's orientation. • Discover why opaque, transparent and translucent objects cast different shadows (Yr3&4). • Investigate how the orientation of an object affects the shadow by making hand shadows (Yr3). • Investigate how shadows can be seen from the other side of a translucent screen (Yr4). • Year 3 - Explore how shadows are made and explore hand puppet shapes. • Year 4 - Explore how shadows are made and play a guessing game. • Both – Attempt to explain the shadows that were seen. (see available resources (ppt))
5	i) Recognise that shadows are formed when the light from a light source is blocked by an opaque object. ii) Find patterns in the way that the size of shadows change. iii). Set up simple practical enquiries and comparative and fair tests. iv). Make systematic and careful observations and, where appropriate, take accurate measurements using standard units. v). Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. • Actively investigate how shadows change as the light source is moved. • Take measurements and look for patterns in data to answer scientific questions.

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	• Freely explore how the distance of the light source affects the size of a shadow (Yr3&4). • Look for patterns and try to answer questions (Yr3&4). • Take accurate measurements of shadows whilst controlling the distance of the light source (Yr3&4). • Observe a demonstration of light travelling in straight lines to explain the shadow data (Yr3&4). • Year 3 - Conduct a fair test to answer a given question with a scaffolded task. • Year 4 - Devise their own fair test to discover how the size of a shadow changes when the light source is moved.
6	ASSESSMENT LESSON (see ppt resources both for the quiz and the answers)

Learning Outcome/product
Complete the cumulative quiz with your class. (See resources)

Assessment records	**List only those children who have not achieved the expected outcomes.**

Assessment records	**List only those children who have exceeded the expected outcomes.**

End of unit assessment statement.
E.g. It is impossible to see round a corner because…