Subject Computing

Winscombe Primary School

Skills & Knowledge Progression Map

Level Expected at the End of EYFS

We have selected the Early Learning Goals that link most closely to the Computing National Curriculum

Understanding the World (Technology)

Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.

Level Expected at the End of KS1 and KS2

Key Stage 1 National Curriculum Expectations	Key Stage 2 National Curriculum Expectations
Pupils should be taught about: • 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.	Pupils should be taught about: • 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.

The computing curriculum progression maps comprehensively show the progression of computing skills and concepts from Reception to Year 6.

Our Curriculum is based on the Wessex Planning which we access as part of our subscription to ELIM. Each class will complete 2 units a term, consisting of CORE and CHOICE units. These develop skills in Programming, Multimedia, Handling Data and Technology in our Lives/E-Safety.

PROGRESSION OF SKILLS

Key skills	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Multimedia		**Key Stage One** Children begin to understand the particular purposes technology can be used for and that by adding text and images you can communicate with technology. Children develop their skills in typing, selecting tools and organising information. Children begin to develop their creativity using technology through recording sound. Children will also begin to develop their editing skills and control of the tools. **KS1 Computing National Curriculum** Children use technology purposefully to create, organise, store, manipulate and retrieve digital content. Children use technology purposefully to create, organise, store, manipulate and retrieve digital content.		**Lower Key Stage Two** Children develop their skills of formatting using keyboard commands, organising their work to demonstrate effect. In LKS2, they will have the opportunity to express themselves more through digital technology, art, PowerPoint and posters. Children should continue to demonstrate control when operating tools as in KS1. Children develop their editing skills further by cropping, organising and arranging film clips. They are able to share work and offer feedback and ideas for improvement with animation and film, giving their opinion on which software to use. In LKS2, children also look at the history of animation and reflect upon the changes over time. **KS2 Computing National Curriculum** Children 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. They 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.		**Upper Key Stage Two** Children begin to look at new software, creating 3D models and learning how to orbit, zoom and develop their editing skills further. They become more confident in inserting links, images and formatting text to create effect. Children begin to look more into multimedia broadcasting, learning new skills including recording jingles, podcasts and narration. They become more confident in post-production with editing, trimming and refining their work based on plans they have made. **KS2 Computing National Curriculum** Children 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. Children 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.	

				Children 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.			
	• I can move objects on a screen. • I can create shapes and text on a screen. • I can use technology to show my learning.	• I can be creative with different technology tools. • I can use technology to create and present my ideas. • I can use the keyboard or a word bank on my device to enter text. • I can save information in a special place and retrieve it again	• I can use technology to organise and present my ideas in different ways. • I can use the keyboard on my device to add, delete and space text for others to read. • I can tell you about an online tool that will help me to share my ideas with other people. • I can save and open files on the device I use	• I can create different effects with different technology tools. • I can combine a mixture of text, graphics and sound to share my ideas and learning. • I can use appropriate keyboard commands to amend text on my device, including making use of a spellchecker. • I can evaluate my work and improve its effectiveness. • I can use an appropriate tool to share my work online.	• I can use photos, video and sound to create an atmosphere when presenting to different audiences. • I am confident to explore new media to extend what I can achieve. • I can change the appearance of text to increase its effectiveness. • I can create, modify and present documents for a particular purpose. • I can use a keyboard confidently and make use of a spellchecker to write and review my work. • I can use an appropriate tool to share my work and collaborate online. • I can give	•I can use text, photo, sound and video editing tools to refine my work. • I can use the skills I have already developed to create content using unfamiliar technology. • I can select, use and combine the appropriate technology tools to create effects that will have an impact on others. • I can select an appropriate online or offline tool to create and share ideas. • I can review and improve my own work and support others to improve their work	•I can talk about audience, atmosphere and structure when planning a particular outcome. • I can confidently identify the potential of unfamiliar technology to increase my creativity. • I can combine a range of media, recognising the contribution of each to achieve a particular outcome. • I can tell you why I select a particular online tool for a specific purpose. • I can be digitally discerning when evaluating the effectiveness of my own work and the work of others.

					constructive feedback to my friends to help them improve their work and refine my own work.		
Programming		**Key Stage One** Children begin to understand their influence on technology by developing their programming skills to determine output. They begin to understand that an algorithm is a series of steps for solving problems and a code is a series of steps that machines can execute. They begin to explore debugging, predicting when codes may not work and changing them. **KS1 Computing National Curriculum** Children understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions. They create, debug and use logical reasoning to predict the behaviour of simple programs.		**Lower Key Stage Two** Children build on their programming skills by solving problems and programming commands to achieve a specific outcome. They begin to write programs, explain algorithms and identify errors in their work. **KS2 Computing National Curriculum** Children design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; they solve problems by decomposing them into smaller parts. They use sequence, selection, and repetition in programs and work with variables and various forms of input and output. They use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.		**Upper Key Stage Two** Children build on their programming skills by using new systems such as a flowchart. They continue to break down problems and create algorithms to solve them. They are able to explain the outcome of an algorithm with confidence and accuracy. **KS2 Computing National Curriculum** Children design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; they solve problems by decomposing them into smaller parts. They use sequence, selection, and repetition in programs and work with variables and various forms of input and output. They use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	
	•I can make a floor robot move. • I can use simple software to make something happen. • I can make choices about the buttons and icons I	• I can give instructions to my friend and follow their instructions to move around. • I can describe what happens when I press	• I can give instructions to my friend (using forward, backward and turn) and physically follow their	• I can break an openended problem up into smaller parts. • I can put programming commands into a sequence to	• I can use logical thinking to solve an open-ended problem by breaking it up into smaller parts. • I can use an efficient procedure to	.• I can decompose a problem into smaller parts to design an algorithm for a specific outcome and use this to write a program.	• I can deconstruct a problem into smaller steps, recognising similarities to solutions used before.

	press, touch or click on	buttons on a robot. • I can press the buttons in the correct order to make my robot do what I want. • I can describe what actions I will need to do to make something happen and begin to use the word algorithm. • I can begin to predict what will happen for a short sequence of instructions. • I can begin to use software/apps to create movement and patterns on a screen. • I can use the word debug when I correct mistakes when I program.	instructions. • I can tell you the order I need to do things to make something happen and talk about this as an algorithm. • I can program a robot or software to do a particular task. • I can look at my friend's program and tell you what will happen. • I can use programming software to make objects move. • I can watch a program execute and spot where it goes wrong so that I can debug it.	achieve a specific outcome. • I keep testing my program and can recognise when I need to debug it. • I can use repeat commands. • I can describe the algorithm I will need for a simple task. • I can detect a problem in an algorithm which could result in unsuccessful programming.	simplify a program. • I can use a sensor to detect a change which can select an action within my program. • I know that I need to keep testing my program while I am putting it together. • I can use a variety of tools to create a program. • I can recognise an error in a program and debug it. • I recognise that an algorithm will help me to sequence more complex programs. • I recognise that using algorithms will also help solve problems in other learning such as Maths, Science and Design and Technology.	• I can refine a procedure using repeat commands to improve a program. • I can use a variable to increase programming possibilities. • I can change an input to a program to achieve a different output. • I can use 'if' and 'then' commands to select an action. • I can talk about how a computer model can provide information about a physical system. • I can use logical reasoning to detect and debug mistakes in a program. • I use logical thinking, imagination and creativity to extend a program	• I can explain and program each of the steps in my algorithm. • I can evaluate the effectiveness and efficiency of my algorithm while I continually test the programming of that algorithm. • I can recognise when I need to use a variable to achieve a required output. • I can use a variable and operators to stop a program. • I can use different inputs (including sensors) to control a device or onscreen action and predict what will happen. • I can use logical reasoning to detect and correct errors in a algorithms and programs
Data Handling		**Key Stage One**		**Lower Key Stage Two** Children begin to explore expressing information in tables, sorting and organising information for others to be able to understand.		**Upper Key Stage Two** Data Handling in UKS2 focuses on selecting the correct method to display data and using software such as spreadsheets. Children also learn how to	

				KS2 Computing National Curriculum Children 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.		check the accuracy of data and compare data for a specific purpose. **KS2 Computing National Curriculum** Children 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.	
	I can tell you about different kinds of information such as pictures, video, text and sound.	• I can talk about the different ways in which information can be shown. • I can use technology to collect information, including photos, video and sound. • I can sort different kinds of information and present it to others. • I can add information to a pictograph and talk to you about what I have found out.	• I talk about the different ways I use technology to collect information, including a camera, microscope or sound recorder. • I can make and save a chart or graph using the data I collect. • I can talk about the data that is shown in my chart or graph. • I am starting to understand a branching database. • I can tell you what kind of information I could use to help me investigate a question.	• I can talk about the different ways data can be organised. • I can search a readymade database to answer questions. • I can collect data help me answer a question. • I can add to a database. • I can make a branching database. • I can use a data logger to monitor changes and can talk about the information collected.	•I can organise data in different ways. • I can collect data and identify where it could be inaccurate. • I can plan, create and search a database to answer questions. • I can choose the best way to present data to my friends. • I can use a data logger to record and share my readings with my friends.	•I can use a spreadsheet and database to collect and record data. • I can choose an appropriate tool to help me collect data.. • I can present data in an appropriate way. • I can search a database using different operators to refine my search. • I can talk about mistakes in data and suggest how it could be checked.	•I can plan the process needed to investigate the world around me. • I can select the most effective tool to collect data for my investigation. • I can check the data I collect for accuracy and plausibility. • I can interpret the data I collect. • I can present the data I collect in an appropriate way. • I use the skills I have developed to interrogate a database.

Technology in our Lives							
		Key Stage One Children begin to make links to how they use technology outside of the classroom. They begin to think about the benefits of using technology in their lives, making links to learning about online safety. **KS1 Computing National Curriculum** Children recognise common uses of technology beyond school. They use technology safely and respectfully, keeping personal information private; they identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.		**Lower Key Stage Two** Children refer to online safety rules when discussing technology in their lives. They are able to navigate between websites and use safe search terms on trusted search engines. They become more confident in using email for communication, including attaching and saving files from emails. **KS2 Computing National Curriculum** Children 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. They use search technologies effectively, appreciate how results are selected and ranked, and are discerning in evaluating digital content.		**Upper Key Stage Two** Children can use safe search terms on trusted search engines, and evaluate websites based on layout and information. They become more confident in understanding Google rankings, adverts and the reliability of websites. **KS2 Computing National Curriculum** Children 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. They use search technologies effectively, appreciate how results are selected and ranked, and are discerning in evaluating digital content.	
	• I can tell you about technology that is used at home and in school. • I can operate simple equipment. • I can use a safe part of the Internet to play and learn.	• I can recognise the ways we use technology in our classroom. • I can recognise ways that technology is used in my home and community. • I can use links to websites to find information. • I can begin to identify some of the benefits of using technology	•I can tell you why I use technology in the classroom. • I can tell you why I use technology in my home and community. • I am starting to understand that other people have created the information I use. • I can identify benefits of using	•I can save and retrieve work on the Internet, the school network or my own device. • I can talk about the parts of a computer. • I can tell you ways to communicate with others online. • I can describe the World Wide Web as the part of the Internet	• I can tell you whether a resource I am using is on the Internet, the school network or my own device. • I can identify key words to use when searching safely on the World Wide Web. • I think about the reliability of information I read on the World Wide Web. • I can tell you how to check who owns	• I can describe different parts of the Internet. • I can use different online communication tools for different purposes. • I can use a search engine to find appropriate information and check its reliability. • I can recognise and evaluate different types of	• I can tell you the Internet services I need to use for different purposes. • I can describe how information is transported on the Internet. • I can select an appropriate tool to communicate and collaborate online. • I can talk about the way search results are selected and ranked.

			technology including finding information, creating and communicating. • I can talk about the differences between the Internet and things in the physical world.	that contains websites. • I can use search tools to find and use an appropriate website. • I think about whether I can use images that I find online in my own work	photos, text and clipart. • I can create a hyperlink to a resource on the World Wide Web. • I can recognise that websites use different methods to advertise products.	information I find on the World Wide Web. • I can describe the different parts of a webpage. • I can find out who the information on a webpage belongs to. • I know which resources on the Internet I can download and use. • I can describe the ways in which websites advertise their products to me.	• I can check the reliability of a website. • I can tell you about copyright and acknowledge the sources of information that I find online. • I know that websites can use my data to make money and target their advertising .
Online Safety	• I can ask an adult when I want to use the Internet. • I can tell an adult when something worrying or unexpected happens while I am using the Internet. • I can be kind to my friends. • I can talk about the amount of time I spend using a computer / tablet /	• I can keep my password private. • I can tell you what personal information is. • I can tell an adult when I see something unexpected or worrying online. • I can talk about why it's important to be kind and polite.	• I can explain why I need to keep my password and personal information private. • I can describe the things that happen online that I must tell an adult about. • I can talk about why I should go online for a short amount of time. • I can talk about why it is important	•I can talk about what makes a secure password and why they are important. • I can protect my personal information when I do different things online. • I can use the safety features of websites as well as reporting concerns to an adult.	• I choose a secure password and an appropriate screen name when I am using a website. • I can talk about the ways I can protect myself and my friends from harm online. • I use the safety features of websites as well as reporting concerns to an adult.	• I can choose a secure password and screen name. • I protect my password and other personal information. • I can explain why I need to protect myself and my friends and the best ways to do this, including reporting concerns to an adult.	• I protect my password and other personal information. • I can explain the consequences of sharing too much about myself online. • I support my friends to protect themselves and make good choices online, including

	game device. • I am careful with technology devices.	• I can recognise an age appropriate website. • I can agree and follow sensible e-Safety rules.	to be kind and polite online and in real life. • I know that not everyone is who they say they are on the Internet.	• I can recognise websites and games appropriate for my age. • I can make good choices about how long I spend online. • I ask an adult before downloading files and games from the Internet. • I can post positive comments online.	• I know that anything I share online can be seen by others. • I choose websites, apps and games that are appropriate for my age. • I can help my friends make good choices about the time they spend online. • I can talk about why I need to ask a trusted adult before downloading files and games from the Internet. • I comment positively and respectfully online and through text messages.	• I know that anything I post online can be seen, used and may affect others. • I can talk about the dangers of spending too long online or playing a game. • I can explain the importance of communicating kindly and respectfully. • I can discuss the importance of choosing an age-appropriate website, app or game. • I can explain why I need to protect my computer or device from harm.	reporting concerns to an adult. • I can explain the consequences of spending too much time online or on a game. • I can explain the consequences to myself and others of not communicating kindly and respectfully. • I protect my computer or device from harm on the Internet.

Impact

The impact of using the full range of resources, including display materials, will be seen across the school with an increase in the profile of computing. The learning environment across the school will be more consistent with computing technical vocabulary displayed, spoken and used by all learners. Whole-school and parental engagement will be improved through the use of computing-specific home learning tasks and opportunities suggested in lessons and overviews for wider learning. We want to ensure that computing is loved by teachers and pupils across school, therefore encouraging them to want to continue building on this wealth of computing knowledge and understanding, now and in the future. Impact can also be measured through key questioning skills built into lessons, child-led assessment such as success criteria grids and summative assessments aimed at targeting next steps in learning.

Coverage of Knowledge - EYFS – KS2

Each unit of work focuses on key computing skills, as well as teaching the knowledge needed to develop an increasingly secure understanding of computing across the ages. Units are sequenced in a way to help develop and build upon prior learning.

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Autumn 1	**Technology in Our Lives** · What technology do children have at home? · What technology can we offer at school? –ipads, IWB, beebots and chromebooks Why do we use technology? · Use kiddle/kidrex to find information about autumn/seasons · Explore sites e.g. cbeebies to explore autumn, different families and celebrations · Explore old technology e.g. keyboards, phones and computers in our role play corner · Explore Google Earth – where is our school? Where do we live? Explore colder countries linked to term 2 topic · Tapestry is showcased to whole class on the IWB to discuss learning taking place either at school or at home · Take pictures on autumn/winter walks	**Programming 1 CORE Move my Beebot Programming 2** More than my Beebot	**TIOL 1 -** Technology in My Life 2 sessions **Programming 4** – Making My Moves with Scratch Jr 4 sessions **Outcome: Racing game**	**Multimedia 3B** Slides about Skara Brae **TIOL 2 – CORE** Scan My Code 2 sessions	**Multimedia 1 – CORE** Creating a comic book about the digestive system (Linked to science)	**Programming 1 – CORE Scratch My Roman Numerals**	**Multimedia 1 CORE** Sell my school
Autumn 2		**TIOL 1 CORE** Discovering my technology **Programming 3** My moves on screen	**Multimedia 1 - Present My Information 4+1 sessions** Outcome: Presentation about Ernest Shackleton – Topic Link	**Programming 1 - CORE** Making my Program in Scratch	**TIOL 1 – CORE** Check my facts 2 sessions **TIOL 2 – CORE** Where is My Information 2 sessions (Linked to Egyptians)	**Handling Data 1 – CORE Discovering My Solar System TIOL 2 – CHOICE Exploring My World (Using Google Earth)**	**Programming 1 CORE** Test my topic
Spring 1	**Programming** Introduce beebots · Can the beebots be programmed to go to different numbers? (up to 7 linked to WRM) · Can the beebots be programmed to go to different dinosaur worlds on the carpet? · Children take photos/videos of their outdoor explorers learning · Children use talking tins to help them construct sentences in the writing area	**Handling Data 1** Counting my information (Favourite fruits linked to DT)	**TIOL 2 Do I Trust My Internet Search? 2/3 sessions Multimedia 3 – CHOICE Year 2** My News Report 2/3 sessions **Report about food – Science Link**	**TIOL 1 - CORE** My Safe Searching 3 sessions **Multimedia 1 – CORE** Make My eBook 2 sessions	**Programming 1 –CORE** My Scratch Games 5 sessions	**Multimedia 1 – CORE Presenting My Information (persuasion)**	**TIOL 1 CORE** Move my information
Spring 2		**Multimedia 3**	**Programming 3 – Drawing My**	**Programming 4**	**Programming 3**	**TIOL 1 -CORE**	**Handling Data 1 CORE**

	(independent writing) · Explore safer internet day	Making my animation (Linked to plants)	**Shapes 3 session Programming 2 –**Explore My Topic with a floor robot 3 sessions Collect information about fairy tales – Topic Link	Bounce My Scratch Jr Basketball 4 sessions	Knowing my Times Tables with Kodu 4 sessions	**Improve My Web Detective Skills Handling Data 3 – CHOICE Changing My Materials**	Ask my questions
Summer 1	**Multimedia and Data Handling** · Introduce chrome books · Explore logging in with username and password · Explore typing name/CVC words/simple sentences using 2Publish/2Paint · Explore drawing a picture with matching CVC words · Video themselves in small groups retelling either The Very Hungry Caterpillar/life cycle of a butterfly · Children take photos of their 'how to look after the ocean' posters around the school · Children take photos/videos of their outdoor explorers learning · Children use talking tins to help them construct sentences in the writing area (independent writing	**Multimedia 1 CORE Describing my** pirate	**Handling Data 1 – Sorting My Birds 5 session** Outcome: Collect data and sort birds – Science Link	**Handling Data 1 CORE** Showing My Device Time 3 sessions **Handling Data 2** My Top Trump Database 2 sessions	**Handling Data – CORE** Investigating my Sound (Linked to science)	**Multimedia 2 - CHOICE My Weather Forecast**	**Programming 4** Rock my Micro:Bit!
Summer 2		**TIOL 2** Technology and my toys	Handling Data 2 – Sorting My Animals 2 session Collect data and sort habitats – Science Link	**Multimedia – (Teach Computing)** Animation **TIOL 4** Evaluate my Animal	**Multimedia 2** Advertising my Game 4 sessions	**Programming 5** My Animated Sprites	**TIOL 2** Using my information **Multimedia 2** My non-linear presentation

Technology accessed all year in Red class Terms 1 - 6
· Children take photos of their learning on the ipads – this will be uploaded to Tapestry (our online learning diary)
· Tapestry is showcased to whole class on the IWB to discuss learning taking place either at school or at home
· Ipads – 1 minute maths (white rose app)