Pebble Brook School

CURRICULUM MAP 2022/23

SUBJECT/ AREA: STEM **SUBJECT LEADER: S. Campbell** **DATE:** July 2022

KS3 STEM YEAR PLAN 2022-23

	AUTUMN TERM 2022		**SPRING TERM 2023**		**SUMMER TERM 2023**	
	5 Sept-21 Oct 7 weeks	31 Oct – 20 Dec 7 weeks	4 Jan – 10 Feb 5.5 Wks	20 Feb-31 March 6 weeks	17 April – 26 May (1 day Bank Hol) 6 weeks	5 Jun – 21 July 7 weeks
KS3 **Y8/Y9**	Discovering Colour	Conducting Science Experiments *Sensory activities, * Developing scientific method- observation, prediction, manipulation, and measurement	Connecting with Our Community * Children will have opportunities to explore these occupations through pretend play, visits with professionals, and field trips to observe community members in action.	Studying Horticulture *Creating own garden, greenhouse and using hydroponic technique	Exploring Animals living in UK * Animal conservationists visit to school or visiting ZSL zoo	Learning about renewable energy

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STEM Content Area description:

1.Discovering Colour

Hypothesis question: What creates the colours we see in our environment?

Investigation purpose: In this unit, Students will have opportunities to explore the colour spectrum through refracting light, colours found in nature, and by creating their own colours.

Students will discover how to describe, sort, match, and mix colours to create new ones as they play with prisms and create rainbows, as well as explore the absence of colour (black and white). This unit focuses on the role colour plays in nature such as in camouflage and photosynthesis. Students can use natural colours to create their own dyes for artwork. Children will also explore the concept of 'eating a rainbow' and how fruits and vegetables of different colours provide nutrients for the body.

2.Conducting Science Experiments

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Hypothesis question: How does the scientific method help me make and prove my discoveries?

Investigation purpose: This unit will focus on exploring chemistry concepts.

Students will further their use of the scientific method by developing hypotheses and testing them through experiments. Through these sensory activities students will explore how materials transform, such as liquids becoming solids or gas; and learn about chemical reactions and catalysts. Students will discover the "magic" of science as well as the explanations as to why the reactions occurred. Students will also learn about scientists and other STEM occupations.

3.Connecting with Our Community

Hypothesis question: What can our community teach us about STEM?

Investigation purpose: This unit focuses on exploring the local community, using maps, and discussing occupations and transportation.

Students will study community helpers through a STEM lens, such as learning how engineers work on bridges, horticulturists cultivate gardens, or veterinarians care for animals. Students will have opportunities to explore these occupations through pretend play, visits with professionals, and field trips to observe community members in action. This Investigation Unit also provides opportunities to explore social problem-solving techniques and why caring for one another is important. this unit as an opportunity to introduce Social-Emotional Skills.

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4.Studying Horticulture

Hypothesis question: What makes plants similar and different? Investigation purpose: This unit will focus on plants and gardening.

Students will create their own garden and determine what they want to grow based on the season, how they will need to care for their plants, and learn about hybridization.

Students will also learn about gardening, farming, and how we gather, ship, and grow food around the world. Students will look at how food is grown in large quantities outside of their seasons and natural habitat (e.g., Hydroponics). Students will have the opportunity to design and create their own mini sustainable gardens/greenhouse.

5. Exploring Animals living in UK

Hypothesis question: How can we help and protect animals that live in our community?

Investigation purpose: This unit will focus on the different animals that students may be able to see in their environment.

Students will have the opportunity to see and learn about different animal in the UK by having animal conservationist coming into school or visiting ZSL zoo. Students will learn about these animals and their natural habitat as well as ways they can protect the animals. Students will explore animal tracks, animal homes, and animal diets including those of herbivores, carnivores, and omnivores.

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6.Learning about renewable energy

Hypothesis question: How can we get sustainable energy without damaging our environment.

Investigative purpose: This unit is focussed on the many debates about reducing greenhouse gases and how renewable energy sources might form part of the answer.

Students will watch video clips such as those showing how steam is used to drive turbines in power stations which burn fossil fuels. Pupils will then look at how turbines can be adapted to be driven by alternative energy sources and examines the advantages and disadvantages of energy sources such as wind, to solar, biomass, hydroelectric power, tidal and geothermal power.

Most people agree that renewable energy is a good thing, but how do people react when a wind farm and other renewable energy farms are proposed to be built near them? The activity in this unit puts students into different roles which will influence how they react to the proposed wind farm, solar farms, hydroelectric plants etc.

Students will have the opportunity to set up mini renewable energy kits but will have make choices of which kit to use based on the environmental condition as well as think about the impact these could have on the community or environment.

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