Wool CE Primary School

Computing Progression

Overview:
Computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

Aims for the National Curriculum computing curriculum:

- Pupils can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- Pupils can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- Pupils can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- Pupils are responsible, competent, confident and creative users of information and communication technology

Pupils will be taught the following knowledge and skills:

	EYFS	Y1/2		Y3/4		Y5/6	
	Puffins/Robins	Year A	Year B	Year A	Year B	Year A	Year B
ONLINE SAFETY (Project Evolve)	I know and talk about the different factors that support overall health and wellbeing, *e.g. sensible amounts of 'screen time'* I can explain the reasons for rules, know right from wrong and try to behave accordingly I can independently log into the school network and other applications I can recognise some ways in which the internet can be used to communicate I know who to can speak to in school if something upsets me in school, at home or online **I know how to handle technology safely**, *e.g. asking an adult to use the internet* I can describe ways that some people can be unkind online I know to not click on things when you don't know what they are I know not to speak to strangers I know to not give out my name online I can follow the schools online safety rules in order to be safe online/ on a screen both at school and at home I know trusted adults can help to keep us safe (online and offline) I know that the internet can be used to connect people and help them find out about things I know there are different types of technology Can use the internet with adult supervision to find and retrieve information of interest to them	I can save my work under a suitable title or name so that others know it belongs to me I can identify ways that I can put information on the internet. **I can explain rules to keep myself safe when using technology both in and beyond the home.** I can give some simple examples of these rules I can describe ways that some people can be unkind online. **I can describe how to behave online in ways that do not upset others and can give examples.** I can explain how passwords are used to protect information, accounts and devices. I can use simple keywords in search engines	**I understand that work created by others does not belong to me even if I save a copy** I can recognise that information can stay online and could be copied. I can identify rules that help keep us safe and healthy in and beyond the home when using technology I can say how those rules / guides can help anyone accessing online technologies I can explain simple guidance for using technology in different environments and settings I can explain what bullying is, how people may bully others and how bullying can make someone feel. **I can talk about how anyone experiencing bullying can get help.** **I can explain how some people may have devices in their homes connected to the internet and give examples** I can talk about how to use the internet as a way of finding information online. I can demonstrate how to navigate a simple webpage to get to information I need (e.g. home, forward, back buttons; links, tabs and sections).	I can explain how identity online can be copied, modified or altered. **I can explain the importance of giving and gaining permission before sharing things online**; how the principles of sharing online is the same as sharing offline e.g. sharing images and videos. I can explain how to search for information about others online I can describe common systems that regulate age-related content (e.g. PEGI, BBFC, parental warnings) and describe their purpose. I can describe appropriate ways to behave towards other people online and why this is important. I can explain how anyone can get help if they are being bullied online and identify when to tell a trusted adult. **I can describe simple strategies for creating and keeping passwords private.** I can demonstrate how to use key phrases in search engines to gather accurate information online. I can give some simple examples of content which I must not use without permission from the owner, e.g. videos, music, images.	**I can explain how people can represent themselves in different ways online** I can give examples of how to be respectful to others online and describe how to recognise healthy and unhealthy online behaviours. I can give examples of what anyone may or may not be willing to share about themselves online. I can explain the need to be careful before sharing anything personal. **I can explain why spending too much time using technology can sometimes have a negative impact on anyone.** I can give some examples of both positive and negative activities where it is easy to spend a lot of time engaged I can give examples of how bullying behaviour could appear online and how someone can get support. **I can explain what a strong password is and demonstrate how to create one.** I can give reasons why someone should only share information with people they choose to and can trust. I can explain that if they are not sure or feel pressured then they should tell a trusted adult. **I can explain that not all opinions shared may be accepted as true or fair by others** I can explain why I need to consider who owns content on the internet and whether I have the right to reuse it.	I can demonstrate how to make responsible choices about having an online identity **I can explain how sharing something online may have an impact either positively or negatively** I can explain ways that some of the information about anyone online could have been created, copied or shared by others. **I can explain why some online activities have age restrictions**, why it is important to follow them and know who I can talk to if others pressure me to watch something online that makes me feel uncomfortable I recognise and can discuss the pressures that technology can place on someone and how / when they could manage this. I can describe ways people can be bullied through a range of media. **I can identify a range of ways to report concerns and access support both in school and at home about online bullying.** I can describe how connected devices can collect and share anyone's information with others. **I can describe how to search for information within a wide group of technologies** and make a judgement about the probable accuracy I can evaluate digital content and can explain how to make choices about what is trustworthy I can demonstrate how to make references to sources I have used from the internet.	I can identify and critically evaluate online content relating to gender, race, religion, disability, culture, and explain why it is important to challenge inappropriate content. I know the importance of respecting boundaries regarding what is shared about others online and how to support them if others do not. **I can explain strategies anyone can use to protect their 'digital personality' and online reputation, including degrees of anonymity.** I can identify times or situations when someone may need to limit the amount of time they use technology and suggest strategies to help with limiting this time. **I can describe how to capture bullying content as evidence to share with others who can help me.** **I can describe strategies for keeping personal information private.** I can describe simple ways to increase privacy on apps that provide privacy settings. I can explain the benefits and limitations of using different types of search technologies. I can explain how some technology can limit the information I am presented with. **I can explain why information that is on a large number of sites may still be inaccurate or untrue, and how this might happen** I can assess and justify when it is acceptable to use the work of others.

Wool CE Primary School

Computing Progression

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
CREATING MEDIA - TEXT AND IMAGES (Teach Computing)	Know how to suggest technology for a purpose, *e.g. video song poetry basket, ask a search engine a question* Know how to select camera icon and push touch screen button to take photo **Know how to use a keyboard to type letters** **Know where the space bar is on a keyboard** **Know how to use a touchpad and a mouse** Know how to take a photo on an iPad Can create content such as a video recording, stories, and/or draw a picture on screen Develops digital literacy skills by being able to access, understand and interact with a range of technologies	**Digital writing:** **Know how to use a keyboard to type, including capital letters** Know how to add and remove text Know how to change the appearance of text: font, colour, size **Digital drawing:** **Know what different digital freehand tools do** Know how to use the shape tool and the line tools Know how to make careful choices when painting a digital picture	**Digital writing:** **Develop typing skills:** *-Home row keys (f, d, s, a, j, k, l, g, h), plus (e, I, r, u)* *-Six keys above the home row (t, y, w, o, q, p)* *-Six keys below the home row (v, m, b, n, c)* *-Remaining keys (x, z , .)* Know how to use the right mouse click to access and use contextual menus Know how to choose a range of media within their digital content, including photos, clipart, texts **Understand the difference between the back key and the delete key** Know that some programs have undo and re-do buttons **Digital photos:** Understand how photographs can be improved **Know that we can use tools to change an image** **Know that some photos have been changed and understand why** Know how to add photos, videos and sound	**Desktop Publishing:** **Know how to touch type with some speed and accuracy** Know how text and images convey information Know that text and layout can be edited Know how to use a variety of page settings, e.g. landscape/portrait, margins, columns Know the benefits of desktop publishing **Know which software is most appropriate for a given task**	**Desktop Publishing:** Understand how different layouts can suit different purposes and audiences **Understand the benefits of desktop publishing and use this to select from a variety of programs to present information**, *e.g. Word is for word processing, Excel is for working with numerical data, PowerPoint for presentations* **Know the basic shortcut keys: cut, copy, paste, print, open, save** Create linked content using a range of software	**Web page creation:** Know how to review an existing website Understand that the features of a web page need to be planned for **Know that the ownership and use of images (copyright) must be considered** **Understand the need to preview pages** Know the need for a navigation path Recognise the implications of linking to digital content owned by other people **Understand the audience when designing and creating digital content**	**Web page creation:** **Know to consider the effectiveness of structure when reviewing an existing website** Understand that a specific audience and purpose will affect the features of a web page -Know that the ability and interests of a specific audience will should influence decisions made Know that the ownership of images (copyright) will affect their use Know that it is best practice to preview pages and make amendments before publishing **Use a criterion to evaluate the quality of digital solutions and identify improvements, making some refinements**
CREATING MEDIA - SOUND AND MOTION (Teach Computing)	Can create content such as a video recording, stories, and/or draw a picture on screen			**Photo editing:** **Know that the composition of digital images can be changed** Know how to effectively change the colours of digital images Know that cloning can be used in photo editing Know that images can be combined Evaluate how changes can improve an image Summer 2	**Photo editing:** Know that there are different ways in which the composition of digital images can be changed Understand how and why colours can be changed in digital images Know some of the negative impact of cloning within photo editing Understand that images can be combined for effect **Know that changes can improve and image, alter designs or negatively affect an image**	**Video editing:** Understand what makes a video effective Know how to use a digital device to record video Know that a series of images can be used to create a storyboard Know that video can be improved by reshooting **Know that you can take a series of pictures to form an animation**	**Video editing:** Know how to capture video using a wide range of techniques Know how to create a storyboard **Know that video can be effectively improved through reshooting and editing** Recognise the impact of the choices made when making and sharing a video **Know how to move items within an animation to create movement on playback** Know how to save images at stages to compare work and talk about changes

Wool CE Primary School

Computing Progression

COMPUTING SYSTEMS AND NETWORKS (Teach Computing)	Know how to switch on an iPad Know how to access an app Uses ICT hardware to interact with age-appropriate computer software	**Know the main parts of a computer: screen, keyboard, mouse, tower** Know how to use a mouse in different ways: to click, to search, to highlight, to scroll Know that a keyboard is connected to a computer screen **Know that all electronic devices need a power source** (mains or battery) Know how to name, save and open work (by clicking on icons) Know that to open a document you need to know what the file is called, what file type it is and where it was stored Know how to access resources online	Know the uses and features of information technology Identify the uses of information technology in the school and beyond **Know different ways that information technology helps us** **Know how to use information technology safely** Know that choices are made when using information technology Know that a computer needs to be shut down correctly otherwise it will not be able to follow the correct sequence to re-start	Know how digital devices function **Identify input and output devices** Know ways in which digital devices can change the way that we work **Know that a computer network can be used to share information** Know that a network is a group of two or more devices that are connected for the purpose of exchanging data Know that documents can be stored on a device, shared network or internet Understand that digital devices can be connected Know the physical components of a network: switch, router, firewall	Know how networks physically connect to other networks **Know that the internet is a network of networks** Know that a network can share messages with another network Know how websites can be shared via the World Wide Web Know how content can be added and accessed on the World Wide Web Know that the content of the World Wide Web is created by people **Understand that posting unreliable content on the internet has consequences** Know how to carry out simple searches to retrieve digital content -Know that the effectiveness of the search depends on the key words chosen	**Know that computers can be connected together to form systems** Understand the role of computer systems in our lives Understand the function, features and layout of a search engine Understand how search engines select results Know how search results are ranked **Understand why the order of results is important, and to whom** Know that most search engines have common features, *e.g. key word search bar, tabs to switch between text and images searches* Know that favourite or regularly visited pages can be 'bookmarked', which speeds up the retrieval of the website	Know the importance of internet addresses Know how data is transferred across the internet **Understand how sharing information online can help people to work together** Know that there are different ways of working together online Know that people communicate using technology **Know that there are different methods of online communication** Know how to read and respond to e-mails, using an address book Know how to add an attachment to an e-mail Know that there are five main parts to an email: subject, greeting, message, closing and signature
CODING AND PROGRAMMING (Twinkl)	Know how to give instructions to a program, *e.g. bee bot*	**Know that an algorithm is a set of rules to follow** Know than an algorithm written for a computer is called a program **Know that sometimes algorithms are wrong and need to be 'de-bugged'** Know how to run programs by following precise and unambiguous instructions Know how to give commands one at a time to control direction and movement, including straight, forwards, backwards, turn Know that you use recognised language in an algorithm Know how to improve and change sequences of commands by debugging	**Know that instructions within an algorithm need to be in order** Know that the instructions need to be written in the correct language so that the computer understands them **Know that algorithm's outcomes can be predicted** Know how algorithms are implemented as programs on digital devices Know how to create an algorithm using a variety of commands, *e.g. repeat, sound, say* Know how to control the nature of events: repeat, loops, single events and add and delete features **Know that debugging involves four steps:** 1. Identify there is a problem 2. Work out which part of the program is causing it 3. Find a solution and fix it 4. Check it has worked	Know how to design, write and debug programs that accomplish specific goals **Know that instructions within a program can be repeated** Know how to control or simulate physical systems Know how to solve problems by decomposing them into smaller parts Know that programs contain sequences of instructions that are written in code, to achieve a specific outcome **Know how to detect and correct errors in algorithms and programs** Know that computers need precise instructions and consequences in order to function correctly -Know that algorithms and code for programs should be written in the simplest form Know that you can use logical reasoning to predict the outcomes of code	Know how to use logical reasoning to explain how some simple algorithms work Know how to use logical thinking to solve an open-ended problem by breaking it up into smaller parts **Know that you should keep testing a program and recognise when it needs to be debugged** **Know that variables can be used to create an effect**, *e.g. repetition, if, when, loop* Know that when the programmer needs to get the computer to make a decision (selection), conditionals are used*, e.g. 'if/then', 'else', 'if, else'* Know how to use sequence, selection, and repetition in programs and work with variables and various forms of input and output	Know how to design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems **Know how to solve complex problems by decomposing them into smaller parts** Know how to investigate the features of programming software Know how to program using 'when' and 'do' instructions **Know how to analyse and deconstruct code to work out its purpose** Know that you can program characters to perform actions Know that physical systems use simulations that include sequencing, selection and repetition, *e.g. traffic lights*	**Know how to use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs** Know how to decompose a problem into smaller parts to design an algorithm for a specific outcome and use this to write a program Know how to evaluate the features of programming software Know how to program using a range of instructions **Know how to analyse and deconstruct code to work out its purpose and to debug** Know how to use a range of tools to program a character to reach a goal Know that an operator is a character used in coding and can be used to stop a program Use design criteria to critically evaluate the quality of solutions, to identify improvements and to make appropriate refinements to the solution

HANDLING DATA (Teach Computing)		Know what a tally chart is and how they can be used Know that objects can be represented as picture on a 1:1 scale **Know how to create simple pictogram** **Know how to tally objects using a common attribute** **Answer simple questions using a pictogram** Know that people can be described by simple attributes Create a simple pictogram	Know that we can count and compare objects using tally charts Know that objects can be represented as pictures beyond a 1:1 scale **Know how to create a pictogram** **Know how to select objects by attribute and make comparisons** **Answer 'more than'/'less than' and 'most/least' questions about an attribute** Know that people can be described by attributes Create a pictogram and draw conclusions from it Explain how we can present information using a computer			Know how to input a data set in to a simple spreadsheet Know that formulas can be used to produce calculated data **Know how to apply simple formulas to data** Understand that spreadsheets can be created to help people to plan	**Know how to create a data set in a spreadsheet** Know how to design and apply formulas to data **Know that data can be presented in a range of ways and that some are more suitable for a given purpose**
VOCABULARY	online safety, technology, device, computer, iPad, bee bot, internet, photo	log in, username, password, log out, save, command, debug, sequence, icon, reaction, instructions, algorithm, predict, program, monitor, speakers, keyboard, mouse, space bar tally, common attribute, pictogram	search, internet, sharing, digital footprint, algorithm, concept map, output, software, programming, execute, algorithm, touch typing, posture, keys, top row, home row, bottom row, predict, loop, repeat, sound, say	search engine, email, coding, action, code block, code design, command, control, event, if, input, output, object, properties, repeat, selection, timer, variable, hardware, motherboard, graphics card, network, command, repetition, switch, router, firewall	photograph, editing, combine, cloning, edit, digital image, impact, negative, positive, viewpoint, template, effective, searching, internet browser, search, search engine, result, ranking, spoof website, simplify, selection, variable, conditionals	animation, frame, background, play, stop motion, database, find, record, sort, group, arrange, reports, table, customise, evaluation, interactive, screenshot, perspective, playability, branching database, data, database, refine, variable, sensor, repeat loops	World Wide Web, network, local area network (LAN), wide area network (WAN), router, network cable, wireless, communication, send, attachment, address book, sender, recipient, operators, output

Wool CE Primary School

Computing Progression

Unit overview:

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Reception	Online Safety Sensible screen time	Online Safety Using technology to develop find motor skills	Online Safety Using technology in expressive design	Online Safety Familiarity with different technologies	Online Safety Develop independence, resilience and perseverance in the face of challenge	Online Safety Logging in
Year 1/2 **YEAR A**	Online Safety: Project Evolve – Health, well-being and lifestyle Keyboard skills	Project Evolve – Privacy and security Computer systems and networks – Technology around us (Y1)	Project Evolve – Managing online information Creating media - Digital writing using Microsoft Word	Project Evolve – Online bullying Creating media - Digital painting (Y1)	Project Evolve – Online relationships Coding – Turtle Logo and Scratch Jr	Project Evolve – Online reputation Coding – Turtle Logo and Scratch Jr
Year 1/2 **YEAR B**	Online Safety: Project Evolve – Health, well-being and lifestyle Keyboard skills	Project Evolve – Self-image and identity Project Evolve – Privacy and security Computer systems and networks – IT around us (Y2)	Project Evolve – Managing online information Creating media - Digital writing using Microsoft Word	Project Evolve – Online bullying Creating media - Digital photos (Y2)	Project Evolve – Online relationships Data and information - pictograms	Project Evolve – Online reputation Data and information - pictograms
Year 3/4 **YEAR A**	Online Safety: Project Evolve – Managing online information Project Evolve – Health, well-being and lifestyle Keyboard skills	Project Evolve – Self-image and identity Project Evolve – Privacy and security Computer systems and networks – Connecting computers (Y3)	Project Evolve – Copyright and ownership Multimedia text and images – Desktop Publishing using PowerPoint	Project Evolve – Online bullying Multimedia text and images - Desktop Publishing using PowerPoint	Project Evolve – Online relationships Coding - Scratch	Project Evolve – Online reputation Coding - Scratch
Year 3/4 **YEAR B**	Online Safety: Project Evolve – Managing online information Project Evolve – Health, well-being and lifestyle Keyboard skills	Project Evolve – Self-image and identity Project Evolve – Privacy and security Computer systems and networks – The Internet (Y4)	Project Evolve – Copyright and ownership Multimedia text and images - Desktop Publishing using Publisher	Project Evolve – Online bullying Multimedia text and images - Desktop Publishing using Publisher	Project Evolve – Online relationships Multimedia sound and motion – Photo editing	Project Evolve – Online reputation Multimedia sound and motion – Photo editing
Year 5/6 **YEAR A**	Online Safety: Project Evolve – Managing online information Project Evolve – Health, well-being and lifestyle Keyboard skills	Project Evolve – Self-image and identity Project Evolve – Privacy and security Computer systems and networks - Systems and searching (Y5)	Project Evolve – Copyright and ownership Multimedia text and images – Web Page Creation	Project Evolve – Online bullying Multimedia text and images – Web Page Creation	Project Evolve – Online relationships Coding - Kodu	Project Evolve – Online reputation Coding - Kodu
Year 5/6 **YEAR B**	Online Safety: Project Evolve – Managing online information Project Evolve – Health, well-being and lifestyle Keyboard skills	Project Evolve – Self-image and identity Project Evolve – Privacy and security Computer systems and networks – Communication and Collaboration (Y6)	Project Evolve – Copyright and ownership Handling Data - Spreadsheets	Project Evolve – Online bullying Handling data - Spreadsheets	Project Evolve – Online relationships Multimedia sound and motion – Video editing	Project Evolve – Online reputation Multimedia sound and motion – Video editing