Ireby Church of England Primary School

'Created to do Good': Ephesians 2;10

Computing

Signed by:

_____ _____Head Teacher Date: 11th February 2025

Next review date: February 2027 or sooner if required

School Governance:

Responsibility of the school leadership

Our Aim/ Christian vision: 'Created to do Good' Ephesians 2:10

At Ireby, we are dedicated to creating a loving community for all, where all are celebrated as unique individuals and where passions and talents can flourish. We learn how God teaches us how to live our lives, how to grow relationships, accept others and use the words and example of Jesus as a foundation for all our learning.

Our computing curriculum supports our children's academic, social and spiritual development through studying a rich computing curriculum which enables all to flourish.

Computing units are carefully selected so that we develop our children's understanding of technology and learn how it can be used responsibly to enhance our world.

Our Intent:

We aim to instil a sense of enjoyment around the use of technology and to develop pupil's appreciation of its capabilities and the opportunities technology offers to create, manage, organise and collaborate. 'Tinkering' with software and programs forms part of the ethos of how we learn as we want to develop pupil's confidence when encountering new technology, which is a vital skill in the ever evolving and changing landscape of technology. Through our curriculum, we intend for pupils not only to be digitally competent and have a range of transferrable skills at a suitable level for the future workplace, but also to be responsible on-line citizens.

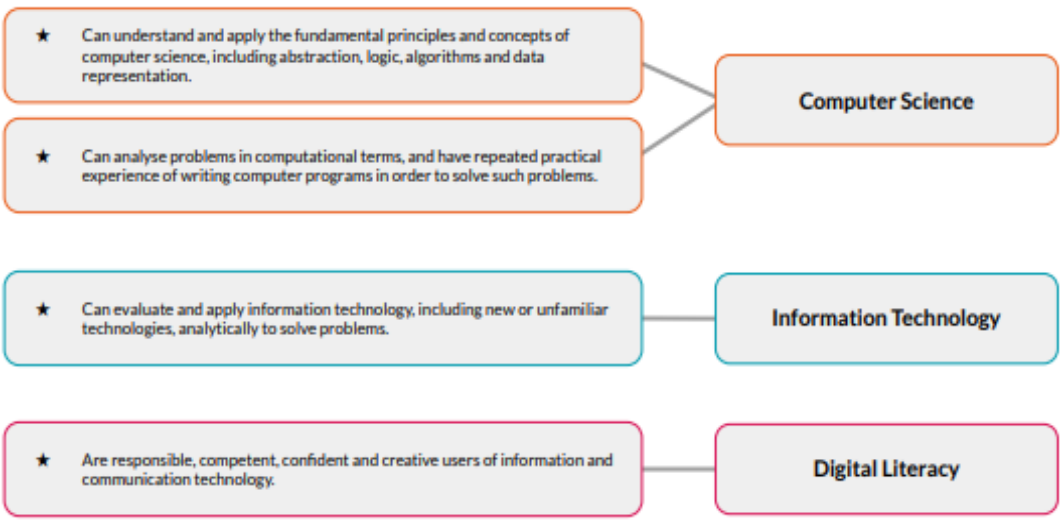
Our curriculum fully meets the attainment targets set out in the National Curriculum and, as it is used with the RSE and PSHE curriculum, meets the objectives set out in the DFE's Education for a connected World framework.

Implementation

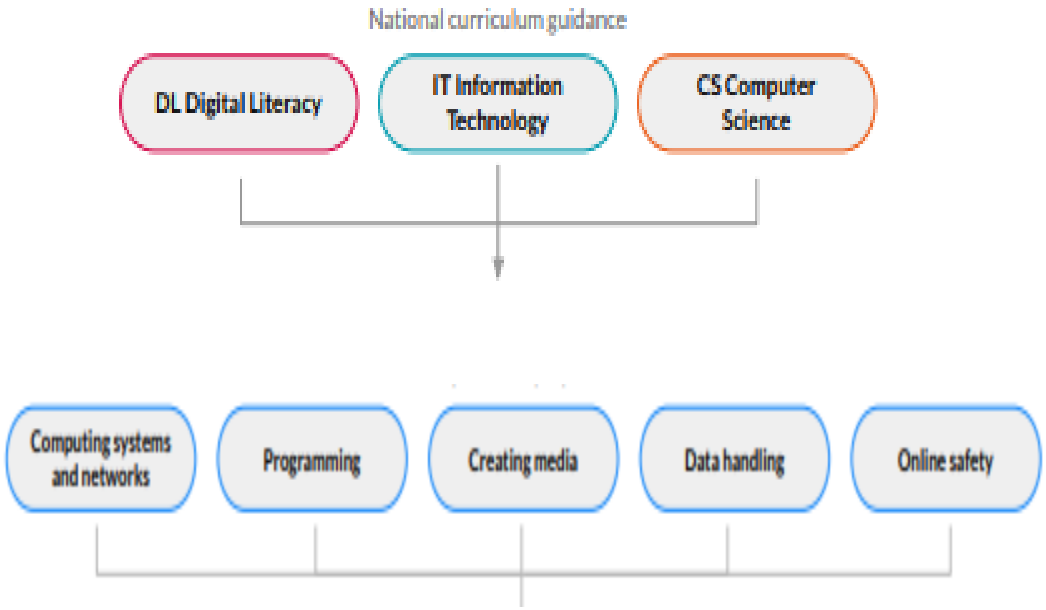
How our curriculum meets the National curriculum

Our curriculum fulfils the statutory requirements outlined in the National Curriculum (2014).

Three strands have been identified which run through our curriculum.

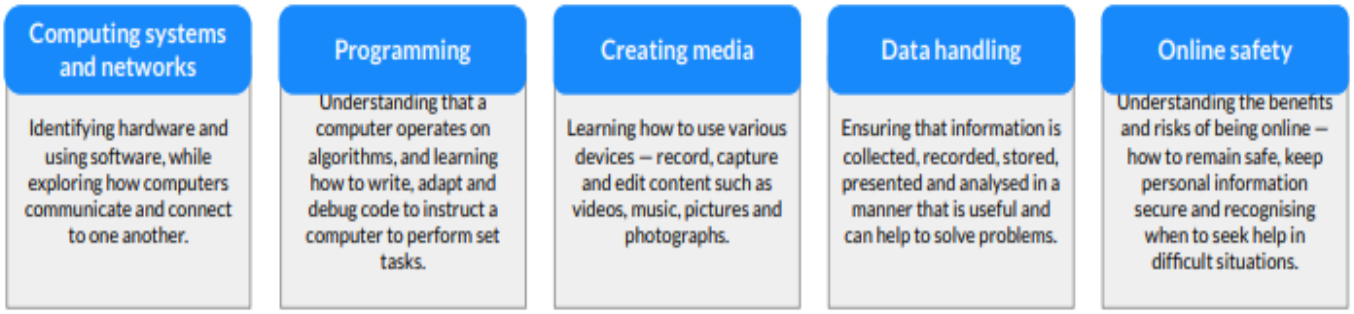


How our computing curriculum is organised



Key Areas

Lessons have been categorized into five key areas below. These are returned to in each Key Stage making it clear to see prior learning and future learning for our pupils and how our teaching fits into their wider learning journey.



Progression

The Computing Progression of skills and knowledge document provides an overview of the knowledge and skills covered across each phase and strand.

The document outlines how pupils develop their understanding of Computer science, Information technology and Digital literacy to meet the expectations set out in the National curriculum.

New learning is weighted toward the beginning of each key stage, allowing for regular opportunities to revisit, consolidate and apply it in subsequent years. As a result, knowledge and skill development may appear more concentrated in some year groups than others.

A Spiral curriculum

Our curriculum is designed as a spiral curriculum with the following principles in mind:

Cyclical: Pupils revisit the five key areas throughout KS1 and KS2.

Increasing depth: Each time a key area is revisited, it is covered with greater complexity.

Prior knowledge: Upon returning to each key area, prior knowledge is utilised so pupils can build

on previous foundations, rather than starting again.

Broadening Horizons

The process of broadening horizons in Computing begins with familiar tasks, such as using simple digital tools, then progresses to more complex concepts like programming, systems and networks.

This approach helps pupils build on what they know and understand their role in an increasingly digital world.

Types of knowledge

Knowledge is defined differently depending on the subject in question. Ofsted's Computing research review helps to define these Computing knowledge strands as:

Declarative knowledge

Declarative knowledge in Computing refers to the facts, concepts and information that pupils need to understand. This includes knowledge of algorithms, how networks function, input and output devices and the vocabulary used to describe digital systems.

It forms the theoretical foundation that helps pupils make sense of the digital world and supports their ability to explain and reason about how and why things work.

Procedural knowledge

Procedural knowledge is the practical know-how that enables pupils to apply their understanding through action.

In Computing, this involves tasks such as writing code, debugging programs, editing digital media, using data-handling tools and navigating software interfaces.

Procedural knowledge is developed through hands-on experience and allows pupils to use technology purposefully and creatively to solve problems and complete tasks.

Wider knowledge and skills

Digital Literacy

Digital literacy is embedded throughout the curriculum and our computing scheme places digital literacy at its core, ensuring pupils learn how to use technology safely, responsibly and effectively.

Through age-appropriate online safety lessons, digital tools and collaborative platforms, pupils develop the critical skills needed to navigate, evaluate and participate in the digital world with confidence

We use this alongside our Computing curriculum, which supports coverage of the expectations in Education for a connected world and aligns with the Teaching online safety in schools guidance.

Oracy

Lessons encourage discussion, explanation and collaborative problem-solving, allowing pupils to articulate their thinking, justify decisions and reflect on their digital creations.

Pupils use oracy to enhance their learning by thinking aloud, questioning processes and discussing solutions. They develop essential skills such as using subject-specific vocabulary, explaining their reasoning clearly and listening to and building on the ideas of others

Sustainability

The Kapow Primary Computing curriculum promotes awareness of environmental issues. It encourages children to explore concepts such as climate change, resource use and conservation, promoting a sense of responsibility for the planet.

Critical thinking

Pupils analyse digital content, evaluate data and reflect on the effectiveness of their own and others' digital solutions.

This helps them to question assumptions, make informed decisions and form reasoned conclusions about how technology is used and its impact on the world around them.

Personal development in computing

SMSC

Our computing curriculum supports spiritual, moral, social and cultural development by encouraging children to:

- Explore different perspectives.
- Reflect on ethical issues.
- Collaborate with others.
- Appreciate cultural diversity through subject-specific content.

British values

Lessons promote British values (democracy, the rule of law, individual liberty, mutual respect and tolerance) by incorporating activities that encourage debate, respect for differing opinions and an understanding of societal structures.

Cultural capital

Our computing curriculum, supported by Kapow broadens pupils' experiences by introducing them to influential innovators, real-world applications of technology and the ethical and social dimensions of the digital world. We visit local tech firms such as Createc so children can meet experts and understand how technology is being developed.

It ensures they gain the knowledge and skills needed to participate confidently and responsibly in a technology-driven society.

Transition from EYFS to KS 1

Continuity of learning

Our computing curriculum, supported by Kapow, aligns with the statutory EYFS guidance.

Key themes and skills introduced in EYFS are revisited and developed further in KS1, ensuring continuity and progression.

This transition is aided by the continuity of learning created by the curriculum strands, which run from EYFS to Year 6. Subject leaders can pinpoint how knowledge develops in Reception and how this creates the foundation for learning in KS1.

Building on early experiences

Lessons build on curiosity, exploration and discussion, which are central to EYFS learning. As pupils move into Year 1, more structured activities are gradually introduced.

In KS1, oracy, questioning and storytelling help pupils transition from informal to more formal subject-based learning

Development of key skills

The scheme supports the progressive development of skills, such as observation, reasoning and problem-solving, which are introduced in EYFS and strengthened in KS1.

Adaptive teaching strategies ensure all learners are supported as they transition to more formal learning approaches.

Cross-curricular links

The scheme aligns with EYFS Early Learning Goals, making links with communication and language, understanding the world and expressive arts to create a smooth transition.

It encourages independence and confidence, supporting children as they adapt to the expectations of KS1 learning.

Inclusion and diversity

Our computing curriculum has been designed to represent a range of cultures, races and backgrounds:

The curriculum's visual representation is inclusive and representative of a variety of people and places, challenging stereotypes or historical ideologies.

Within sensitive units, questions have been included to support children's lived experiences and backgrounds.

Where appropriate, colonial choices and their impact on digital issues are explored.

Our curriculum's scheme supports children in appreciating the complexity of people's lives, the diversity of societies and the relationships between different groups.

Implementation

Computing is for one-hour per week in KS1 and across KS 2. There are three classes, KS 1, Year 3 and 4, and Year 5 and 6. This allows us to plan a two-year rolling programme.

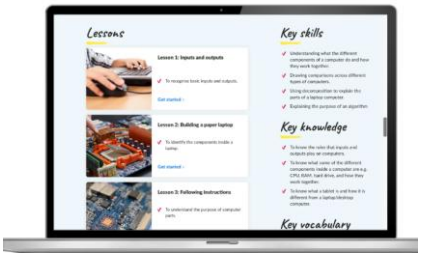
CPD

Kapow Primary supports teachers in delivering the Computing curriculum effectively through clear and informative CPD videos.

These videos are designed to help teachers feel confident in their role by providing guidance on key concepts, teaching strategies and best practices.

Unit structure

Computing curriculum is divided into units. Each unit consists of between 5 and 7 lessons, each carefully sequenced to build skills and knowledge.



Lesson structure

Recap and recall

Each Computing lesson begins with a short activity revisiting prior learning. This helps reinforce key knowledge, activate long-term memory and create connections between past and new learning.

Recap and recall activities are varied to keep the start of the lesson engaging and fun while still supporting active recall.

Attention grabber

A short, engaging activity designed to hook pupils into the new learning in the lesson.

This could be a thought-provoking question, a quick investigation or an interactive discussion to spark curiosity and enthusiasm for the topic.

Main event

The core part of the lesson, where children engage in activities that develop their understanding of the learning objective.

This includes a mixture of teacher modelling, guided practice and independent or collaborative tasks tailored to support all learners.

Wrapping up

A final reflective activity that consolidates learning.

This could involve reviewing the success criteria, discussing key learning or applying knowledge in a different context to assess understanding and encourage deeper thinking.

SEND

Our computing curriculum is designed to be fully adaptable for pupils with SEND. Every lesson includes an adaptive teaching section, providing clear guidance on how activities can be modified to meet the needs of all learners.

Children learn in a variety of ways. As such, our computing lessons include a range of strategies (also documented in our teaching and learning policy) to support and challenge every pupil, such as:

Scaffolding – activities are designed with flexibility in mind, allowing for additional support or challenge where needed.

Multi-sensory approaches – lessons incorporate different elements to engage all learners.

Clear instructions and structured tasks – ensuring clarity and reducing cognitive load for pupils who benefit from additional support.

Opportunities for collaborative and independent learning – allowing pupils to work at their own pace while building confidence and independence.

By embedding adaptive teaching throughout, our curriculum ensures that all pupils, regardless of their starting points, can access and succeed in their learning.

In addition, the step-by-step curriculum design supports pupils with SEND, avoiding sudden jumps in complexity at transition points and allowing for steady, manageable progression.

Knowledge retention

Spiral curriculum

Our computing curriculum incorporates a spiral curriculum model, ensuring that children revisit and develop their understanding of key themes and concepts as they progress. This approach allows them to make meaningful connections, reinforce their learning and achieve mastery over time.

Revisiting key concepts – pupils encounter the same ideas multiple times throughout their education, with each revisit adding more complexity.

Progressive depth – concepts are not just repeated but expanded upon, helping pupils to make connections and develop a richer understanding over time.

Knowledge retention – regular exposure to key ideas strengthens memory and prevents knowledge from being forgotten.

Skill development – pupils refine and apply their skills in different contexts, improving their ability to think critically and solve problems.

Adaptive learning – by building on prior knowledge, the curriculum meets pupils at their current level and supports all learners, including those who need extra reinforcement and those who are ready for greater challenges.

Knowledge organisers

Units of lessons are supported by Knowledge organisers which are a structured document designed to support pupils' learning by clearly outlining the key knowledge, vocabulary and concepts covered in a unit of work – and can be found at the front of a unit of work in our floor books.

It serves as a reference tool for both teachers and pupils, helping to consolidate learning and support knowledge retention.

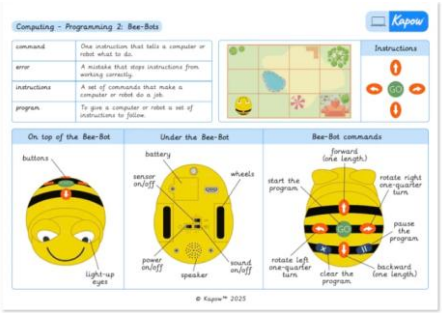
Essential knowledge at a glance – summarises the most important facts, concepts and skills that pupils need to learn for a particular unit.

Key vocabulary – provides a list of subject-specific terms with definitions to develop pupils' language and understanding.

Clear and visual layout – organised in a way that makes information easy to digest and revisit, often using diagrams, timelines or key images.

Support for retrieval practice – helps pupils engage in self-assessment, recall activities and revision, reinforcing long-term memory.

Teacher and pupil-friendly – acts as a quick reference for teachers when planning lessons and an accessible learning aid for pupils to develop independence in their studies.



Assessment during the lesson

Formative assessment is embedded throughout computing lessons to ensure that teachers can gauge pupils' understanding in real time and adapt their teaching accordingly.

Questioning – lesson plans include targeted and open-ended questions to check understanding, promote critical thinking and address misconceptions.

Observation – teachers are supported to observe pupils during tasks, noting how they approach activities, collaborate and apply geographical skills.

Discussion and peer interaction – pair and group discussions are built into lessons, providing opportunities for pupils to articulate their thinking and for teachers to assess understanding through dialogue.

Lesson pauses – plans include strategic pause points for checking comprehension, summarising learning and addressing any common errors before progressing.

Retrieval practice – recap activities such as short recall tasks and oral explanations are embedded to reinforce prior knowledge and assess retention.

Use of success criteria – success criteria are shared within lessons, allowing pupils to self-assess or peer-assess their work and reflect on their progress.

Short reflections in the Wrapping up – lessons end with brief written or verbal reflections, enabling pupils to consolidate learning and teachers to gauge understanding.

Cross-Curricular learning

Skills and knowledge gained in computing are used across our curriculum. In KS 2, each child has their own laptop which they use throughout the school curriculum. This ensures that our children's computing skills develop quickly and that they all achieve at least nationally expected standards by the end of Key Stage 2.

Impact

Assessment

Formative

Computing lessons include ongoing assessment opportunities, such as questioning, retrieval practice and interactive activities.

These enable teachers to assess understanding in real time and adapt their teaching accordingly.

Summative

Each unit provides an Assessment quiz and Knowledge catcher, which allow teachers to measure pupils' understanding at key points.

These tools help gauge how well pupils have retained key knowledge and skills over time.

Evidencing progress

Children's written and computing work (shared on TEAMs and through our floor books) provide tangible evidence of progress across lessons. Children's own knowledge and understanding is demonstrated daily through our interactions, questioning and responses. Learning Objectives are reviewed each lesson.

Summative assessments are made by teachers using a range of this evidence and summative judgements recorded on spreadsheets against national expectations.

Computing in the EYFS

Our EYFS lessons are a natural precursor to our Year 1 Computing plans. They are designed especially for the Reception classroom and are play-based, hands-on and fun!

They support a child-led project approach to using technology and focus on computing through continuous provision.

Whilst the technology strand is no longer a specific area in the new EYFS framework (2021), having the opportunity to develop computing skills at an early age fosters an interest and confidence in technology and gives our pupils an advantage going into KS1.

Our EYFS curriculum focuses on the same key areas and link to Primary and Specific Areas of the EYFS framework 2024 and Development Matters Guidance as detailed on individual lesson plans and on our National curriculum mapping document.

Our Long-term plan

CYCLE A		Autumn Term		Spring Term		Summer Term	
	EYFS	Awesome Autumn: Creating, Pattern, Logic, Algorithms, Decomposition, Collaborating	Winter warmers Algorithms, Creating, Collaboration, Decomposition, Tinkering, Persevering	Super space Algorithms, Collaboration, Persevering, Creating, Pattern, Logical reasoning, Tinkering, Abstraction	Spring time Abstraction, Tinkering, Creating, Collaborating, Algorithms, Persevering, Decomposition	Summer fun Tinkering, Persevering, Patterns, Logic, Decomposition, Debugging, Collaborating, Algorithms	Boats Ahoy Algorithms, Decomposition, Creating, Tinkering, Logic, Patterns, Abstraction, Collaborating
	KS1	**Computer systems:** Improving mouse skills	**Computer systems:** Word Processing	**Computer systems:** What is a computer?	**Data Handling:** International Space Station	**Programming:** Algorithms unplugged	**Programming:** Prg 1 Algorithms and debugging
	LOWER KS2	**On-line Safety**	**Computer systems and networks:** Emailing	**Programming** Computational thinking	**Creating Media** Website design Sway	**Computer systems and networks:** Networks	**Programming** Coding with Scratch
	UPPER KS2	**On-line Safety**	**Computer systems** Search Engines	**Data Handling:** Mars Rover	**Creating Media** Stop Animation	**Programming** Music in Scratch	**Programming** Introduction to python/ Logo
CYCLE B		**Autumn Term**		**Spring Term**		**Summer Term**	
	EYFS	Awesome Autumn: Creating, Pattern, Logic, Algorithms, Decomposition, Collaborating	Winter warmers Algorithms, Creating, Collaboration, Decomposition, Tinkering, Persevering	Super space Algorithms, Collaboration, Persevering, Creating, Pattern, Logical reasoning, Tinkering, Abstraction	Spring time Abstraction, Tinkering, Creating, Collaborating, Algorithms, Persevering, Decomposition	Summer fun Tinkering, Persevering, Patterns, Logic, Decomposition, Debugging, Collaborating, Algorithms	Boats Ahoy Algorithms, Decomposition, Creating, Tinkering, Logic, Patterns, Abstraction, Collaborating
	KS1	**Computer systems and networks** Word Processing	**Creating Media** Digital Imagery	**Data Handling:** Introduction to data	**Creating Media:** Stop-motion	**Programming:** Beebots	**Programming:** Pg 2: Introduction to block coding
	LOWER KS2	**On-line safety**	**Computer systems** Collaborative Learning	**Data handling** Comparison cards	**Creating media:** Video trailers	**Programming:** Further coding with Scratch	**Programming** Further coding with Scratch
	UPPER KS2	**On-line Safety**	**Creating media/ programming** Building 3-D worlds and coding	**Data Handling** Big data 1	**Programming** Microbit	**Computer systems** Explaining AI	**Computer systems:** Bletchley Park

How our curriculum is sequenced

Key Stage 1

Cycle A

Key Stage 1 starts with understanding computer systems and skills they will need throughout the year, improving mouse skills and Word processing. In the spring term they learn about computer systems and networks in the unit 'what is a computer?' exploring what a computer is by identifying how inputs and outputs work and how computers are used in the wider world to design their own computerised invention.

In the summer term, we start to build the children's programming skills in the unit 'Algorithms unplugged' where Algorithms, decomposition and debugging are made relatable to familiar contexts, following directions, learning why instructions need to be specific. This will then lead into the unit 'Algorithms and debugging' where they continue to develop an understanding of; what algorithms are, how to program them and how they can be developed to be more efficient through the introduction of loops.

Cycle B

Cycle B follows a similar pattern in Key Stage 1 building basic Word processing skills before moving on to the creating media unit, digital imagery, where they learn to taking and edit photos, searching for and adding images to a project and lead into the creating imagery unit, 'Stop motion' top Motion (5 lessons), using cameras to create and publish simple animations from storyboarding creative ideas.

We then introduce the children to data handling in the unit 'Introduction to data' learning what data is and the different ways it can be represented. Learning why data is useful and the ways it can be gathered and recorded.

Finally, during the summer term, children continue build coding skills through Beebots, introducing or building programming skills using a Bee-Bot and exploring its functions before being introduced to Scratch Junior, exploring what 'blocks' do' by carrying out an informative cycle of predict > test > review. Programming a familiar story and make a musical instrument and preparing them for increasingly demanding coding in Key Stage 2.

Online Safety in Key Stage 2

All cycles at the start of the academic year start with a thorough on-line safety curriculum designed to ensure that our children have the skills and knowledge they require to keep themselves safe on-line. From Year 3, our children have their own laptops and have a greater degree of independence when on-line. These units support their growing independence.

Lower Key Stage 2

Cycle A

Cycle A starts with building basic computing system skills through the unit 'Emailing' which continues into the autumn term. We then build on children's computer system skills through the unit 'Computational thinking,' where children solve problems effectively using the four areas of abstraction, algorithm design, decomposition and pattern recognition. We then build children's creative media skills with the unit 'Website

design,' learning how web pages and sites are created and how to embed media and links. Children then build on their Key Stage 1 data handling skills by building a database investigating weather.

The summer term ends cycle A with a comprehensive study on programming exploring the programme Scratch, building on the predict > test > review cycle learnt in Key Stage 1, and learning about 'loops' and programming an animation, story and game before moving on to 'Further coding in Scratch' where they begin to use 'variables' in script codes.

Cycle B

Cycle B starts with a creating media unit which challenges children to collaborate and build a virtual reality world using the coding programme Co-Space. The project incorporates the creation of an Internet safety tour. This moves naturally into a Computer systems unit based around 'Collaborative learning' exploring a range of collaborative tools including Microsoft Teams – where they learn how to work together on shared documents – skills they will need and build throughout the curriculum. Next, we build continue to build our data handing skills in the unit Comparison cards, learning about records, fields and data and sorting and filtering data. In the summer term we return to coding through an in-depth study of Coding in Scratch.

Upper Key Stage 2

Cycle A

Cycle A starts with computing systems, supporting the children with search engines learning about how page rank works and how to identify inaccurate information. We then continue to build creative media in the unit 'Stop animation' which builds key stage 1 units and website design in lower KS 2 by Creating animations, storyboard ideas

and decomposing a story into small parts before putting together to create the illusion of a moving image. Through the spring and summer term, we continue then to build children's coding skills with an in-depth study programming music using Sonic Pi to create different sounds, beats and melodies which are put to the test with a Battle of the Bands performance and through coding in python using Logo.

Cycle B

Starts with a unit on online safety. Children in Year 6 will then extend themselves through their use of python whilst Year 5 children in the cycle will do the same using extended block code. Big data 1 unit further develops children's understanding of handling data in the real world. Children then continue to deepen their coding knowledge through the unit on microbits**,** creating algorithms and programs that are used in the real world. Using the 'predict, test and evaluate' cycle to create and debug programs with specific aims. This is then finished off in the summer term with an in-depth look at the growth and application of AI – a topic that has gained increasing relevance in our world, and finishes with an exciting topic on Bletchley Park which looks at secret codes as well as the historical significance of the code breakers.

The implementation of computing will be in-line with our Curriculum intent, implementation and impact policy.

Computing End points

Our curriculum supports every child to reach a required 'end point' by the end of each Key Stage. These 'end points' reflect both the requirements of the National Curriculum 2014, and reflect the needs of the children in our school context. To find out more, click here to view to progression of skills and knowledge from EYFS to Upper KS 2.

Key Stage 1

Pupils will be assessed against their ability to demonstrate the following end points by the end of Key Stage 2:

- understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions
- create and debug simple programs
- use logical reasoning to predict the behaviour of simple programs
- use technology purposefully to create, organise, store, manipulate and retrieve digital content
- recognise common uses of information technology beyond school
- use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies

Key Stage 2

Pupils will be assessed against their ability to demonstrate the following end points by the end of Key Stage 2:

- design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration
- use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
- use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

Monitoring and evaluation of impact of this policy

Activity	Frequency
Book reviews	We will sample the quality of books once per term
Lesson observations	Our computing leader will sample lessons during the year
Pupil voice	Samples on computing during year
Collecting and evaluating summative assessment	Termly Teachers will review learning towards 'end points' and record data on a spreadsheet for evaluation by the subject leader

The headteacher and subject leader are responsible for monitoring and evaluating the effectiveness of this policy towards meeting our stated vision and aims. This will be achieved through:

The role of governors

Our governors determine, support, monitor and review the school's approach to teaching and learning. In particular they:

- support the use of appropriate teaching strategies by allocating resources effectively;
- ensure that the school buildings and premises are used optimally to support teaching and learning;
- check teaching methods in the light of health and safety regulations;
- seek to ensure that our staff development and our performance management both promote good-quality teaching;
- monitor the effectiveness of the school's teaching and learning approaches

- through the school's self-review processes, which include reports from the headteacher, senior leaders and subject leaders, and a review of the continuing professional development of staff.

Monitoring and review of this policy

Senior leaders monitor the school's Computing Policy and carry out reviews so that we can take account of new initiatives and research, changes in the Computing curriculum, developments in technology or changes to the physical environment of the school. We will therefore review this policy every three years or sooner if required.