Computing at Breachwood Green School

At Breachwood Green JMI School we are aware of the increasingly important role that technology is playing in people's lives. We enable children to build understanding and skills through investigating, selecting and using a range of applications. We use the Purple Mash computing scheme of work to deliver the curriculum which introduces essential aspects of computer science inspiring children to become productive creators and designers of technology. Children will know how to stay safe online and the wider school community will be equipped to support them with this. Children will cover online safety, digital literacy, and information technology and computer science as part of the curriculum whilst at the same time developing important ongoing skills.

Progression in Computing

The table shows when concepts should be secured. It is very important, therefore, that the content in earlier years be **revisited** in subsequent years to consolidate knowledge and build on pupils' understanding. Teachers should also go beyond the content set out here if they feel it is appropriate.

	EYFS	KS1	Lower KS2	UPKS2
Ongoing Skills	• With support, log in to an online site using username and password • Begin to share their experiences of technology at home and school. • Experience a broad range of simple devices and applications (laptops, tablets, sound or recording devices etc.). • Begin to use keyboards to locate and type letters and numbers for name, username and password.	• Independently log in safely to an online site using their username and password • Recognise a range of technology used in places such as homes and schools. • Engage in conversations about digital applications and respond appropriately. • Develop typing speed through regular use of keyboards, touch screens and games.	• Continue to develop confidence in using a range of software and to justify their choice for a specific purpose. • Build on developing typing speed.	• Continue to develop computational thinking in different aspects of the computing curriculum. • Justify their choice of technology or computational software they are using for a purpose.

	EYFS	KS1	Lower KS2	UPKS2
Online safety	• Begin to know who to tell if something they see makes them worried or uncomfortable. • Begin to understand the importance of asking permission when capturing an image or recording a sound of others.	• Develop e-safe practices and use technology safely and respectfully. • Know what personal information is and understand the need to keep it private. • Identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies. • Begin to respect copyright and ownership. • Take sensible pictures.	• Use technology safely, respectfully and responsibly. • Identify a range of ways to report concerns about content and contact. • Know what makes a good password and how to keep passwords safe. • Recognise safe websites and know the signs of an unsafe website; identify secure sites by looking for privacy seals of approval e.g. https, padlock icon. • Search the internet considering the reliability of sources of information; check validity and understand the impact of incorrect information • Begin to understand that information put online provides a digital footprint • Begin to understand the positive and negative influences of technology on health and the environment; understand the importance of balancing game and screen time with other parts of their lives.	• Recognise acceptable/unacceptable behaviour online; be aware of appropriate and inappropriate text, photographs and videos and the impact of sharing these online • Know the importance of maintaining secure passwords. • Begin to know how to reference sources in their work and apply copyright rules. • Understand the impact that sharing digital content can have including the advantages, disadvantages, permissions and purposes of altering an image digitally and the reasons for this. • Identify benefits and risks of mobile devices broadcasting the user/device location e.g. apps accessing location; identify the benefits and risks of giving personal information and device access to different software • Understand the meaning of digital footprint and how and why people use their information and online presence to create a virtual image of themselves as a user; begin to understand how information online can persist and give away details of those who share or modify it.

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Computer Science	Programming and understanding digital systems and replicating these, including digital games.	• To be able to use simple instructional language to play robots, control a beebot or onscreen device. • Develop skills to control different devices including keyboard and touch screen with increasing accuracy and independence. • To know that technology can be used to make things happen (output) e.g. make a sprite or cursor, move or a sound • Explore and find out that different things happen based on the choice they make (selection). • Investigate real, play and pretend digital devices and explain, in simple terms how they think they work. • Begin to understand that applications have specific functions and often need to be used in a certain order (algorithm).	• Understand what algorithms are and how they are implemented as programs on digital devices; that programs execute by following precise and unambiguous instructions • Program onscreen characters. • Use logical reasoning to predict the behaviour of simple programs. • Create and debug simple programs. • Investigate how we derive information from different sources. • Understand that not all information available online is reliable. • Use simple pictograms, bar graphs, mind maps and tables to group and sort information. • Develop a range of questions to investigate and find out.	• Design, test, debug and refine programs to accomplish specific goals. • Solve problems by decomposing them into smaller parts. • Use sequence, selection, and repetition in programs; begin to 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. • Use and build programs and procedures in 2Logo to create digital pictures. • Develop computational thinking in the context of the wider curriculum by creating animations, building games and interactive scenes. • Generate graphs and information from a ready database by querying the database. • Create and use branching databases using yes and no questions.	• Design, write and debug more complex programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • Use sequence, selection, repetition in programs; use variables and functions to control simulations. • Use logical reasoning 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 a range of visual and text-based programming languages to write code and create a simulation/adventure or game • Add variables to make a program more interesting. Design a game so that there is a possibility of adding an external input/output device. • Design and create databases, generate information using these and share this as multimedia reports /files for a specific purpose. • Continue to generate graphs and information from a ready database by querying the database. • Continue to collect own data linked to different aspects of the curriculum, converting this to a report with analysis and graphs to support. Understand real life applications of spreadsheets using basic formulae and functions for analysis and answering questions

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Information Technology	• Select and use technology for particular purposes. • Know that technology can be used to find things out. • Save work with adult support and begin to understand why we choose to save.	• Use technology purposefully to create, organise, store, manipulate and retrieve digital content. • Understand what is meant by 'technology'; know some types of technology used in school and out of school • Explore the idea of a network related to computers at home and school, logging on to their area. • Begin to save and retrieve files in designated spaces.	• Save and retrieve files from different locations on a computer network. • Develop an understanding of file names. • Use sensible file names. • Save sequences of drafts while doing research or a project over a few sessions. • 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.	• To understand computer networks; use appropriate file names, save, organise and retrieve files from various locations both online and offline. • Create programs using range of software applications and physical robots (WeDo 2.0)

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Digital Literacy	*Creating digital content including text, images and sound. Research and digital communication.*	• Begin to create digital content; text, drawing, pictures and sound using simple digital applications, tools and software. • Be able to choose a regular activity on a safe site via a hyperlink or icon. • Navigate using simple navigation tools like arrows.	• Begin to use technology creatively and explore digital texts and edit digital images. • Begin to use software to create digital content combining text, images and sound. • Use tools to edit content (change font size, colour, size, bold, capitalise and use word art for a purpose; cut, copy and paste) and appearance of digital images (resize, add frames, colour) • Develop understanding of effective searching using digital sources, including the World Wide Web. • Begin to navigate within a website using menus and tabs and hyperlinks to locate information. • Develop awareness that emails can be a means of digital communication.	• Use digital software to explore and understand how music is created; create their own digital sound • Explore how font size and style can affect the impact of a text on different audiences. • Edit documents and keep drafts while working on longer projects. • Share and communicate digitally using e-mails within the school domain; understand the use of cc, bcc; respond to emails with attachments • Find specific websites by copying and pasting the address in the address bar; use keywords in a search engine for researching a topic safely. • Know that information found online is not always reliable; check the reliability of the information from various sources. • Create and use graphs, spreadsheets, tables and charts in a wider context.	• Work reliably on collaborative documents and spaces, using these creatively to collate materials from varied sources and present projects with text, images and sound. • Create 3D models using 3Dmodelling software in the context of the wider curriculum. • To be a responsible digital citizen and create digital content respectfully in different software based on the use of the features of the chosen software. • Share and communicate digitally using; emails, blogs, wikis or other digital communication tools. • Compare different search engines; know the origin of a website by looking at the web address; navigate a website efficiently for a purpose; understand the implications of incorrect information and pro-actively safeguard against this by finding information from various sources and quote the sources.

Computing Long Term Planning (2 year) using Purple Mash Computing Scheme of Work			
Cycle A	**Autumn Term**	**Spring Term**	**Summer Term**
KS1	**Online safety** Unit 1.1 **Effective searching** Unit 2.5 **Lego builders** Unit 1.4	**Technology outside school** Unit 1.9 **Grouping & sorting** Unit 1.2 **Creating pictures** Unit 2.6	**Spreadsheets** Unit 1.8 **Coding** Unit 1.7 **Coding** Unit 2.1
LKS2	**Coding** Unit 3.1/4.1 – using flowcharts (Unit 3.1 L1), using timers Unit 3.1 L2), 'if' statements (Unit 4.1 L2), coordinates (Unit 4.1 L3), code, test and debug (Unit 3.1 L4); design, code, test and debug (Unit 4.1 L1) **Online safety** Unit 3.2 **Spreadsheets** Unit 3.3	**Touch typing** Unit 3.4 **Email (including email safety)** Unit 3.5 **Branching databases** Unit 3.6	**Simulations** Unit 3.7 **Graphing** Unit 3.8 **Making Music** Unit 4.9
UPKS2	**Coding** Unit 5.1/6.1 – coding efficiently (Unit 5.1 L1), simulating physical system (Unit 5.1 L2), friction & functions (Unit 5.1 L4), introducing strings (Unit 5.1 L5), text variable and concatenation (Unit 5.1 L6), user input (Unit 6.1 L5) **Online safety** Unit 5.2 **Spreadsheets** 5.3 or **Spreadsheets** 6.9 (using Excel)	**Spreadsheets** (continued from Autumn term) **Databases** Unit 5.4 **Game Creator** Unit 5.5	**3D Modelling** Unit 5.6 **Word processing** Unit 5.8 (using Microsoft Word)
Cycle B	**Autumn Term**	**Spring Term**	**Summer Term**
KS1	**Online safety** Unit 1.1 **Maze explorers** Unit 1.5 **Questioning** Unit 2.4	**Animated Story Books** Unit 1.6 **Online safety** Unit 2.2 **Making music** Unit 2.7	**Spreadsheets** Unit 2.3 **Pictograms** Unit 1.3 **Presenting ideas** Unit 2.8
LKS2	**Coding** Unit 3.1 /4.1 – using repeat (Unit 3.1 L3), repeat/if/else (Unit 4.2 L4), number variables (Unit 4.1 L5), design and make an interactive scene (Unit 3.1 L5-6); making a playable game (Unit 4.1 L6) **Online Safety** Unit 4.2 **Spreadsheets** Unit 4.3	**Spreadsheets** (cont.) Unit 4.3 **Writing for different audiences** Unit 4.4 **Logo** Unit 4.5	**Animation** Unit 4.6 **Effective Search** Unit 4.7 **Hardware Investigators** Unit 4.8
UPKS2	**Coding** Unit 6.1/5.1 - designing & writing more complex program (Unit 6.1 L1-2), decomposition & abstraction (Unit 5.1 L3), using functions (Unit 6.1 L3), flowcharts and control simulations (Unit 6.1 L4), Text adventure (Unit 6.1 L6); **Online safety** Unit 6.2 **Spreadsheets** Unit 6.3	**Blogging** Unit 6.4 **Text adventures** Unit 6.5 *use Word **Networks** Unit 6.6	**Quizzing** Unit 6.7 **Programming Robots** WeDo 2.0 (not purple mash)