Principles of our ICT & Computing Curriculum

- Take a systematic approach to the teaching of coding using 2Code as a consistent resource
- Embedded eSafety for all year groups
- A clear focus for children to use increasingly complex ICT tools including Google Apps
- Children to have a clear understanding of HOW computers work and therefore how they need to use them
- Innovation as a recurring theme throughout each year group (for example, App Design)
- Clear knowledge and skills targets per unit

In line with the 2014 National Curriculum for ICT, our aim is to provide a high-quality ICT which equips children to use computational thinking and creativity to understand and change the world. The curriculum will teach children key knowledge about how computers and computer systems work, and how they are designed and programmed. Learners will have the opportunity to gain an understanding of computational systems of all kinds, whether or not they include computers.
By the time they leave Chieveley Primary School, children will have gained key knowledge and skills in the six main areas of the computing curriculum: Coding, Using ICT, Understanding systems, E-Safety and Innovation. The objectives within each strand support the development of learning across the key stages, ensuring a solid grounding for future learning and beyond.

Children are exposed to a variety of progressive topics within the computing curriculum. Our goal is to enthuse and engage all children to ensure progress for all. Through the teaching of the computing curriculum, all children should develop key computational skills which will be invaluable as they continue their school and professional journeys. We feel it is important for the children to be given an opportunity to learn through a variety of approaches, such as group/class discussions, learning walks, role play, learning through questioning themselves, peers and teachers, problem solving and the use of different technology (iPads, laptops, beebots etc). Teachers regularly assess understanding through a variety of appropriate questioning and tasks. Teachers demonstrate progress through the evidencing of children's work online through Purple Mash, Google Drive, produced work in books and in class books as well as their own teacher assessment. The children are also responsible for their own learning journeys and are expected to save and evidence their own work in their own documents (KS2). ICT will be taught in stand alone lessons and embedded throughout all subjects to ensure a broad and balanced approach.

Our approach to the curriculum results in a fun, engaging, and high-quality computing education. The quality of children's learning is evident on Purple Mash and Google Classroom, where pupils can share and evaluate their own work, as well as that of their peers. Evidence such as this is used to feed into teachers' future planning, and as a topic-based approach continues to be developed, teachers are able to revisit misconceptions and knowledge gaps in computing when teaching other curriculum areas. This supports varied paces of learning and ensures all pupils make good progress.

Much of the subject-specific knowledge developed in our computing lessons equip pupils with experiences which will benefit them in secondary school, further education and future workplaces. From research methods, use of presentation and creative tools and critical thinking, computing at Chieveley aims to provide children with the building blocks that enable them to pursue a wide range of interests and vocations in the next stage of their lives.

CODING

Our expectation is that, out of 6 units per year, coding takes up 2.5 of these – 2 in clear coding units (often on PurpleMash), but also as a coincidental part (roughly 0.5) of another unit. Examples of this would include the App design in Year 6 or the Video Game creation in Year 4, both of which rely on children being able to understand how code drives the apps that we use.

The children's progress in coding is evident through their completion of increasingly complex coding tasks on 2Code. This will culminate with their use of 'Free Code Gorilla' in Year 6. After this point, we aim to use Scratch with the children as a contrast to the software they use, and also providing a more sophisticated platform on which they can code.

We also encourage the use of 'unplugged' skills to develop children's knowledge of coding. Often these will take the form of warm-up activities and linked aspects of lessons – such as children writing code-cards to show how their video game (Y4) is driven by code.

UNDERSTANDING SYSTEMS

It is important that children know and understand how computers, networks and clouds are put together in order for them to use and navigate them safely. This will even come down to learning the difference between internal and external storage, which is covered in Year 3. The spiral nature of our curriculum means that children will recap and build on these concepts as they move up through the school.

USING ICT

While the value of coding is clear, we also need to train children in the use of productivity apps in order for them to succeed in the wider world. Our 'Using ICT' units expose children to email, blogging, WYSIWYG content management software and also the Google Apps package, which is analogous to Microsoft Office. Again, we aim to build up the skills children learn across year groups, and in a way that will also support ICT in a cross-curricular context. For example, it is reasonable to expect a Year 5 child to produce a presentation, thus it is taught as part of the Year 4 ICT curriculum then revised as part of their phone design unit.

INNOVATION

Even Steve Jobs and Bill Gates had to start somewhere! Our Innovation units give children the freedom to design their own Apps, games and devices, applying their understanding of coding, design and trends in the world of ICT. These tasks often give children a vital chance to present their ideas and critique the ideas of others.

E-SAFETY

Every year, the children will learn about e-safety, in a way that is relevant to their developing interests and competencies in the digital world. For example, in Year 2 the focus is on keeping data and passwords secret and creating useful passwords, whereas in Year 4 it moves on the discuss the risks posed by online gaming platforms and social media, which many children start to use. Each year, the e-safety will revisit and

build on the previous year's content, and this unit will be updated yearly by the ICT Leader to ensure that its objectives are relevant to the world that we live in and the apps the children have access to.

In Year 6 e-safety will briefly cover issues such as sexting; however this is part of a wider theme linked to ownership of content, tweets, pictures.

In addition to these taught units, it is also expected that children use our ICT resources in a cross-curricular way. Examples of this could include using Mathletics or 2Simple software to support maths, or using word processing apps to support writing.

ICT & COMPUTING CURRICULUM
2023

	Using ICT	Understanding Systems	Coding	eSafety	Innovation	Tools and Resources
Foundation Stage	**Ongoing provisions using whiteboard/ipads etc** Recognise that a range of technology is used in places in and out of school Select and use technology for particular purposes	**N/A**	Beebots Use Beebots to understand how to follow and create specific instructions. Create and debug simple programs using beebots. Use logical reasoning to predict the behaviour of a Beebot	Appropriate (careful) use of equipment Understand how to use the ipads and the interactive whiteboard appropriately, safely and respectfully.	N/A	Ipads Beebots Interactive whiteboard Cameras Photocopier CD players Keyboard Torches Battery operated devices Phones
Year 1	Ongoing as part of phonics and maths play (iPads)	Linked to coding - understanding that robots and computers can only do as we tell them and not make inferences.	Design a robot Children design a robot to help them with their everyday lives. In groups, can they think of some of the INSTRUCTIONS that the robot will need to follow? Junk model this robot. Could they make it a costume for someone to wear?	STARTING SAFELY Safe carrying, use and care of computers and other hardware.	MAKE ME A ROBOT Follow oral instructions and not infer (as a robot wouldn't) Understand that computers don't THINK - they just follow the instructions given.	Coding Mice and challenge cards iPads Interactive White Boards

	Using ICT	Understanding Systems	Coding	eSafety	Innovation	Tools and Resources
			<u>Beebot City</u> Children are introduced to beebots as a means to entering simple instructions (code) into a computer. Children will need to predict how far these robots will travel and ther turns that they will need to make in order to reach an end destination. Children can use the clear, FD, BK, LT, RT functions on a probot and explain the impact these have upon the robot.		Suggest some clear and simple instructions for a robot to follow.	

	Using ICT	Understanding Systems	Coding	eSafety	Innovation	Tools and Resources
Year 2	<u>DEAR SANTA…</u> Explain how emails are similar to and different from traditional letters. Children can explain the terms sender, recipient, subject and body in reference to emails. Children send and reply to emails using the 2Simple software, ensuring their email has a RECIPIENT, SUBJECT and BODY.	<u>Dragging, Dropping, clicking and typing.</u> Children will use a number of Purple Mash resources to help them develop their computer literacy. 2drag multi (in the Computing area) will teach children how to drag and drop items on a page, which they will need to do before they start manipulating coding blocks. 2type can also be used to introduce a quicker way to type and correct hand spacing on a keyboard (but also introducing where the letters and commands are).	<u>GIVING INSTRUCTIONS ON 2GO</u> children can successfully log in (safely) to PurpleMash. children can explain how 2Go is similar to 'real' robots used in Y1. Children can give a series of instructions to navigate an on-screen robot on 2Go. <u>INTRODUCING 2CODE</u> Children will independently begin to move through the tasks on 2code, using the linked videos to support their learning. A class teacher may decide to focus on one aspect of coding, and thus one particular activity, for a lesson.	<u>KEEPING IT SECRET</u> Children understand why we have passwords. Children keep passwords safe and don't try to find out other people's. Children start to understand what a good or bad password is.	<u>COMPUTERS IN THE YEAR 3000</u> Sequence computers, laptops and tablets and comment on trends over time. What does a computer need to do? Design a computer from the year 3000 – how will it look different?	iPads Interactive Whiteboards Chromebooks PurpleMash (2Simple) 2Drag 2Respond 2Email 2Go
	2Respond	2Drag 2Type	2Go			

	Using ICT	Understanding Systems	Coding	eSafety	Innovation	Tools and Resources
	2Email (See lesson 2 E-Safety Purple Mash & 2respond activities)		2Code - Fun with Fish Bubbles Air Traffic Control Snail Race Vehicles Turtle Haunted Scene Guard the Castle Princess and the Frog Sounds			
Year 3	<u>INTRODUCING GOOGLE DOCS</u> Children can use THE WAFFLE to find Apps Children Can open a Google Doc Children can give their work an appropriate file name Children can find their work again using the Waffle and Google Drive	<u>SAVE YOURSELF!</u> Children can explain the difference between internal, external, network and cloud storage. Understand that there are multiple areas that a folder can be saved to. Give appropriate names to files so they are easier to find and edit later.	<u>USING 2CODE</u> [unplugged] Code-sorters - children piece together code jigsaws and show using objects and pictures how this would look on the screen of an app. children continue to use 2Code to develop their understanding of block coding. They need to understand that instructions refer to a specific part of a game or app, and that each part needs its own code. <u>2CODE</u>	<u>BEAT THE HACKERS!</u> Children understand the value of safe, non-predictable passwords and can decide if a given password is secure or not. Children can suggest sensible passwords and file names for their online work (lnk to PurpleMash activities).	<u>CREATING A SAFE SPACE</u> Building on their knowledge of internal, external and cloud storage, children can create a 4th type of storage computers can use. FOCUS: How will it help keep people and their work safe? Will it use passwords? Fingerprints?	iPads Chromebooks 2Code Other 2Simple apps to support cross-curricular learning Google Docs Google Drive

	Using ICT	Understanding Systems	Coding	eSafety	Innovation	Tools and Resources
			Children will independently begin to move through the tasks on 2code, using the linked videos to support their learning. A class teacher may decide to focus on one aspect of coding, and thus one particular activity, for a lesson.	Children Understand the need to use 'avatars' and usernames online to protect their identities when working online. [It may need to be clarified that on a CLOSED SYSTEM such as purple mash, this doesn't need to be the case. Detective hacker activity. Show children a range of fabricated web pages about 3 online personalities. How much information could the children find on these pages? Could they use it to guess their passwords?	As part of this, discuss what safety features devices already have - e.g. phones and CBs. Children can design on paper, however there are PurpleMash apps that would also allow them to draw and 'present' their ideas. Any sheets into Science books!	
			Tick Tock Challenge Magician Jumping Monkey	2connect 2blog		

	Using ICT	Understanding Systems	Coding	eSafety	Innovation	Tools and Resources
			Superheroes Sparklers Rockets Night & Day Newton and the Apple Printing to the Screen Free Code Scenes	Spoof website: https://www.allaboutexplorers.com/		
Year 4	Introducing Google Classroom Children can log in to G Classroom and identify their class stream. Discuss appropriateness of comments on the board - it is a working wall! Children can complete and 'turn in' work on Google Classroom. Creating a presentation on Google Slides. Children can access google	How does the internet work? Children can explain how the internet connects computers. They can explain the pros and cons of such technology and start to understand the risks. Children use any cloud-based software, and also do so at home, to demonstrate that the company, not the person, holds the information, which allows them to work from anywhere. Without this technology, it would be like leaving a book at school.	PLAYER 1, LOADING... (UNPLUGGED). Children understand that video games work by following instructions and receiving commands. (when button x pressed, character does...). Children can play their own games (e.g. MyMaths) and can begin to understand how the code powers the sprite to move. (SPRITE - PICTURE OF A CHARACTER). Children can power a sprite on 2Code using button press and collision detection blocks (such as Knights and Castles).	THE OTHER ONLINE - VIDEOS, GAMING and TROLLING Children understand the need for a 'family' account for sites such as Youtube. Children can identify the difference between a constructive comment and a 'troll' comment on a video. Children can explain what they would do if they ever thought that content or	Designing a video game. Children understand and can show how computer games rely on 'when clicked/pressed' [command] instructions to work. (Link to unplugged and coding). They can explain the difference between a collection and platform game, giving some examples where appropriate. Children can use 2DIY to create	iPads Chromebooks 2Code Other 2simple software to support cross-curricular learning 2DIY Google Classroom Google Drive Google Slides

	Using ICT	Understanding Systems	Coding	eSafety	Innovation	Tools and Resources
	classroom to open a task. Children can post useful links onto the task feed and support each other. Children can enter text and image using the correct boxes to make a slide show. They can search by image on google and find appropriate results.		2CODE Children will independently begin to move through the tasks on 2code, using the linked videos to support their learning. A class teacher may decide to focus on one aspect of coding, and thus one particular activity, for a lesson.	comments are inappropriate for them. Children build on their Y3 learning to ensure that they don't use their proper name or address when working on sites such as Youtube, instead using an avatar, gamertag or username.	their own simple game, also investigating how scores, timers and lives are affected by code. (e.g. when coin collected, coin=HIDE, score increase by 1). Children can write these bits of code onto card to explain how their game works. Children can also write a review for each other's games using 2Simple software.	
			2Code: Gibbon Shapes Random Words and Wizards Traffic Lights Vehicles 2 Guard the Castle (Gibbon) Genie Switching Background			

	Using ICT	Understanding Systems	Coding	eSafety	Innovation	Tools and Resources
Year 5	SPREADSHEETS, SPREADSHEETS, SPREADSHEETS Children can enter and read data from a simple spreadsheet. Children refer to cells, data sets and formula on a spreadsheet. Children can code a formula to help a spreadsheet automatically update itself. Children can create graphs from a spreadsheet and interpret these graphs. Children can set a simple, conditional format to change colours of cells	HOW DOES A ROBOT MAKE FRIENDS? (links to coding). Children can follow the information on a flow chart to come to a conclusion. Children can produce a flow chart on paper, then on 2Question. Children can decode the binary (1001) inputs that help a robot decide. FINALLY, children can write in code how their flow chart works.	CONTINUING ON 2CODE Children continue to use 2Code to develop their understanding of block coding. They need to understand that instructions refer to a specific part of a game or app, and that each part needs its own code. 2CODE Children will independently begin to move through the tasks on 2code, using the linked videos to support their learning. A class teacher may decide to focus on one aspect of coding, and thus one particular activity, for a lesson.	CYBERBULLYING Children can explain what cyberbullying is, giving examples. Children understand the role that ALL App users have to keep one-another safe, and also the features on Apps that allow them to stay safe. Children can use Google Docs to produce a cyber bullying poster for someone YOUNGER, explaining the risks and consequences of cyber bullying.	THE JPHONE Children to timeline a selection of phones and make decisions about how trends and features have evolved over time. Children will work in groups to design a phone of the future. They may choose to draw, prototype or use Google Slides to present their	Chromebooks 2Code Google Classroom Google Docs Google Slides Google Sheets 2Publish (support esafety unit)

	Using ICT	Understanding Systems	Coding	eSafety	Innovation	Tools and Resources
	based on an input score (e.g. 1, 2, 3) Use Google Sheets to design a theme park, based on the coding they have used so far (limit of blocks = 50). (state links to app coding and how the computer 'reads' instructions in the formula box.)					
			Night and Day (Gibbon) Catherine Wheel Functions Splatty Bug Metric Conversions Helicopter Swipe Game Turtle Road Crossing			

	Using ICT	Understanding Systems	Coding	eSafety	Innovation	Tools and Resources
Year 6	WHAT'S A WHIZZY-WIG? Children understand that a WYSIWYG is a content-manage ment system that will help them to create a simple website or blog. Children can use the 'insert by search function of Google Sites to produce their own simple website linked to their topic and end of year production.	/ /	CODEHUNTERS [UNPLUGGED] Children use a selection of websites, apps and games and determine the strands of underlying code that power them. Show children the source code of a page to try and 'check' their predictions.	ONLINE SAFETY Children understand that they lose ownership of content, photos and information when they post it online. Children can explain the dangers and risks provided by online anonymity. Children understand the implications of cyber-bullying, sexting and how these link to ownership of content. Children can choose one aspect of e-safety and produce a leaflet explaining the risks and also the	THERE'S AN APP FOR THAT! Children to define different types of app (productivity, entertainment, etc.) Children will form an idea for a USEFUL app and explain how it will benefit users. Children will start to investigate the ways in which apps work and the needs of apps (e.g. Wifi/Data, camera functions). Children will use free-code (Gorilla) to code an approximation of their app (this will also show the written code	Chromebooks 2Code (Free Gorilla section for coding their app) Google Docs Google Slides Google Sheets Google Classroom Google Sites

	Using ICT	Understanding Systems	Coding	eSafety	Innovation	Tools and Resources
				precautions they could take.	behind each block, which they can they to edit instead). (Links to coding).	
	2blog		2Code: Send the Rocket to Space Catching Game Driving Game Dancer 2Go Football Game Feed the Duck			

Useful Websites/Apps
10 unplugged activities for Coding: https://www.digitalschoolhouse.org.uk/computing-at-home-10-activities **Unplugged Concepts from STEM** https://www.stem.org.uk/resources/collection/3909/computer-science-unplugged **Blockly: Games and puzzles to develop coding** https://blockly.games/

VOCABULARY

AREA	DESCRIBING CODE			WHAT'S IN MOST CODE?				MORE COMPLEX CODING		
VOCAB	COMMAND	ALGORITHM	(DE)BUG	OBJECT	ACTION	EVENT	OUTPUT	INPUT	VARIABLE	CONTROL
Definition	A single instruction in a computer program THEY WILL OFTEN INCLUDE AT LEAST AN OBJECT AND AN ACTION	A set of commands (instructions) that runs a computer program	A bug is a mistake in an algorithm or command When you debug some code… you fix the mistake!	A part of a computer program that can be changed or moved using commands	A type of command that makes an object DO SOMETHING	Something that causes a block of code to run	Information that comes out of your computer as a result of the algorithm… such as sounds or messages	When a computer asks you to type something in, like a password. This is either to store information or is part of a control instruction (eg if you get the password right, you can open the page)	This is something the computer stores or counts, like a score! Your actions can cause it to change… such as scoring more goals or collecting more coins	These commands help your computer to decide if and when to start using an instruction (such as a timer),or even how many times to do it
Examples may include	"Simon Says" "When I Tap your head, Jump" "When Clicked on Tuna, Tuna Moves Left"			Characters (Sprites) Backgrounds Pictures	Jump Move forwards Change colour or size	Collision Detection 'When Clicked' 'When Key' 'When Swiped'	Sounds Alerts and Messages (such as GAME OVER) Print to Screen	Username Password	Points Scores Scale (size of pictures)	Timers If If/Else Repeat Restart Launch