Computing Intent

At Breachwood Green School, we are aware of the increasingly important role that technology is playing in people's lives. We enable children to build essential understanding and skills through investigating, selecting and using a range of applications on different devices and platforms. Introducing essential aspects of computer science inspires children to become productive creators and designers of technology. At the end of Key Stage 2, our pupils will be digitally literate and creative users of a variety of technologies. Children will know how to stay safe online and the wider school community will be equipped to support them with this. Children will cover digital literacy, information and technology and computer science through five strands: create, eWorlds, digital research, digital communication and info.. info..

Progression of Knowledge and Skills in Computing- EYFS

Early Years prerequisite skills for Computing within the national curriculum. The EYFS framework is structured very differently to the national curriculum as it is organised across seven areas of learning rather than subject areas. The aim of this document is to help subject leaders to understand how the skills taught across EYFS feed into national curriculum subjects. This document demonstrates which early years outcomes are prerequisite skills for computing within the national curriculum. The table below outlines the most relevant early years outcomes from 30-50 months to ELG, brought together from different areas of the Early Years Foundation Stage, to match the programme of study for computing.

The most relevant early years outcomes for computing are taken from the following areas of learning: Understanding the World, Technology.

	Age band: 30-50 months	Age band: 40-60 months	ELG
Understanding of the World: Technology	• To know how to operate simple equipment. • To show an interest in technological toys with knobs or pulleys, or real objects. • To show skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images. • To know that information can be retrieved from computers	• To complete a simple program on a computer. • To interact with age-appropriate computer software.	• To recognise that a range of technology is used in places such as homes and schools. • To select and use technology for particular purposes.

Progression in Computing Knowledge and Skills				
	EYFS	**KS1**	**Lower KS2**	**Upper KS2**
Ongoing Skills	• Recognise a range of technology is used in places such as homes and schools. • Begin to share their experiences of technology at home and school. • Engage in conversations about digital applications and respond appropriately. • Use a broad range of simple devices and applications appropriately with increasing independence (PCs, laptops, tablets, sound or recording devices, cameras, toys, phones etc). • Select an appropriate device for a chosen activity. • Use various keyboards (onscreen and physical), increasingly able to locate and type letters and numbers.	• Recognise common uses of information technology beyond school. • Improved understanding of use of technology outside school. • Use an extended range of devices (PCs, laptops, tablets, sound or recording devices, cameras, toys, phones etc). • To develop typing speed through regular use of Keyboards, mouse, keypad and touch screens and games.	• Develop understanding of how a computer and technology works, focusing on computational thinking. • Continue to develop confidence in using a range of devices and to justify their choice for a specific purpose. • Develop understanding of shared documents. • To be able to create, contribute to and edit these documents being aware that that they are visible to all users. • To build on developing typing speed.	• Continue to develop computational thinking in different aspects of the curriculum. • To be able to justify their choice of technology or computational software.
e-safety	• Increasingly know who to tell if something they see makes them worried or uncomfortable. • Understand they should ask permission when capturing an image or recording a sound of others. • Take sensible pictures.	• Develop esafe practices. • Use technology safely and respectfully. • Keep personal information private. • Understand the need to keep personal information safe. • Identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies. • Understand the need to check their research results. • Begin to respect copyright and ownership.	• Use technology safely, respectfully and responsibly. • Identify a range of ways to report concerns about content and contact. • To recognise safe websites and know the signs of an unsafe website.	• Recognise acceptable/unacceptable behaviour. • To apply copyright rules in their work

		EYFS	KS1	Lower KS2	Upper KS2
Computer Science	**Programming and Understanding digital systems and replicating these, including digital games.**	• To be able to use simple instructional language to play robots and to control simple onscreen and physical devices. • Explore and investigate digital toys. • Develop skills to control the computer using different devices and input methods including use of mouse, touch pad, buttons, switches and touch screen with increasing accuracy and independence. • To know that technology can be used to make things happen (output); move, make sound or music, change light etc. • To explore and find out that different things happen based on the choice made (selection). • Investigate real, play and pretend digital devices and explain, in simple terms how they think they work. • Understand that applications have specific functions and often need to be used in a certain order (algorithm).	• To develop their computational skills; recognise the sequence based on choices made, and explain their findings. • Understand what algorithms are and how they are implemented as programs on digital devices. • Use logical reasoning to predict the behaviour of simple programs. • Use algorithms to write and test programs • Create and debug simple programs. • To efficiently control programmable toys. • Investigate programmable devices relating their understanding of inputs and outputs to natural and digital systems. • Use simulations, drag and drop to test digital systems or model systems. • To explain their findings in terms of input, output and algorithm. • Create algorithms linked to their simulations. • Develop an understanding of how repetition can make a program/ algorithm more efficient. • Explain how certain simulations help our understanding of real life situations. • Program onscreen characters.	• To explore simulations with other curriculum areas discussing the pros and cons. • Use simulations to make and test predictions. • Test, debug and refine programs. • To use visual and text based programs. • Solve problems by decomposing them into smaller parts. • Plan complex sequences using onscreen programming tools and physical devices/turtles/robots. • Use sequence, selection, and repetition in programs. • To make the programming efficient by writing procedures. • Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. • Develop computational thinking in context of the wider curriculum by building games, simulations, puzzles and quizzes.	• Explore a range of complex simulations, observe, record and analyse the effect of changing variables in the simulation. Suggest improvements with reasons and methods to improve. • To program physical devices by first creating algorithms, testing and debugging. • Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems. • Work with variables and various forms of input and output. • To apply the understanding of computational thinking in writing programs. • To continue to develop efficient algorithms and code. • To continue to use a range of visual and text based programming languages to write code and create a physical system/game/ maths quiz /function machine. • Add variables to make the program more interesting. Design the game so that there is a possibility of adding an external input/output device. • Test and debug the digital system created to achieve the goal.

		EYFS	KS1	Lower KS2	Upper KS2
Computer Science	Data collection, handling and presentation	• Explore devices which monitor sound, light or temperature and make links to their own senses. • Explore and build simple onscreen pictograms with support. Discuss the information displayed.	• Investigate how we derive information from different sources. • To understand that not all information available online is reliable. • Present their research using charts, graphs and mind maps. • To be able to edit charts including adding titles and labels. • Make general statements. • Use sensing devices to explore environmental conditions. • Explore how computers might sort objects. • Develop a range of questions to investigate and find out. • To create and use branching databases using yes and no questions.	• 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. • Continue to create and use graphs, tables and charts in a wider context. • To be able to generate graphs and information from a ready database by querying the database. • Create databases by collecting own data, converting this to a report with some analysis and graphs to support.	• 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. Use this to present a report to an audience for a purpose.
Information Technology		• Select and use technology for particular purposes. (ELGs) • With increasing independence type their first name, adding to digital work and beginning to use in logging on to the school network • To know that technology can be used to find out. • Print work with support, talk about why we choose to print. • Save work with support, talk about why we choose to save.	• Use technology purposefully to create, organise, store, manipulate and retrieve digital content. • Name the main external parts of a computer and explore how they work together. • Investigate differences between hardware and software. • Explore the idea of a network related to computers at home and school, logging on to their area. • Save and retrieve files in designated spaces. • Develop an understanding of file names. • To save sequences of drafts while doing research or a project over a few sessions.	• Can save and retrieve files from different locations on a computer network. • Can use sensible file names.	• To understand computer networks; use appropriate file names, save, organise and retrieve files from various locations both online and offline. • 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. • To understand the reasons why different search engines display different results for the same search. • To understand that online activities may leave a digital footprint. • Investigate the concept of Big Data and how this is used in today's world.

		EYFS	KS1	Lower KS2	Upper KS2
Digital Literacy	**Creating digital content including text, images and sound**	• Explore ways in which technology can be used to create digital content, including writing and drawing. • Begin to create digital content; text, drawing, pictures and sound using simple digital applications. • Edit simple text size, font and colour. • Edit the content and appearance of digital images using simple software. • Use simple graphics and drawing/painting software and tools to create digital drawings. • Investigate, listen and respond to a range of digital sound and music on varied devices, comparing this to live sound (rhyme, sound, stories, and songs). • Capture their own sound and share with others. • Create simple tunes using digital resources. • Use simple software with speech support to help with reading. • Discuss similarities and differences in using digital and non-digital media and share what they have discovered.	• Begin to use technology creatively and edit digital images. • To explore digital texts. • Begin to use varied devices and software to create digital content combining text, image and sound. • To be able to insert text box and format font. • To change font size, colour, size, bold, capitalise and use word art for a purpose. • To be able to cut, copy and paste. • To insert an image and format and resize an image.	• Develop an understanding of editing software to use technology creatively and safely. • To be able to take notes digitally alongside researching. • To work on collaborative documents and incorporate hyperlinks, images and other media in a finished product. • To be able to edit documents and keep drafts while working on long projects. • To present the finished project using a multimedia text.	• To continue to use computers for projects across the curriculum. • To 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. • To make choices about the style, animation and effect.

		EYFS	KS1	Lower KS2	Upper KS2
Digital Literacy	**Research and Digital communication**	• To know that technology can be used to communicate. • Compare digital and non-digital experiences and share what they have discovered. • Contribute to group communication- real life/role play or digital (email/text). • Be able to choose a regular activity on a safe site via a hyperlink or icon. • To know that different types of information can be searched using a range of digital and non-digital sources; CD, stored information, ebooks, CD players, audio books, TV, videos and websites. • Compare these. Find out information using simple navigation tools like arrows, onscreen instructions, icons, buttons (talk about hyperlinks).	• Understand the use of technology in daily life including research and communication • Develop understanding of researching using non-digital and digital sources, including the World Wide Web. • To navigate within a website using menu, tabs and hyperlinks to locate information. • To find specific websites using the links on an intranet or 'favourites'. • Begin to understand that there are different ways to communicate; letters, Instant Messaging, text, email, blog. • To begin to understand that certain on-line spaces are collaborative areas. • To be aware that emails can be a means of digital communication.	• Share and communicate digitally using; emails, blogs, or other digital communication tool. • Understand the advantages of digital communication. • To send e-mails within the school domain. • Understand the use of cc, bcc. • To be able to send and respond to emails with attachments. • To find specific websites by copying and pasting the address in the address bar. • To use keywords in a search engine for researching a topic safely. • To know that information found online is • not always reliable. • To check the reliability of the information from various sources.	• To communicate safely and work collaboratively on an online space. • To be able to compare different search engines and give an opinion about the search engines with a reason. • To know the origin of a website by looking at the web address. • To be able to navigate a website efficiently for a purpose using the index, menu and hyperlinks. • To understand the implications of incorrect information and to pro-actively safeguard against this by finding information from various sources and quote the sources.

Adapted Long Term Planning for 2019-2020			
Computing 2 Year Long Term Planning **green: additional skills to be taught**			
Cycle A	**Autumn Term**	**Spring Term**	**Summer Term**
EYFS	Finding Out; Image and Light	Toys and Machines; Marking Marks	Exploring Sound
KS1	Let's Create Use digital devices and software to listen, respond and talk about songs, stories, rhymes and sound; use technology that can sense sound (app);	Visual Information Sequence, sort, organise and classify images, words and sound to meet specific criteria (Clicker);	Discovering Programming Understand an algorithm is a precise set of instructions; use for sequencing an activity; create a simple animation; use knowledge of algorithms to create programs which cause onscreen objects to move and respond; use sequence and simple repetition; create, test and debug simple algorithms; use be aware of rules to keep us safe online including personal information.
LKS2	Authoring Create a database; use databases to organise, refine and analyse data for a purpose; create graphs to represent findings; refine questions to improve selection in a branching database.	Developing Communication Create, test and debug algorithms; use sequence and simple repetition to cause onscreen objects to move; keep personal information safe such as details online.	Bringing Images to Life Use procedures and functions in Scratch; use logical reasoning to predict outcomes in programs and detect errors using Scratch.
UKS2	Sound Works Use procedures and functions in Scratch; use logical reasoning to predict outcomes in programs and detect errors using Scratch online.	Robotics and Systems Create and adapt spreadsheets; use formulae and functions correctly in a spreadsheet; use graphs to represent findings	Staying Connected Create a database; use databases to organise, refine and analyse data for a purpose; create graphs to represent findings; refine questions to improve selection in a branching database.

Computing 2 Year Long Term Planning Red: topics where skills not secure or not covered			
Cycle B	**Autumn Term**	**Spring Term**	**Summer Term**
EYFS	Finding Out; Image and Light	Toys and Machines; Marking Marks	Exploring Sound
KS1	Starting Research	Getting Creative	Messages and Virtual Worlds
LKS2	Accuracy Counts	Programming and Games	Keeping Informed
UKS2	Morphing Image	Data Matters	Information Models