

COMPUTING: CURRICULUM CONTENT AND PROGRESSION FRAMEWORK

“When something is such a creative medium as the web, the limits to it are our imagination.” - Tim Berners-Lee

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.

At Kirk Fenton we want our children to become digital citizens, digital creators, digital communicators and digital investigators. We teach computing skills through a combination of Purple Mash (all children) and Google Classroom (from Year 2). Our younger children have the opportunity to develop their computational thinking by giving and following instructions (algorithms) and interacting with floor robots. E-safety is a fundamental part of our curriculum to equip our children to be responsible and safe online citizens; these key skills form part of our extensive RSHE curriculum.

FOUNDATION

Curriculum Content:	The key things we want children to know/be able to do:
<ul style="list-style-type: none"> • Access to laptops/chromebooks through continuous provision. • Whole class access to Mini Mash leading to independent use. • Explore movement with floor robots. • Play appropriate online games e.g. phonicsplay 	Computer Science <ul style="list-style-type: none"> • To make a floor robot move. e.g. Beebot, Bluebot, Code-a-pillar, Code & Go Mouse, Cubetto • To complete a simple program on a computer. e.g. 2Go, MiniMash activity, online counting game • To make choices about the buttons and icons pressed, touched or clicked on.
<ul style="list-style-type: none"> • Establish classroom rules around sharing technology, limiting time and respecting devices. 	E-Safety <ul style="list-style-type: none"> • To ask an adult when you want to use the Internet. • To explain to an adult when something worrying or unexpected happens

<ul style="list-style-type: none"> ● Seek out an adult before accessing programs on the Internet and if something worrying or unexpected happens. ● Smartie the penguin story 1 for EYFS to cover: <ul style="list-style-type: none"> ○ Telling an adult when something pops up ○ Telling an adult about inappropriate games/websites 	<p>while using the Internet.</p> <ul style="list-style-type: none"> ● To be kind to friends. ● To talk about the amount of time spent using a computer / tablet / game device. ● To be careful with technology devices.
<ul style="list-style-type: none"> ● Access different kinds of technology through cross-curricular learning and identify the media e.g. <ul style="list-style-type: none"> ○ Photos to show changes over time within living memory (history) ○ Digital maps of the local area or area studied (geography) ○ Listen to and appreciate music on a CD or digitally (music) ○ Share an ebook (English) 	<p>Handling Data</p> <ul style="list-style-type: none"> ● To explain different kinds of information such as pictures, video, text and sound.
<ul style="list-style-type: none"> ● Use an interactive whiteboard or laptop/chromebook to create shapes/images and text on a screen using Mini Mash 2Create a Story. ● Role play using technology with recycled devices. ● Use a camera to take photos, videos and record sound and talk about it with an adult. 	<p>Creative Use Of Media</p> <ul style="list-style-type: none"> ● To move objects on a screen. ● To create shapes and text on a screen. ● To use technology to show learning. e.g. Take photos, videos, use voice recording devices ● To select and use technology for particular purposes.
<ul style="list-style-type: none"> ● Share images of technology being used at home. ● Go on a technology hunt around school, asking simple questions about how it is used. ● Explore how toys and simple equipment work. ● Access safe online learning platforms/websites e.g. PurpleMash, CBeebies, PhonicsPlay and TopMarks as part of provision. 	<p>Technology In Our Lives</p> <ul style="list-style-type: none"> ● To talk about technology that is used at home and in school. ● To operate simple equipment. e.g. CD player, toys with knobs and pulleys ● To use a safe part of the Internet to play and learn.

YEAR 1

Curriculum Content:	The key things we want children to know/be able to do:
<p>Purple Mash: Unit 1.4 - Lego Builders Unit 1.5 - Maze Explorers</p> <p>Floor Robots: Give and follow instructions to others to move around. Instruct a floor robot to move to a predetermined location.</p> <p>Cross-curricular: Give and receive instructions to others to move around in a game/PE. Check the instructions in an instruction text are correct and 'debug' any errors.</p>	<p>Computer Science</p> <ul style="list-style-type: none"> ● To give instructions to others and follow their instructions to move around. ● To describe what happens when a button is pressed on a robot. e.g. Beebot, Bluebot, Code-a-pillar, Code & Go Mouse, Cubetto ● To press buttons in the correct order to make a robot do what you want. ● To describe what actions are needed to make something happen and begin to use the word algorithm. ● To begin to predict what will happen for a short sequence of instructions. ● To begin to use software/apps to create movement and patterns on a screen. e.g. 2Go, Lightbot ● To use the word debug when correcting mistakes when programming.

<p><i>E-Safety is covered in the RSHE scheme of work</i></p>	<p>E-Safety</p> <ul style="list-style-type: none"> • To keep a password private. • To explain what personal information is. • To tell an adult when unexpected or worrying content is found online. • To talk about why it's important to be kind and polite. • To recognise an age appropriate website. • To agree and follow sensible e-Safety rules.
<p><i>A selection of activities from:</i> Purple Mash: Unit 1.2 - Grouping and Sorting Unit 1.3 - Pictograms Unit 1.8 - Spreadsheets</p> <p>Cross-curricular: Venn diagrams in science. Use cameras, video recorders, voice recorders to collect information to support and show learning for a purpose.</p>	<p>Handling Data</p> <ul style="list-style-type: none"> • To explain the different ways in which information can be shown. • To use technology to collect information for a purpose, including photos, video and sound. • To sort different kinds of information and present it to others. e.g. Venn Diagram, 2Count • To add information to a pictograph and talk about what is found out.
<p><i>A selection of activities from:</i> Purple Mash: Unit 1.6 - Animated Story Books 2create a story</p> <p>Cross-curricular: 2paint to support learning in another subject</p>	<p>Creative Use Of Media</p> <ul style="list-style-type: none"> • To be creative with different technology tools. e.g. 2Paint, take digital photos and use in a collage • To use technology to create and present ideas. e.g. poster, e-book • To use the keyboard or a word bank on a device to enter text. • To save information in a special place and retrieve it again.
<p>Purple Mash: Unit 1.9 - Technology Outside School</p> <p>Use bookmarks to access regular websites/online platforms.</p>	<p>Technology in Our Lives</p> <ul style="list-style-type: none"> • To recognise the ways we use technology in our classroom, home and community. • To use links to websites/bookmarks to find information. • To begin to identify some of the benefits of using technology.
<p>YEAR 2</p>	
<p>Curriculum Content:</p>	<p>The key things we want children to know/be able to do:</p>
<p>Purple Mash: Unit 1.7 - Coding Unit 2.1 - Coding J2code - execute a command for a chosen scene</p>	<p>Computer Science</p> <ul style="list-style-type: none"> • To give instructions to a friend (using forward, backward and turn) and physically follow their instructions.

<p>Cross-curricular: Give and receive accurate instructions to complete a task in a game/PE. Write an accurate instruction text, ensuring all the steps are correct and 'debug' any errors.</p>	<ul style="list-style-type: none"> • To describe the order things need to be done to make something happen and talk about this as an algorithm. • To program a robot or software to do a particular task. • To look at a completed algorithm program and predict what will happen. • To use programming software to make objects move. e.g. 2Code, Logo, J2Code - Turtle • To watch a program execute and spot where it goes wrong so that it can be debugged.
<p><i>E-Safety is covered in the RSHE scheme of work</i></p>	<p>E-Safety</p> <ul style="list-style-type: none"> • To explain why you need to keep a password and personal information private. • To describe the things that can happen online that you must tell an adult about. • To talk about why you should go online for a short amount of time. • To talk about why it is important to be kind and polite online and in real life. • To know that not everyone is who they say they are on the Internet.
<p>Purple Mash: Unit 2.3 - Spreadsheets Unit 2.4 - Questioning / J2Data - Branch</p> <p>Cross-curricular: Use a data logger to collect information 2graph linked to science/math</p>	<p>Handling Data</p> <ul style="list-style-type: none"> • To talk about the different ways we use technology to collect information, including a camera, microscope or sound recorder. • To make and save a chart or graph using the data we collect. e.g. 2Count, 2Graph • To talk about the data that is shown in a chart or graph. • To start to understand a branching database. e.g. J2Data - Branch, 2Question, paper-based database • To tell you what kind of information you could use to help you investigate a question.
<p>Google Classroom: Open and submit documents, responding to feedback Use Google Docs with text and images</p> <p>Purple Mash: Unit 2.6 - Creating Pictures Unit 2.8 - Presenting Ideas (2Quiz)</p> <p>Cross-curricular: Type up a story on 2publish / Google Doc Add work to the class online display board on Purple Mash.</p>	<p>Creative Use Of Media</p> <ul style="list-style-type: none"> • To use technology to organise and present ideas in different ways. • To use the keyboard on devices to add, delete and space text for others to read. • To talk about an online tool that will help to share ideas with other people. • To save and open files on the device being used.
<p>Purple Mash: Unit 2.5 - Effective Searching</p>	<p>Technology in Our Lives</p> <ul style="list-style-type: none"> • To explain why we use technology in the classroom, home and community.

<p>Use information collected from the home and community to share technology used in these places.</p>	<ul style="list-style-type: none"> • To start to understand that other people have created the information we use. • To identify benefits of using technology including finding information, creating and communicating. • To explain the differences between the Internet and things in the physical world.
YEAR 3	
Curriculum Content:	The key things we want children to know/be able to do
<p>Purple Mash: Unit 3.1 - Coding</p> <p>Cross-curricular: Write an accurate instruction text for making/playing a game, ensuring all the steps are correct and 'debug' any errors.</p>	<p>Computer Science</p> <ul style="list-style-type: none"> • To break an open-ended problem up into smaller parts. • To put programming commands into a sequence to achieve a specific outcome. • To keep testing a program and recognise when it needs debugging. • To use repeat commands. • To describe the algorithm that is needed for a simple task. • To detect a problem in an algorithm which could result in unsuccessful programming.
<p><i>E-Safety is covered in the RSHE scheme of work except:</i></p> <p>Screen Time:</p> <ul style="list-style-type: none"> • To make good choices about how long is spent online. <p>Devices & Resources:</p> <ul style="list-style-type: none"> • To talk about what makes a secure password and why they are important. • To recognise websites and games appropriate for my age. • To make good choices about how long is spent online. • To ask an adult before downloading files and games from the Internet. 	<p>E-Safety</p> <ul style="list-style-type: none"> • To talk about what makes a secure password and why they are important. • To protect personal information when doing different things online. • To use the safety features of websites as well as reporting concerns to an adult. • To recognise websites and games appropriate for my age. • To make good choices about how long is spent online. • To ask an adult before downloading files and games from the Internet. • To post positive comments online.
<p>Purple Mash: Unit 3.3 - Spreadsheets Unit 3.6 - Branching Databases</p> <p>Cross-curricular: Collect and present data in a spreadsheet linked to other foundation subject learning.</p>	<p>Handling Data</p> <ul style="list-style-type: none"> • To talk about the different ways data can be organised. • To search a ready-made database to answer questions. • To collect data help me answer a question. • To add to a database. • To make a branching database. • To use a data logger to monitor changes and can talk about the information collected.
<p>Google Classroom: Google Docs</p>	<p>Creative Use Of Media</p> <ul style="list-style-type: none"> • To create different effects with different technology tools.

<p>Google Slides - text, graphics, sound</p> <p>Purple Mash: Unit 3.4 - Touch Typing</p> <p>Cross-curricular: Create a newspaper report which includes text and graphics.</p>	<ul style="list-style-type: none"> • To combine a mixture of text, graphics and sound to share ideas and learning. • To use appropriate keyboard commands to amend text on a device, including making use of a spellchecker. • To evaluate work and improve its effectiveness. • To use an appropriate tool to share work online.
<p>Purple Mash: Unit 3.5 - Email (including email safety)</p> <p>Use a safe search tool to find information and images to use in cross-curricular projects.</p>	<p>Technology in Our Lives</p> <ul style="list-style-type: none"> • To independently save and retrieve work on the Internet, the school network or a personal device. • To talk about the parts of a computer. • To discuss ways to communicate with others online. • To describe the World Wide Web as the part of the Internet that contains websites. • To use search tools to find and use an appropriate website. • To think about whether I can reuse images from the WWW.
YEAR 4	
Curriculum Content:	The key things we want children to know/be able to do:
<p>Purple Mash: Unit 4.1 - Coding Unit 4.5 - Logo</p>	<p>Computer Science</p> <ul style="list-style-type: none"> • To use logical thinking to solve an open-ended problem by breaking it up into smaller parts. • To use an efficient procedure to simplify a program. • To use a sensor to detect a change which can select an action within my program. • To know that there is a need to keep testing my program while putting it together. • To use a variety of tools to create a program. • To recognise an error in a program and debug it. • To recognise that an algorithm will help me to sequence more complex programs. • To recognise that using algorithms will also help solve problems in other learning such as Maths, Science and Design and Technology.
<p><i>E-Safety is covered in the RSHE scheme of work except:</i></p> <p>Screen Time:</p> <ul style="list-style-type: none"> • To help friends make good choices about the time they spend online. <p>Devices & Resources:</p>	<p>E-Safety</p> <ul style="list-style-type: none"> • To choose a secure password when I am creating an account. • To talk about the ways you can protect yourself and friends from harm online. • To use the safety features of websites as well as reporting concerns to an adult.

<ul style="list-style-type: none"> ● To choose a secure password when I am creating an account. ● To choose websites and games that are appropriate for my age. ● To talk about why it is needed to ask a trusted adult before downloading files and games from the Internet. 	<ul style="list-style-type: none"> ● To know that anything posted online can be seen by others. ● To choose websites and games that are appropriate for my age. ● To help friends make good choices about the time they spend online. ● To talk about why it is needed to ask a trusted adult before downloading files and games from the Internet. ● To comment positively and respectfully online.
<p>Purple Mash: Unit 4.3 - Spreadsheets</p> <p>Cross-curricular: 2Branch database to classify animals (linked to science work)</p> <p>Cross-curricular: Use a data logger to record readings to present to others.</p>	<p>Handling Data</p> <ul style="list-style-type: none"> ● To organise data in different ways. ● To collect data and identify where it could be inaccurate. ● To plan, create and search a database to answer questions. ● To choose the best way to present data to an audience. ● To use a data logger to record and share readings with others.
<p>Purple Mash: Unit 4.6 - Animation</p> <p>Google Classroom: Google Docs - titles, headings and subheadings, hyperlinks Google Slides - text, graphics, sound, embedding a Youtube video, hyperlinks, transitions and animations</p> <p><i>Projects in Y4 will include online collaboration through shared docs within Google Classroom.</i></p>	<p>Creative Use Of Media</p> <ul style="list-style-type: none"> ● To use photos, video and sound to create an atmosphere when presenting to different audiences. ● To explore new media to extend what I can achieve. ● To change the appearance of text to increase its effectiveness. ● To create, modify and present documents for a particular purpose. ● To use a keyboard confidently and make use of a spellchecker to write and review my work. ● To use an appropriate tool to share my work and collaborate online. ● To give constructive feedback to friends to help them improve their work and refine my own work.
<p><i>Technology in our lives objectives will be covered during project work using Google Classroom.</i></p>	<p>Technology in Our Lives</p> <ul style="list-style-type: none"> ● To tell whether a resource being using is on the Internet, the school network or my own device. ("The Cloud"). ● To identify key words to use when searching safely on the World Wide Web. ● To think about the reliability of the information is read on the World Wide Web. ● To tell how to check who owns photos, text and clipart. ● To create a hyperlink to a resource on the World Wide Web.
<p>YEAR 5</p> <p><i>In Upper Key Stage 2, all projects should, where possible, have a brief to be creatively met and evaluated against by pupils (audience, purpose criteria, composition).</i></p>	
<p>Curriculum Content:</p>	<p>The key things we want children to know/be able to do:</p>
<p>Purple Mash:</p>	<p>Computer Science</p>

<p>Unit 5.1 - Coding Unit 5.5 - Game Creator</p>	<ul style="list-style-type: none"> • To decompose a problem into smaller parts to design an algorithm for a specific outcome and use this to write a program. • To refine a procedure using repeat commands to improve a program. • To use a variable effectively. <i>e.g. Scores, Timers</i> • To change an input to a program to achieve a different output. • To use 'if' and 'then' commands to select an action. • To talk about how a computer model can provide information about a physical system. • To use logical reasoning to detect and debug mistakes in a program. • To use logical thinking, imagination and creativity to extend a program.
<p><i>E-Safety is covered in the RSHE scheme of work except:</i></p> <p>Screen Time:</p> <ul style="list-style-type: none"> • To talk about the dangers of spending too long online or playing a game. • To discuss the importance of choosing an age-appropriate website or game. <p>Devices & Resources:</p> <ul style="list-style-type: none"> • To explain why I need to protect my computer or device from harm. • To know which resources on the Internet I can download and use. 	<p>E-Safety</p> <ul style="list-style-type: none"> • To protect my password and other personal information. • To explain the need to protect oneself and friends and the best ways to do this, including reporting concerns to an adult. • To know that anything I post online can be seen, used and may affect others. • To talk about the dangers of spending too long online or playing a game. • To explain the importance of communicating kindly and respectfully. • To discuss the importance of choosing an age-appropriate website or game. • To explain why I need to protect my computer or device from harm. • To know which resources on the Internet I can download and use.
<p>Purple Mash: Unit 5.4 - Databases</p> <p>Google Classroom: Introduction to Google Sheets - spreadsheets, tables, graphs</p>	<p>Handling Data</p> <ul style="list-style-type: none"> • To use a spreadsheet and database to collect and record data. • To choose an appropriate tool to help collect data. • To present data in an appropriate way. • To search a database using different operators to refine my search. • To talk about mistakes in data and suggest how it could be checked.
<p>Google Classroom: A range of individual and collaborative projects with a brief to be creatively met and evaluated against by pupils (audience, purpose criteria, composition).</p> <p>Google Docs Google Slides Google Sheets</p> <p><i>Skills acquired in each program during LKS2 will be consolidated.</i></p>	<p>Creative Use Of Media</p> <ul style="list-style-type: none"> • To use text, photo, sound and video editing tools to refine work. • To use the skills already developed to create content using unfamiliar technology. <i>e.g. across chromebook to laptop technology/ software.</i> • To select, use and combine the appropriate technology tools to create effects that will have an impact on others. • To select an appropriate online or offline tool to create and share ideas. • To review and improve my own work and support others to improve their work.

<p><i>Technology in our lives objectives will be covered during project work using Google Classroom.</i></p>	<p>Technology in Our Lives</p> <ul style="list-style-type: none"> • To describe different parts of the Internet. • To use different online communication tools for different purposes. • To use a search engine to find and evaluate appropriate information on the WWW and check its reliability. • To describe the different parts of a webpage. • To find out who the information on a webpage belongs to.
<p>YEAR 6</p> <p><i>In Upper Key Stage 2, all projects should, where possible, have a brief to be creatively met and evaluated against by pupils (audience, purpose criteria, composition).</i></p>	
<p>Curriculum Content:</p>	<p>The key things we want children to know/be able to do:</p>
<p>Purple Mash: Unit 6.1 - Coding</p> <p>Cross-curricular: Control a bulb and motor in a series circuit - science.</p>	<p>Computer Science</p> <ul style="list-style-type: none"> • To be able to design and deconstruct a problem into smaller steps. • To explain and write/program each of the steps in an algorithm. • To evaluate the effectiveness and efficiency of an algorithm while continually testing the programming of that algorithm for “bugs”. • To recognise when there is a need to use a variable to achieve a required output. • To use a variable and operators to stop a program. • To use different inputs (including sensors) to control a device or onscreen action and predict what will happen. • To use logical reasoning to detect and correct errors in algorithms and programs.
<p><i>E-Safety is covered in the RSHE scheme of work except:</i></p> <p>Screen Time:</p> <ul style="list-style-type: none"> • To explain the consequences of spending too much time online or on a game <p>Devices & Resources:</p> <ul style="list-style-type: none"> • To protect a computer or device from harm on the Internet. 	<p>E-Safety</p> <ul style="list-style-type: none"> • To understand the need to use and protect a strong password and other personal information. • To explain the consequences of sharing too much about oneself online. • To support friends to protect themselves and make good choices online, including reporting concerns to an appropriate body. • To explain the consequences of spending too much time online or on a game. • To explain the consequences to oneself and others of not communicating kindly and respectfully. • To protect a computer or device from harm on the Internet.
<p>Google Classroom: Google Sheets - spreadsheets, tables, graphs Introduction to Google Forms - collecting and interpreting data</p>	<p>Handling Data</p> <ul style="list-style-type: none"> • To select the most effective tool to collect data for an investigation. • To check the data collected for accuracy and plausibility. • To interpret the data that is collected • To present the data collected in an appropriate way.

	<ul style="list-style-type: none"> ● To use the skills developed to interrogate a database.
<p>Google Classroom: A range of individual and collaborative projects with a brief to be creatively met and evaluated against by pupils (audience, purpose criteria, composition).</p> <p>Google Docs Google Slides Google Sheets Google Forms</p> <p><i>Skills acquired in each program during LKS2 will be consolidated.</i></p>	<p>Creative Use Of Media</p> <ul style="list-style-type: none"> ● To talk about audience, atmosphere and composition when planning a particular outcome. ● To combine a range of media, recognising the contribution of each to achieve a particular outcome. e.g. editing photos, audio and videos to be used purposefully in a project.
<p>Purple Mash: Unit 6.6 - Networks</p> <p><i>The remainder of the Technology in our lives objectives will be covered during project work using Google Classroom.</i></p>	<p>Technology In Our Lives</p> <ul style="list-style-type: none"> ● To explain the available Internet services needed to use for different purposes. ● To describe how information is transported across computer networks and on the Internet. ● To select an appropriate tool to communicate and collaborate online. ● To talk about the way search results are selected and ranked. ● To check the reliability of a website by cross referencing. ● To describe copyright and acknowledge the sources of information that are found online.