Holmer Lake Primary School

The STEM Vision

(Science, Technology, Engineering and Mathematics)

Led by: Mrs Rachel Gillett

The philosophy of the four cornerstones of learning

At Holmer Lake Primary School, we want every child to be motivated to be the very best learner they can be. This means inspiring them with new and varied experiences every half-term. Our curriculum is based on our four-stage philosophy: Engage, Develop, Innovate and Express.

Our Vision

We aim to develop resilient, resourceful, reflective and reciprocal pupils who:

- are proud to belong to Holmer Lake Primary School;
- are committed to being a successful learner and are inspired by the success of others;
- are well-informed of how they fit into a democratic society, how they can participate in and contribute to life in Britain and value themselves as a citizen;
- are self-assured and are able to manage change and adapt to the expectations of 21st Century Britain;
- are given time to reflect on their own beliefs, culture and heritage, whilst respecting those of others;
- participate in and enjoy the artistic, historic, sporting and cultural opportunities within and beyond the school;
- be given the opportunity to have wonderful ideas for exploration and investigation and the joy of finding out and problem solving; which prepares them for modern life;
- have a good understanding of what is right and wrong, how to make the right decision and the consequences of these choices;
- to be accepting of difference in all its forms;
- can think creatively, independently and imaginatively about the bigger picture and how they can achieve their aspirations in life;
- embrace challenge and have high aspirations.

Curriculum organisation

At Holmer Lake Primary School we provide a creative curriculum based around the Cornerstones Curriculum; linked to the National Curriculum.

The key areas within the Humanities'' Curriculum are:

- Science – Mrs Katie Maton
- Technology – Mrs Jenny Millington
- Engineering – Mrs Elle Woodman
- Mathematics – Mrs Rachel Gillett

Links to the expectations of the National Curriculum for Science, Technology, Engineering and Mathematics are below.

Science – https://www.gov.uk/government/publications/national-curriculum-in-england-science-programmes-of-study/national-curriculum-in-england-science-programmes-of-study

Technology - https://www.gov.uk/government/publications/national-curriculum-in-england-computing-programmes-of-study

Engineering - https://www.gov.uk/government/publications/national-curriculum-in-england-design-and-technology-programmes-of-study

Mathematics - https://www.gov.uk/government/publications/national-curriculum-in-england-mathematics-programmes-of-study/national-curriculum-in-england-mathematics-programmes-of-study

Science

Purpose of study

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

Aims

The national curriculum for science aims to ensure that all pupils:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future

Technology

Purpose of study

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with

mathematics, science and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

Aims

The national curriculum for computing aims to ensure that all pupils:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- are responsible, competent, confident and creative users of information and communication technology

Engineering

Purpose of study

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

Aims

The national curriculum for design and technology aims to ensure that all pupils:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world

- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook

Mathematics

Purpose of study

Mathematics is a creative and highly interconnected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

Aims

The national curriculum for mathematics aims to ensure that all pupils:

- become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately
- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration

through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

Attainment targets

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

Tracking progress

We use Cornerstones' Assessment to support our formative assessment methods. Essential Skills, based on end of year age-related expectations, are used to inform planning in all foundation subjects. They break the programmes of study into end of year group expectations to show a clear progression. For each subject the skills are organised into aspects, allowing teachers to monitor children's breadth of understanding.

We use the Essential Skills in two formats:

- a subject-specific format, showing annual progression. This is used by subject leaders to track progression across school in particular subjects.
- a year group format, showing all subjects for each year group. This is used by teachers to support planning and target-setting

Policy- Document Status			
Date of Policy Creation	**September 2006**	**Named Responsibility**	
Date of review completion	**September 2018**	**Named Responsibility**	Governors
Inception of new Policy	**September 2018**	**Named Responsibility**	
Date of Policy Adoption by Governing Body			