Our Computing Curriculum

Intent	Implementation
The computing curriculum at West Earlham Infant and Nursery School aims to provide our children with a strong foundation of the computing skills, knowledge and understanding that they require in order to positively take part in the digital world. The digital world is constantly adapting, changing and improving, therefore, we aim to provide our pupils with the computing and creative skills required to enable them to not only understand computing but also be confident and creative in their approach. We aim for our children to understand the technological world and the impact that they have upon it. Our curriculum teaches children to: consolidate technical skills, achieve fluency with a range of key applications, develop their knowledge and understanding of the principles that underpin digital technologies and the changing consequences of these for individuals and society. The computing curriculum has three strands: computer science, information technology and digital literacy. At West Earlham Infant and Nursery School we aim to ensure that our teaching enables all children to: -Understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation. **(Computer science)** -Analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems. **(Computer science)** -Evaluate and apply information technology, including new or unfamiliar technologies in order to solve problems **(Information technology)** -Be responsible, competent, confident and creative users of information and communication technology. **(Digital literacy)**	We acknowledge that computing and computational thinking skills are found across a variety of curriculum areas including: mathematics; science; PSHE; and design and technology. We recognise that computing skills can be used to enhance and extend these curriculum areas and more. Therefore, our approach when implementing our computing curriculum aims to teach the integral computing skills both implicitly and explicitly. This allows our computing skills teaching to be threaded throughout learning experiences in a cross-curricula manner as well as during explicit computing lessons. Initially, children are supported to become safe internet users following regular Online Safety discussions whilst delivering the important message of how to stay safe online. We use the SMART guidelines as well as the simple three stage advice of what to do if something online makes you feel worried or scared: 1. Stop 2. Get out 3. Tell an adult. Our children are exposed to a variety of different computing devices and resources, each designed to support children to develop the skills for computer science and information technology alongside supporting children to ensure digital literacy is upheld throughout. Children have access to iPads, chromebooks and remote control devices to support the expansion of their understanding of the key concepts and three strands of the computing curriculum. The computing curriculum is developed to ensure progression through each computing strand: Computer science, Information Technology and Digital Literacy. This is delivered in a child-centred approach and differentiated to ensure the teaching meets the learning needs of the abilities of all our children, progressing from EYFS through to KS1.

Our **EYFS curriculum** is taught through the EYFS framework 2021. The Understanding the World area of learning. The framework states: 'listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, **technologically** and ecologically diverse world'. In EYFS, the key computing concepts are supported and linked with the Characteristics of Effective Learning, we feel this is an effective way to teach, and learn, the computing concepts (see below) in EYFS.

Characteristics of Effective Learning:

Playing and exploring – engagement

- Finding out and exploring
- Playing with what they know
- Being willing to have a go

Active learning – motivation

- Being involved and concentrating
- Keeping trying
- Enjoying achieving what they set out to do

Creating and thinking critically – thinking

- Having their own ideas
- Making links
- Choosing to do things

In KS1, we follow the 'Switched on Computing' scheme - year one and year two follow a progressive sequence of lessons to teach the three computing strands. Children learn new skills in year one which are built upon and consolidated in year

	two to ensure progression. Children access the key topics through a variety of software.

Our children will experience:	Reception	Year One	Year Two
Assembly discussing the importance of keeping safe online and how to do so. E-Safety day for Whole School: Safer Internet Day Year One and Year Two: Into the Screen - delivering important messages about internet safety and how to keep safe online.	**Learning themes:** Online safety Using technology to answer questions Understanding the diversity of technology Tinkering and exploration	**Learning themes:** Online safety Algorithms and Coding - solving problems using programmable toys and ScratchJr. Using a range of technologies, including iPads, Chromebooks, cameras, Beebots. Exploring a range of computer programmes, including iMovie, Brushes Redux, Autodesk sketchbook, GarageBand and google drive.	**Learning themes:** Online safety Algorithms and Coding Animation, using an animation app. Use of a range of technologies including iPads, Chromebooks and BeeBots. Using a range of programmes, including ScratchJr, Snapseed, FixTheFactory and google drive. Exploring the use of technology beyond the school.

Key Computing Concepts
Patterns:
Spotting and using similarities https://drive.google.com/file/d/1etlYvv-ZgceYVfwRWHN6pybdjYGFigks/view
Tinkering:
Experimenting and playing

Creating:
Designing and making
Decomposition:
Breaking activities down into parts https://drive.google.com/file/d/1cYfOji6NcvmaYe4xoGkAJ0FftedPCqfU/view
Collaborating:
Working together on a common goal
Persevering:
Keeping going with a growth mind-set
Logic:
predicating and analysing
Evaluation:
Making judgments and educated guesses
Debugging:
Finding and fixing errors
Algorithms:
Creating own steps and rules https://drive.google.com/file/d/1CbMK4KN63ivNSloYE9J_GEUnCBUl3he1/view
Abstraction:
Removing unnecessary detail to streamline processes https://drive.google.com/file/d/11kx0NHekuwEjrFunr5fOctwfuSoobyL3/view

(Links to PDFs modelling cross-curricular links of Computing concepts and how children can develop these skills in 'unplugged' ways in different lessons)

The computing curriculum has three strands: computer science, information technology and digital literacy. The progression document has been divided up into these strands for ease of understanding.
- **Computer Science** – Programming and Coding
- **Information Technology** –Using computers to organise and present information in different ways
- **Digital Literacy** – Understanding where computers fit into our daily lives.

Nursery	Reception	Year One	Year Two
UTW: 25-30 months: -Responds to photographs or digital media showing shared events/familiar people or places 31-36 months: -Uses technologies to share experiences with others for example discussing learning journal events. 37-42 months: -Uses technologies to share experiences with others and share experiences of using technology. 43-48 months: -Uses technologies and books with support, to find out more about the world around them.	UTW: 49-54 months: -Uses technology to enhance, change or recreate within a learning experience 55-60 months: -Captures and documents a sequence of events or experiences using ICT. 60-66 months/Early Learning Goal (ELG) - Recognises that a range of technology is used in different places such as homes and schools. -Selects and uses technology for particular purposes. By 67+ Uses technologies and books with support, to find out more about the world around them.	Pupils should be taught to: - understand what algorithms are -create 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 to: 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.

Digital Literacy (including Online Safety, Technology in our Lives)			
Progression of Skills			
Nursery	**Reception**	**Year One**	**Year Two**
	● Understand that the internet can be used to play and learn ● Know that the things they create digitally can be shared with others ● Recognise purposes for using technology at home and in school ● Understand that a password protects a device from someone else using it ● Understand that an adult should be present when they access online material ● Know who to go to for help if they need it when using the internet ● Understand to take turns when using technology ● Know that care is needed when using equipment	● I can keep my password private. ● I can tell you what personal information is e.g. name; address; date of birth; photo, passwords ● I know that I must 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 recognise an age appropriate website. ● I can agree and follow sensible e-Safety rules. ● 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 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 it is important 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 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 the benefits of using technology including finding information, creating and communicating. ● I can talk about the differences between the Internet and things in the physical world.

Key Vocabulary			
Nursery	**Reception**	**Year One**	**Year Two**
Safe, people we do know, people we don't know, games, online, worry	Safe, strangers, internet, email, games, online, unsure, confused	Messaging, password, personal information, posting, smartphones, social media, strangers, safety	
Home, school, computer, telephone, mobile, screen, ipad, phone, camera,	Internet, devices, Facebook, computer, laptop, technology, tablet, iPad, laptop, smartphone, remote-control, search, Google, website,	Community, social media, Facebook, Twitter, email, communication, connection, hardware, software, network, systems, technology, search, back, homepage, refresh, search engine, webpage and website Computer tower, device, digital devices, internet-going, machine, hardware, software,	

<u>Key Vocabulary definitions</u>
Personal information: names, addresses, dates of birth, passwords
Internet: a computer network which allows computer users to connect with computers all over the world, and which carries e-mail.
Technology – any electronic equipment or equipment that can be used with a computer or handheld device.
Hardware: refers to the machines themselves as opposed to the programs which tell the machines what to do.
Software: Computer programs are referred to as software
Communication: how people speak to each other and how they share things.

Computer Science (Programming and Coding)			
Progression of Skills			
Nursery	**Reception**	**Year One**	**Year Two**
- Play Simon Says (algorithms/debugging) - Take a simple 'problem' and split it into smaller steps – e.g. to dress a teddy (computational thinking - decomposition) - Listen to and follow recorded instructions - Explore playing with programmable toys (programming) - Ask the children to sequence a series of photographs to recount a story (algorithms)	- Identify some of the steps needed to achieve a simple task – e.g. brushing teeth - Understand that people and computers follow instructions - Can follow instructions and correct mistakes - Know that devices and objects on a screen can be controlled - Recognise that a printer is connected to a computers and devices	- I can give instructions to my friend and follow their instructions to move around. - I can describe what happens when I press buttons on a programmable toy. - I can press the buttons in the correct order to make my programmable toy 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.	- I can give instructions to my friend (using forward, backward and turn) and physically follow their 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 programmable toy 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.

Key Vocabulary			
Nursery	**Reception**	**Year One**	**Year Two**
Working, not working, right, wrong, fix, look, order, do	Instruction, plan, design, sequence, order, check, repair, problem solve, process	Algorithm, instruction, information, process, correct, incorrect, bug, debug, code, coding, error, input, loop, output, rule, resolve, operation, collaboration, control	

<u>Key Vocabulary definitions</u>
Algorithm: a set of instructions to be able to do a task.
Debug: find mistakes and fix them
Programming: the act or process of writing a program so that data may be processed by a computer
Collaboration: working together.
Control: make something do what you want.

Information Technology (Multimedia, Word Processing and Data Handling)

Progression of Skills			
Nursery	**Reception**	**Year One**	**Year Two**
	- Know that Information Technology (including online tools) can help them do things - Can use a mouse to move objects - Can use a keyboard for basic activities - Can use a camera, sound recorder or mobile device to collect photographs and/or sound - Recognises and can use the common icons for save and print	- 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 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 talk about the different ways I use technology to collect information - I can talk about the data that I have collected. - I can use the data I have collected in a purposeful way. - I can tell you what kind of information I could use to help me investigate a question. - 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.
Key Vocabulary			

Nursery	Reception	Year One	Year Two
Button, click, tap, Make Turn on and turn off Job Pictures, letters, numbers,	Screen, program, print, photo Create, Log on, log off, password, close, shutdown Instruction Pictures, letters, numbers, chart, table, information,	Mouse, computer tower, device, digital devices, double-click, home button, internet-going, machine, monitor, tab, program, hardware, software Design, edit, application (app), document, folder, retrieve, save, restart, close, full screen, window Action, copy, paste, input, output, turn on, shut down, log on, log off Operation, task, function Chart, presenting, process, handling, input, keys, output, symbols,	

Key Vocabulary definitions
Function: The function of something or someone is the useful thing that they do or are intended to do.