COMPUTING

Intent

Computing pays close attention to guidance provided by the National Curriculum sequence and content. It is infused with evidence-led practice and enriched with retrieval studies to ensure long-term retention of foundational knowledge.

Through excellent teaching and generative tasks, the connection between the computing content and the context is relevant to the everyday lives of children e.g. real life use of technology such as laptops, mobile devices, cameras and enables them to stay safe in the digital world.

The foundations of Computing are introduced in the EYFS through being exposed to the digital world in everyday experiences e.g. telephones in home corner, iPads for taking photographs. Our ambitious interpretation of the National Curriculum places knowledge, vocabulary, and computational thinking at the heart of our principles, structure and practice.

We aim to encourage pupils to be curious learners who are motivated facilitators of technology, who become digitally literate.

Substantive knowledge
This is the subject knowledge and explicit vocabulary used to learn about the content. Misconceptions are challenged carefully and in the context of the substantive and disciplinary knowledge. They are not introduced too early, as pupils need to construct a mental model in which to position that new knowledge.

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.

Disciplinary knowledge
This is knowing how to collect, use, interpret, understand and evaluate the evidence from digitally literate processes. This is taught. It is not assumed that pupils will acquire these skills by luck or hope. Pupils construct understanding by applying substantive knowledge to

- creating and debugging programs
- using logical reasoning to predict outcomes
- purposefully creating, organising, storing, manipulating and retrieving digital content
- using technology safely and respectfully.

We use the National Curriculum coverage maps to check the balance of provision and skills are mapped throughout the curriculum.

Substantive concepts include concrete examples, such as following a series of instructions before creating computer programs. . Concepts are taught through explicit vocabulary instruction as well as through the direct content and context of the study.

Principles
A guiding principle of our Computing is that each study draws upon prior learning and our school values are woven into the learning. woven through too

Our Computing is organised into three distinct subject domains: ***Computer Science, Information Technology and Digital Literacy***

SequencingSequencing

- Our Computing Long Term Plan (LTP) is sequenced into meaningful and connected 'chunks' of content to reduce the load on the working memory as well as creating coherent and strong long-term memories.
- The sequence of substantive and disciplinary knowledge enables pupils to become 'more expert' with each study and grow an ever broadening and coherent mental model of the subject. This guards against superficial, disconnected and fragmented scientific knowledge and weak disciplinary knowledge.
- **E-safety is the first unit taught in every year group each academic year.**
- Our curriculum builds and develops on previous units with the breadth of information technology covered through for example, creating pictures, data handling, creating music and presenting ideas.
- Each Computing unit has specific vocabulary to enhance and deepen understanding. These are explicit on each unit knowledge organiser.
- Within the PSHE / Values curriculum, a focus on safeguarding through Online Safety is also mapped.
- We have planned both vertically and horizontally across our Computing curriculum, giving thought to the optimum knowledge sequence for building secure schemes of learning. Our curriculum is well thought out and linked to other areas of the curriculum where appropriate. Our Computing curriculum offers links with maths to include statistics, sorting and classifying. There are links to English through creating text, Art through creating pictures, Music through creating musical pieces, Science through data-handling and PSHE through the Online Safety.
- INSERT WHOLE SCHOOL PLAN

Spaced Retrieval Approach

- Our curriculum maps clearly show how our curriculum introduces and revisits substantive and disciplinary knowledge within and across year groups. This approach enables staff to deepen pupil understanding and embed learning.

Implementation

We recognize the importance of teaching children about e-safety. We therefore, teach this unit to all years groups at the beginning of each academic year.

Early Years

In the Early Years Foundation Stage, children experience technology through real life uses e.g. within role play, in the classroom and exploring technology uses around the school. There is a planned computing program through i-Compute, as shown below.

Vocabulary

EYFS: We want our children to have an expansive vocabulary and through teacher modelling and planning, children are given opportunity to use and apply appropriate vocabulary. Computational language is taught and built upon with vocabulary being a focus.

EYFS CURRIC MAP

Online Safety is also taught within the PSHE & Values curriculum within EYFS.

Computing Long Term Mapping

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Reception	Continuous Provision to support use of technology in real life / role play. Online safety taught within PSED.					
Year 1 Purple Mash	 Unit 1.1 Online Safety and explore Purple Mash	 Unit 1.4 Lego Builders	 Unit 1.5 Maze Explorers	 Unit 1.6 Animated Story Books	 Unit 1.7 Coding	 Unit 1.9 Technology Outside School
Year 2 Purple Mash	 Unit 2.1 Coding	 Unit 2.2 Online Safety	 Unit 2.4 Questioning	 Unit 2.6 Creating Pictures	 Unit 2.5 Effective searching	 Unit 2.7 Making Music  Unit 2.8 Presenting Ideas

Computing enables pupils to ask relevant reflective questions, as well as begin to answer them using subjective and disciplinary knowledge.

Modular Units – Knowledge & Understanding

- Computing is taught across each year group (in Key Stage 1 and Key Stage 2) in units that enable pupils to study key digital understanding, skills and vocabulary.
- Each unit aims to activate and build upon prior learning to know more and remember more.
- Each unit is carefully sequenced to enable pupils to purposefully layer learning from previous sessions to facilitate the acquisition and retention of key knowledge.

The Unit Themes

We put an emphasis on sharing the key focus with the children at the beginning of every module.

Key Stage 1

- Pupils study the basics of the learning platform **Purple Mash** and develop an early conceptual understanding of how **to create, save and retrieve** work. An understanding of Purple Mash develops over time and connects to all the further units in KS1. This initial focus enables children to learn how to login, navigate around the platform and be ready to use it at home and school for further learning.
- **Online Safety** principles are also introduced in this initial unit such as the importance of keeping personal information private.
- Pupils are introduced to **Computer Science** through familiar, real life examples within Lego Builders and Maze Explorers. They learn how to create simple code and the importance of instructions being clear and in the correct order. This is revisited and developed later in the year through the **Coding** unit.
- Pupils are introduced to **Information Technology** in the unit Animated Stories. Children learn skills to type using a keyboard and draw using a touchpad, which enable them to create and manipulate digital content. Vocabulary such as text, font, background and animation are explicitly taught and modelled through direct instruction.
- As pupils progress through KS1, new knowledge is integrated with pre-existing understanding. For example, in Year 2, the study of **Coding** enables the pupils for focus on more advanced coding skills such as testing, debugging and using repeat programs. Their understanding of **Digital Literacy** is further developed through opportunities to explore what is effective searching. They also learn about other forms of **Information Technology** such as data handling through questioning, creating content through art & design programs and creating sound when making music.
- Their KS1 journey ends with **Presenting Ideas** which combines much of their prior learning from the key stage in particular their knowledge and skills developed in **Information Technology**.

National Curriculum objectives and how these link to prior / further learning are evident at the beginning of every module through the section entitled **Key Learning Point.**

Development of Computational skills

- As well as ensuring pupils are taught key knowledge, each module is designed to offer pupils the opportunity to undertake enquiries and develop their skills as a Computational thinker by asking questions, learning new skills and applying skills in different contexts.

Skills of Computer Science

- Create simple algorithms
- Test and debug simple algorithms
- Use logical reasoning to predict the behaviour of simple programs.

Skills of Digital Literacy

- Use technology safely and respectfully
- Keep personal information private
- Identify where to go for help

Skills of Information Technology

- Create digital content
- Organise digital content
- Store digital content
- Manipulate digital content
- Retrieve digital content

Minimum lesson expectations

All Computing lessons will incorporate the following elements:

- **Introduction:** where does this learning fit in their learning journey
- **Vocabulary overview:** introduce & explain new vocabulary required for the lesson
- **Activities:** a series of guided activities to teach key knowledge and skills, practice and apply them.
- **Extension:** encourage them to further refine skills learnt or understanding using key vocabulary / greater explanations
- **Review:** link back to learning journey and vocabulary for the lesson.

Knowledge and Vocabulary organisers in KS1

Vocabulary instruction is at the heart of the curriculum and subject specific words are incorporated in each module.

- Accompanying each module is a **Knowledge Organiser** which contains key vocabulary, information and concepts which all pupils are expected to understand and retain. Knowledge notes are the elaboration and detail which help pupils acquire the content of each module. They support vocabulary and concept acquisition through a well-structured sequence that is cumulative. Knowledge Organisers are referenced throughout each module.

ailoring for SEND / <20%

- We aim for all Computing lessons to be accessible to all pupils:

- Provide extra scaffolding e.g. support to log into network through verbal or visual cues.
- Peer to peer support
- Providing opportunities to revisit and embed skills and knowledge
- Personalizing or adapting the curriculum e.g.

Oracy

When discussing their findings or presenting information, pupils are encouraged to speak using full sentences and incorporating key computing vocabulary.

Impact

Teacher assessment

Formative

- Teachers use formative assessments within lessons as children demonstrate their knowledge and the intended outcomes of the unit

Summative

- Evidence of pupil outcomes are used to check on pupil understanding at the end of each unit of learning.

Monitoring

- Learning walk
- Moderation across year groups
- Termly reviews about how the curriculum is being implemented and the outcomes
- Pupil outcomes stored in 2Do Work folders within Purple Mash

Outcomes

- Pupil outcomes stored in 2Do work folders within Purple Mash
- Teacher assessments each term
- Annual reports