

Computing is taught across **four golden threads**, the combination of which ensures our students grow up to become true digital natives who understand technology, recognise its potential and limitations, know how to use it safely and are able to take advantage of different tools to create their own, meaningful, digital content.

How this connects to the
**Ofsted Research Review
Series**

DIGITAL TECHNOLOGY

Understanding the fundamental building blocks of computers & digital networks by considering how they are used and why. Realising how hardware works on our own devices as well as in larger networks opens up a greater understanding, including that the internet is a global network which connects us all.



Computer science
Information technology

DIGITAL PROGRAMMING

Using instructional commands to solve problems, complete challenges and automate tasks. Problem solving to understand where and why existing instructions aren't working and developing ideas and systems to create the desired outcomes in digital programs. A variety of different experiences across different programming environments and languages supports a well-rounded understanding of key programming concepts.



Computer science
Digital literacy

DIGITAL SAFETY

Learning how to use the Internet and related technologies safely and responsibly. Understanding the potential risks and discovering how to use the internet effectively to help with research, communication and other key activities. Understanding what to do if there is a problem or situation online that would be best resolved with the support of a trusted adult.



Digital literacy

DIGITAL CREATIVITY

Using a variety of technologies and apps to create meaningful and relevant content that fits a brief. Discovering how multimedia can play a key part in sharing messages or conveying information and how technology allows for interactive experiences. Using digital technologies to create dynamic and exciting content that allows students to express themselves in new and powerful ways.



Information technology
Digital literacy

Resources Used in this Overview:

Everyone Can Code

This is a book made by Apple which is designed to help students learn to code using the Swift Programming Language. This book sits alongside the Swift Playgrounds App for iPad and is a comprehensive start with learning to code Swift. I do find the lessons well structured and clear to follow, but find that it ramps up in difficulty quite rapidly. I would use this in conjunction with other coding opportunities for students such as Scratch.

Everyone Can Create

The four books in this series, again made by Apple, offer a variety of creative lesson ideas to make the most of iPad. Across the four areas of Photography, Drawing, Video & Music, the lesson ideas will fit into many cross-curricular contexts and offer plenty of easy-to-follow ideas to help empower students to become creators of content, as well as developing their digital literacy and confidence.

Be Internet Legends

Be Internet Legends from Google and ParentZone encourages active and honest conversations with students, based around a framework featuring clear and easy-to-follow messages about using the Internet safely. It is aligned with the RSE curriculum and is regularly updated to keep students safe and aware of dangers online. Most importantly it encourages and fosters open conversations with students about the dangers they face online and how these can be approached and solved.

Scratch

The Scratch application is made by MIT University and is the gold-standard for block based coding. It's so ubiquitous that many other programs build off of the core Scratch experience for their own software development platforms. It is designed as a web-based interface but I've always found it works just as well on iPad. Despite looking simple, Scratch has a wealth of power hidden away and can be used to create and code just about anything your students can imagine!

Teach Computing

Teach Computing is a scheme of work created by the National Centre for Computing Education and offers a wide range of lesson plans and ideas to support teachers with their Computing Lessons. I wouldn't follow this scheme in its entirety, but I do like picking and choosing from there to support less confident colleagues in my own school. I've selected some of the best lessons to support with the Scratch projects in this overview document.

Smartie the Penguin

These books offer an easy-to-understand introduction to Online Safety in a way which progresses nicely from EYFS up to Year 2. They create space for discussion and questions which may help the teacher recognise issues that their students are facing online that perhaps otherwise would be hard for the student to bring up or talk about.

National Curriculum Objectives for Computing:

KEY STAGE 1

- KS1-A** understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
- KS1-B** create and debug simple programs
- KS1-C** use logical reasoning to predict the behaviour of simple programs
- KS1-D** use technology purposefully to create, organise, store, manipulate and retrieve digital content
- KS1-E** recognise common uses of information technology beyond school
- KS1-F** 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

- KS2-A** design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- KS2-B** use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- KS2-C** use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- KS2-D** 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
- KS2-E** use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- KS2-F** 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
- KS2-G** use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

EYFS

Autumn 1

CREATIVITY KS1-D

Everyone Can Create: People and Things

Students will learn how to use the **Camera** app to record and document their view of the world. They will learn to compose, capture and evaluate their photos and capture objects related to their class topic.

This will enable them to share their perspective on the world around them whilst building a basic familiarity with iPad.

Inspired by the 'Patterns and Things' chapter in the **Everyone Can Create Early Learners** book on Apple Books.

Autumn 2

PROGRAMMING KS1-B

Everyone Can Code Early Learners: Commands

Students will be encouraged to use step-by-step **instructions** to describe everyday activities, ensuring they are in the correct order and make sense to another person.

This will begin to develop their understanding of **sequencing** and order when sharing instructions.

Based on the 'Commands' chapter in the **Everyone Can Code Early Learners** book on Apple Books.

Spring 1

[SAFETY] KS1-E KS1-F

Online Safety Smartie the Penguin

Students will use the two EYFS books to explore various themes linked to online safety and discuss them as a class afterwards.

The opportunity for discussion after reading the books is incredibly valuable and may lead to unexpected issues that the children are already aware of which can be properly addressed in this session.

Smartie the Penguin books are available to download from Childnet here: <https://www.childnet.com/resources/smartie-the-penguin/>

Spring 2

PROGRAMMING KS1-A KS1-B

ScratchJr: Building Blocks to Make Animations

Students will be introduced to on-screen coding through the ScratchJr app for iPad. They will explore **Sprites** and **Backgrounds** and use basic coding blocks to use, modify and create programs. They will use these blocks to create **animations** as they begin to explore the concept of algorithms and instructions.

Inspired by activities in the Teach Computing Curriculum here: <https://teachcomputing.org/curriculum/key-stage-1/programming-b-introduction-to-animation>

Summer 1

TECHNOLOGY KS1-D KS1-F

Introduction to iPad

Students will explore different functionality of the iPad beyond what they've used already (i.e. Camera and ScratchJr). They will learn to move between apps, return to the Home Screen and access tools like Control Center.

These fundamental iPad skills will be used across all aspects of Digital Learning and spending time at this stage developing an understanding of how the device works and building confidence with it is time well spent.

Summer 2

CREATIVITY KS1-D

Everyone Can Create: Share A Story

Students will learn to record their voice to tell their stories and share their ideas using the **GarageBand** app.

They will explore how they can capture their ideas without having to write them down and then share these with others by playing them back. They will also learn how to add sound effects to create an atmosphere or mood for their story.

Inspired by the 'Recording your Voice' chapter in the **Everyone Can Create Early Learners** book on Apple Books.

Year 1

Autumn 1

CREATIVITY KS1-D

Everyone Can Create: Light and Shadows in Photography

Students will use the **Camera** app to discover how light can effect the objects they see around them. They will use light to emphasise subjects, shadows to draw attention to unseen worlds and take control of the light source to capture different perspectives on every-day objects linked to their class topic.

Inspired by the 'Light and Shadows' chapter in the **Everyone Can Create Early Learners** book on Apple Books.

Autumn 2

PROGRAMMING KS1-B

Everyone Can Code Early Learners: Functions and Loops

Students will explore the idea of grouping sets of instructions together with a name to create a '**Function**' and then consider how these can be repeated multiple times using a '**Loop**'.

By relating these two Computing concepts to real life situations the students will develop a real-world knowledge and understanding of how both Functions and Loops work.

Based on the '*Functions*' and '*Loops*' chapters in the **Everyone Can Code Early Learners** book on Apple Books.

Spring 1

SAFETY KS1-E KS1-F

Online Safety Smartie the Penguin

Students will use the two Year 1 books to explore various themes linked to online safety and discuss them as a class afterwards.

The opportunity for discussion after reading the books is incredibly valuable and may lead to unexpected issues that the children are already aware of which can be properly addressed in this session.

Smartie the Penguin books are available to download from Childnet here: <https://www.childnet.com/resources/smartie-the-penguin/>

Spring 2

PROGRAMMING KS1-A KS1-B KS1-C

ScratchJr: Creating a Quiz

Students will build on their previous learning in ScratchJr to design and code a series of simple quiz questions based on the sprites and backgrounds they have chosen.

These quiz questions will be coded to be either a correct or incorrect answer, before students are encouraged to evaluate and refine their ideas and project.

Inspired by activities in the Teach Computing Curriculum here: <https://teachcomputing.org/curriculum/key-stage-1/programming-b-an-introduction-to-quizzes>

Summer 1

TECHNOLOGY KS1-D KS1-F

Data and Information - Grouping data

Labelling, grouping and searching are important aspects of data and information. Searching is a common operation in many applications and requires an understanding that to search data, it must have labels.

The children will focus on assigning data (images) with different labels in order to demonstrate how computers are able to group and present data.

Inspired by activities in the Teach Computing Curriculum here: <https://teachcomputing.org/curriculum/key-stage-1/data-and-information-grouping-data>

Summer 2

CREATIVITY KS1-D

Everyone Can Create: Patterns and Shapes

Children will use the **Sketches School** app to practice their fine motor skills through creative drawing exercises on iPad. They will explore different digital art tools as they work towards producing their own pattern linked to their class topic.

They will begin to develop an understanding of storing and retrieving digital files as they create their artwork.

Inspired by the '*Patterns*' chapter in the **Everyone Can Create Early Learners** book on Apple Books.

Year 2

Autumn 1

CREATIVITY KS1-D

Everyone Can Create: Drawing People and Places

Building on their skills last year with Patterns and Shapes, students will learn how to draw more complex pieces of art using digital tools. This will include using scale and perspective, showing emotion and movement and saving and organising their documents in the **Sketches School** app.

Students will link their artwork to the topic they are studying where possible, to be used as illustrations in other pieces of digital learning.

Inspired by the 'People' and 'Places' chapter in the **Everyone Can Create Early Learners** book on Apple Books.

Autumn 2

PROGRAMMING KS1-B

Everyone Can Code Early Learners: Variables and App Design

Students will explore the concept of '**Variables**' by relating them to real-world examples. They will develop an understanding of a Variable being something which can change in value when requested and which can be used to inform future choices or decisions.

They will then use their learning to unpick several apps they are familiar with on iPad and try to identify examples of Commands, Functions, Loops and Variables within them.

Based on the 'Variables' and 'App Design' chapters in the **Everyone Can Code Early Learners** book on Apple Books.

Spring 1

SAFETY KS1-E KS1-F

Online Safety Smartie the Penguin

Students will use the two Year 2 books to explore various themes linked to online safety and discuss them as a class afterwards.

The opportunity for discussion after reading the books is incredibly valuable and may lead to unexpected issues that the children are already aware of which can be properly addressed in this session.

Smartie the Penguin books are available to download from Childnet here: <https://www.childnet.com/resources/smartie-the-penguin/>

Spring 2

PROGRAMMING KS1-A KS1-B KS1-C

Scratch: Musical Actions and Sequences

Students will be introduced to the main version of **Scratch** by using sound blocks to sequence a piece of music. They will consider the order in which blocks are placed, and the effect they have on the overall program.

Students will then be encouraged to use Sprites as buttons to activate different sound and motion effects by making their own 'Rock Band' using multiple Sprites and sound effects.

Inspired by activities in the Teach Computing Curriculum here: <https://teachcomputing.org/curriculum/key-stage-2/programming-a-sequence-in-music>

Summer 1

TECHNOLOGY KS1-E KS1-F

Technology All Around Us

Students will consider different uses of Computing Technologies in their own lives including at home and at school. They will discover how it can be used for good in our lives and the benefits it can bring. Students will also learn about the benefits technology can bring in other walks of life from libraries to hospitals and shops to businesses.

Inspired by activities in the Teach Computing Curriculum here: <https://teachcomputing.org/curriculum/key-stage-1/computing-systems-and-networks-it-around-us>

Summer 2

CREATIVITY KS1-D

Everyone Can Create: Photo Collages

Students will learn a variety of photographic and digital skills in this module, including how to edit, crop, rotate, position, resize and remove backgrounds from images. They will use both the **Camera** app and **Keynote** to pull photographs together to form their compositions.

Inspired by the 'Collage Composition' chapter in the **Everyone Can Create Photography** book on Apple Books.

Year 3

Autumn 1

CREATIVITY KS2-F

Everyone Can Create: Your First Movie

Students will learn the key skills of recording, editing, selecting background footage, building a storyline and creating their own short movie about themselves in **Clips**. This could also be linked to the topic being studied at the time.

Inspired by activities within the 'Your First Movie' activity in the **Everyone Can Create Video** book on Apple Books.

Autumn 2

PROGRAMMING KS2-A KS2-B KS2-C

Scratch: Using Loops and Repetition

Students will learn to use **Loops** and **Repetition** blocks (repeat x times / forever blocks) to create shapes using the drawing tools in Scratch. They will differentiate between these two types of loops to determine which one is best suited to a particular use-case. Once these skills are mastered they will then create animations to be used in a Scratch game project.

Inspired by activities in the Teach Computing Curriculum here: <https://teachcomputing.org/curriculum/key-stage-2/programming-b-repetition-in-games>

Spring 1

SAFETY KS2-D KS2-E KS2-G

Be Internet Legends: Online Reputation, Passwords & Behaviour and Opinions and Differences

Students will discover what their **online reputation** is and how it can follow them as they grow older. They will decide which information is safe to share and which should be kept private, including how passwords can help us keep our digital lives secure.

They will also understand that messages online can be interpreted in different ways and that it may be easy for misunderstandings to occur.

Based around the Interactive Lesson Slides (1-3) from Be Internet Legends: <https://parentzone.org.uk/beinternetlegends/curriculum/start>

Spring 2

PROGRAMMING KS2-A KS2-B KS2-C

Scratch: Selection in Quizzes

Students will learn to use '**If / Then / Else**' structures to alter the outcome of their code depending on whether a certain condition has been met.

They will use this structure to create an interactive multiple-choice quiz using Scratch, with questions linked to their topic of Stone Age or Roman Britain.

Inspired by activities in the Teach Computing Curriculum: <https://teachcomputing.org/curriculum/key-stage-2/programming-b-selection-in-quizzes>

Summer 1

TECHNOLOGY KS2-F KS2-G

Data and information – Branching databases

Students will use the **Numbers** app to explore the concept of spreadsheets and consider how they can be useful in different contexts.

Starting with a simple data collection spreadsheet with the class, students will learn to format and present their data including through appropriate charts and graphs.

Inspired by activities in the Teach Computing Curriculum here: <https://teachcomputing.org/curriculum/key-stage-2/data-and-information-branching-databases>

Summer 2

CREATIVITY KS2-F

Everyone Can Create: Artistic Adjectives

Students will use digital methods to portray emotion, meaning and expression in the **Sketches School** app.

They will learn different methods of creating lettering using different drawing tools within the app, before then creating their own piece of Expressive Word Art based around an adjective. They will create a visual representation of the adjective through a creative depiction of the word itself.

Inspired by several of the activities within the 'Word Art' chapter in the **Everyone Can Create Drawing** book on Apple Books.

Year 4

Autumn 1

CREATIVITY KS2-F

Everyone Can Create: Storyboards + Movie Pitch

Students will learn the key skills of planning and refining a video project whilst developing their skills in both **Pages** and **Keynote**. Their video will link to their topic work in order to bring their existing learning to life whilst developing their narrative abilities.

Inspired by activities within the 'Storyboarding' chapter in the **Everyone Can Create Video** book on Apple Books.

Autumn 2

PROGRAMMING KS2-A KS2-B KS2-C

Scratch: Using Variables in a Game

Students will use **Variables** to add a scoreboard into a Scratch project, ensuring that points are recorded accurately. As they develop a greater understanding of variables they will then implement a Timer into their game using a second variable.

Inspired by activities in the Teach Computing Curriculum here: <https://teachcomputing.org/curriculum/key-stage-2/programming-a-variables-in-games>

Spring 1

SAFETY KS2-D KS2-E KS2-G

Be Internet Legends: Making Good Decisions Online, Being Brave Online and Speak Up & Report It

Students will learn that the decisions they make online can have real world implications if not handled correctly. They will understand the difference between being a 'bystander' and an 'up stander' when they see somebody experiencing unkind behaviour online and will learn how to bring this to a responsible adult so that it can be resolved.

Based around the Interactive Lesson Slides (4-6) from Be Internet Legends here: <https://parentzone.org.uk/beinternetlegends/curriculum/start>

Spring 2

PROGRAMMING KS2-A KS2-B KS2-C

Everyone Can Code: Commands and Functions

Students will begin to learn how to code in Swift using the **Swift Playgrounds** app. The first concept to grasp is that of using Commands to control what is happening in the app. In this instance the students will be issuing commands to move a character around a course. They will then take this further with Functions, which act as a series of commands run in one go.

Based on the 'Commands' and 'Functions' chapters in the **Everyone Can Code Puzzles** book on Apple Books.

Summer 1

TECHNOLOGY KS2-D KS2-E KS2-F KS2-G

Computer systems and networks - The Internet

Students will be briefly introduced to the concept of computer networks before focussing more on the Internet itself, something they will be far more familiar with. Students will be encouraged to evaluate online content in order to decide how honest, accurate, or reliable it is and understand the consequences of false information.

Inspired by activities in the Teach Computing Curriculum here: <https://teachcomputing.org/curriculum/key-stage-2/computing-systems-and-networks-the-internet>

Summer 2

CREATIVITY KS2-F

Everyone Can Create: Infographics

Students will use their own imagery, combined with symbols and text in **Keynote**, to create their own Infographics linked to their topic of either the Egyptians or the Shang Dynasty.

These skills will empower student to be confident creators with iPad by teaching them how to share information and display relevant facts and research through colourful and vibrant Infographics.

Inspired by activities within the 'Infographics' chapter in the **Everyone Can Create Drawing** book on Apple Books.

Year 5

Autumn 1

CREATIVITY KS2-F

Augmented Reality Ancient Greek Civilisation

Using the **AR Makr** App, students will create key features of Ancient Greek life in their classroom using Augmented Reality. They will create their own graphics and imagery in **Keynote** which will then be exported and used in AR Makr to bring this world to life.

Students will then narrate a short **documentary-style video** of their AR civilisation, identifying key features.

The process will be the same as I used in my AR Book Review #QuickLesson, but focussed to the topic of Ancient Greece:
<https://www.iacobwoolcock.co.uk/quicklessons-old/ar-book-scene/>

Autumn 2

PROGRAMMING KS2-A KS2-B KS2-C

Everyone Can Code: For Loops and Variables

Students will use **Loops** to run the same instruction-set multiple times in order to complete tasks in the Swift Playgrounds app. These Loops are found by locating patterns in the existing code and then reducing the total number of lines written by exchanging them for Loops.

Students will also learn that Variables are ways of storing data and values to use within their coding.

Based on the 'For Loops' and 'Variables' chapters in the **Everyone Can Code Puzzles** book on Apple Books.

Spring 1

SAFETY KS2-D KS2-E KS2-G

Be Internet Legends: Positive Digital Footprints, Spotting Fake Information Online and Sharing, Settings & Passwords

Students will learn about their digital footprint and how this reflects who they are to people who have never met them. They will consider how something that seems harmless and silly now could have huge implications in the future when they're adults.

They will learn all about the concept of 'fake news' and how to spot this dangerous misinformation online as well as how to report this and make others aware.

Based around the Interactive Lesson Slides (7-9) from Be Internet Legends here:
<https://parentzone.org.uk/beinternetlegends/curriculum/start>

Spring 2

PROGRAMMING KS2-A KS2-B KS2-C

Everyone Can Code: Conditional Code and Types + Initialisation

Students will learn how to use **Conditional Code** to make decisions in their programming, such as whether something is true or false. This is called a 'Boolean' comparison. They will also learn how to classify and organise their code using Types, structures which can save time when writing large programs and algorithms.

Based on the 'Conditional Code' and 'Types and Initialisation' chapters in the **Everyone Can Code Puzzles** book on Apple Books.

Summer 1

TECHNOLOGY KS2-C KS2-F

Data and Information - Flat-File Databases

Students will discover how data can be stored in a database by using two example databases. They will understand the concept of a record, a field and a key. They will learn how records can be grouped and how this makes it easy to access data stored on an electronic device.

Inspired by Year 5 'Data and Information' unit in the STEM Computing Curriculum here: <https://teachcomputing.org/curriculum/key-stage-2/data-and-information-flat-file-databases>

Summer 2

CREATIVITY KS2-F

Everyone Can Create: Podcasts

Students will learn how to use the Audio Recorder in **GarageBand** to record a conversation between two or more participants, before carefully editing and arranging these audio clips to create a polished narrative in the form of a Podcast. Students will also use Apple Loops to add background music, sound effects and section divides in their podcasts.

Inspired by the 'Recording a Podcast' chapter in the **Everyone Can Create Music** book on Apple Books.

Year 6

Autumn 1

CREATIVITY KS2-F

Everyone Can Create: Special Effects in iMovie

Students will learn to use jump cuts to enhance storytelling and green screen to bring their imaginations to life using **iMovie**. They will also learn to use the built-in Storyboards feature of iMovie to structure their projects as they create a final project sharing their topic based learning.

Inspired by the 'Special Effects' chapter in the **Everyone Can Create Video** book on Apple Books.

Autumn 2

PROGRAMMING KS2-A KS2-B KS2-C

Everyone Can Code: Functions with Parameters and Logical Operators

Students will learn that **Functions** are powerful ways of running an algorithm multiple times, but with subtle differences specified in an input. This means they can re-use code to create more complex programs in less time. They will also learn about using **Logical Operators** in Swift which will determine which algorithm to run at which point, based on pre-determined conditions.

Based on the 'Functions with Parameters' and 'Logical Operators' chapters in the **Everyone Can Code Puzzles** book on Apple Books.

Spring 1

SAFETY KS2-D KS2-E KS2-G

Be Internet Legends: Relationships & Being Kind, Refusing & Reporting and Handling & Reporting Mean Behaviour

Students will learn how offline and online relationships can become blurred and how decisions they make can impact both. They will learn more about cyber bullying and how to keep themselves and others safe online by reporting behaviour which is upsetting or unkind.

Based around the Interactive Lesson Slides (10-12) from Be Internet Legends here:
<https://parentzone.org.uk/beinternetlegends/curriculum/start>

Spring 2

PROGRAMMING KS2-A KS2-B KS2-C

Everyone Can Code: While Loops and Arrays and Refactoring

Students will learn that powerful **While Loops** allow code to run for a variable period of time or iterations, stopping only when a condition is met. For instance, keep moving one step forward and until you reach the end of the path. They will combine previous learning and coding structures together to create more interesting and complex programs by rewriting existing code so it links together in a more effective way.

Based on the 'While Loops' and 'Arrays and Refactoring' chapters in the **Everyone Can Code Puzzles** book on Apple Books.

Summer 1

TECHNOLOGY KS2-D KS2-F KS2-G

Computer systems and networks - Communication and networks

Students will explore how data is transferred over the internet. Learners initially focus on addressing, before they move on to the makeup and structure of data packets. Learners then look at how the internet facilitates online communication and collaboration; they complete shared projects online and evaluate different methods of communication. Finally, they learn how to communicate responsibly by considering what should and should not be shared on the internet.

Inspired by Year 6 'Computing systems and networks - Communication and collaboration' unit in the STEM Computing Curriculum here:
<https://teachcomputing.org/curriculum/key-stage-2/computing-systems-and-networks-communication>

Summer 2

CREATIVITY KS2-F

Everyone Can Create: Year 6 Short Film

Combining all the skills learnt in **iMovie** and **Clips**, as well as students story-telling abilities, the students will create a short film linked to their time in Primary School. They may choose to look back at their seven year journey or look ahead to the next steps, but they will concentrate on narrative, structure and content based on a screenplay which they will create in **Pages**.

Inspired by the 'Short Film Production' chapter in the **Everyone Can Create Video** book on Apple Books.

