Computing
at
Worth Valley Primary School



Why we teach Computing at Worth Valley Primary School

Computing at Worth Valley Primary School intends to develop **'thinkers of the future'** through a modern, ambitious and realistic education in computing.

Our computing curriculum ensures pupils are well equipped with skills for the ever-changing world of technology that we live in.

At Worth Valley Primary School, we use a computing scheme called **Purple Mash** from EYFS to Y6. We aim to provide a computing curriculum that is designed to balance acquiring a broad and deep knowledge alongside opportunities to apply skills in various digital contexts.

Beyond teaching computing discreetly, we give pupils the opportunity to apply and develop what they have learnt across and alongside other subjects. Lessons are recorded in a big book for children to look through and reflect on their learning. We have organised days about keeping safe online for both the pupils and parents to encourage understanding about privacy and parental controls. Information is also shared through our website and newsletter for parents.

Our Values linked in the computing curriculum

One team	Respect	Trust	High expectations	Community
We work together as one team throughout our computing curriculum. Children will use their oracy skills to discuss new concepts and to help them to explore and develop new and existing computing skills. In order to overcome any barriers to their learning, children seek guidance from their peers as well as the staff, we work together to ensure all children develop their knowledge, understanding, confidence and independence with computing skills.	Having respect in all computing lessons allows children to develop sensible and rational thinking regarding how to keep safe online in different situations. Children accept that everyone has different opinions about different things whilst recognising that maintaining confidential and safety is a non-negotiable. Children learn to understand, recognise and respect that personal information using the computer needs to be confidential and safe.	Trust shows throughout our computing curriculum, where children learn to trust information online, what not to trust online and where to seek confirmation. Also children learn to trust what are safe and unsafe interactions online. Our children trust us to deliver and teach an exceptional curriculum that they all enjoy and access daily.	At Worth Valley primary school, our children always work to their full potential, achieving realistic milestones towards their progress. Our high expectations allow children to achieve in a space that encourages exploration and investigation; both of which help children to solve problems and reason successfully.	Children at Worth Valley Primary School will relate computing to their daily life in this ever changing world of technology. Children will understand how computing helps us to make sense of the world around us. Children develop an understanding of how the subject is critical in many areas including science and maths. Also how a solid understanding of computing skills are vital to them becoming a contributing part of our community and navigating the fast paced world we live in.

Computing Key Concepts

Children will develop a deep understanding of key concepts in computing as they move through the computing curriculum.

Key concepts have been identified as the core knowledge and skills required to successfully develop computing knowledge and understanding. Opportunities to revisit and develop these key concepts are planned out carefully as the children move through the school to ensure that they are firmly embedded within their long-term memory. The expectation is that, by the end of primary School, children will know and understand these key concepts to continue to build their computing knowledge as they transition to KS3 and eventually adult life navigating a world where ICT is now heavily relied upon.

We utilise the information provided within the National Curriculum regarding the key concepts of the ICT curriculum for primary schools:

'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.'

Computing Key Concepts

Technology

The key concept of technology in the primary computing curriculum is to help children develop the skills to use technology purposefully and creatively. It encourages them to understand the role of technology in the world around them, both in everyday life and in future careers.

Safety

The key concept of safety in the primary computing curriculum revolves around teaching children how to use technology responsibly, securely, and ethically. It is crucial that pupils are made aware of potential risks and the importance of maintaining their safety while engaging with digital tools, the internet, and online environments. The aim is to equip children with the skills to navigate the digital world safely, enabling them to protect themselves and others while interacting with technology.

Communicate

The key concept of **communication** in the primary computing curriculum focuses on teaching children how to use technology to share ideas, collaborate, and express themselves effectively. This concept encourages pupils to use digital tools and platforms to communicate in a variety of ways, ensuring they understand the value of both the technology and the responsibility that comes with using it. The aim is to help children realise that digital communication is a powerful tool for learning, creativity, and collaboration, while also teaching them how to use it safely and respectfully.

Media

The key concept of **media** in the primary computing curriculum focuses on teaching children how to create, manipulate, and evaluate different types of digital media. This includes images, sound, video, and animations, helping pupils understand how media can be used to express ideas, tell stories, and communicate messages effectively. The goal is to equip children with the skills to not only produce their own digital media but also understand how media is created, shared, and consumed, fostering both creativity and critical thinking in their use of technology.

Computing Second Order Concepts

Second Order Concepts

- responsibility The second-order concept of **responsibility** in the primary computing curriculum is about helping children understand their role in using technology in a safe, ethical, and respectful manner. It teaches pupils that with the power and capabilities of digital tools comes the need for responsible behaviour, both online and offline. This includes recognising the impact of their actions, respecting others, and being aware of the consequences of their decisions in the digital world.

- similarity & difference The second-order concept of **similarity and difference** in the primary computing curriculum encourages children to identify and understand how things are alike or different when working with digital technology. It helps them recognise patterns, compare digital tools or concepts, and appreciate both the similarities and the distinctions in their use or application. This concept supports critical thinking, problem-solving, and developing a deeper understanding of the subject.

- change under time The second-order concept of **change over time** in the primary computing curriculum helps children understand how technology evolves and how its use, impact, and applications have transformed throughout history. This concept encourages students to recognise that computing is not static, and that the tools, techniques, and ways in which we use technology are continually changing and advancing.

- chronology The key concept of **chronology** in the primary computing curriculum involves understanding the development and progression of computing technologies over time. This concept helps pupils to recognise key events, milestones, and advancements in the history of computing and how these changes have shaped the way technology is used today.

Curriculum Delivery

The discreet teaching of computing is delivered by teachers utilising the **PurpleMash** scheme of learning. The ICT curriculum is taught in a block over a week long period every half term from years 1 to 6. This is to ensure the ICT equipment and resources needed is accessible for all pupils. EYFS have their own supply of IPADS so that they can use ICT flexibly to support their knowledge, understanding and the development of skills through their topic based approach to learning.

The school delivers diverse and innovative lessons that are accessible for all. The use of technology enables the pupils to explore a variety of programs that exposes them to different areas of the computing curriculum. With the use of chromebooks and the computing suite, children are exposed to a modernised way of learning which is centred around the technology rich environment that we live in today.

Throughout the year, children experience classroom and computer-suite based learning and are encouraged to work productively often using their design skills to develop a new version within a particular medium. Children often have to coordinate their ideas with each other, in order to produce a final product which may be a program, an animation, or a range of other content. Each area gives them the opportunity to express themselves creatively and provides them with a platform for achievement within another area of the curriculum. The aim is to motivate, inspire and engage the children and to give them confidence to discover their abilities within the wider curriculum.

Curriculum Delivery

The computing curriculum is broken down into 3 strands:

-Computer science
-Digital Literacy
-Information technology

Computing is a practical subject, in which invention and resourcefulness are encouraged. The ideas of computing are applied to understanding real-world systems and creating purposeful products. The role of programming in computer science is similar to that of practical work in the other sciences –it provides motivation, and a context within which ideas are brought to life.

Digital literacy is the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills Bringing digital literacy into the classroom is key to nurture students who are able to understand the basics of internet safety including creating strong passwords, understanding and using privacy settings, and knowing what to share or not on social media. They can also be supported in understanding the dangers of cyberbullying and seeking help.

Information technology deals with applying computer systems to solve real-world problems, such as finding things out, exchanging and sharing information, and reviewing, modifying and evaluating work.

Curriculum Coverage

COMPUTER SCIENCE

DIGITAL LITERACY

INFORMATION TECHNOLOGY

Worth Valley Primary School Long Term Plan- COMPUTING						
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer2**
Early Years	Safety and privacy Technology around us	Using Purple Mash with an Individual Login	Mouse & Trackpad Skills Keyboard Skills	Drawing skills Robots	Sounds Quizzzes	Hardware Photography
Year 1	Online safety - 4 Technology outside school 2	Coding 6	Lego Builders - 3 Maze Explorer - 3	Animated Story Books - 5	Grouping & Sorting - 2 Pictograms - 3	Spreadsheets - 3
Year 2	Online safety - 3 Effective searching - 3	Coding - 6	Spreadsheets - 4 Making Music - 3	Questioning - 5	Creating Pictures - 5	Presenting ideas - 4
Year 3	Online safety - 3 Simulations - 3	Coding - 6	Spreadsheets - 3 Graphing - 2	Touch Typing - 4 Branching Databases - 4	Email (Including Email safety) - 6	Presenting - 6

Curriculum Coverage

COMPUTER SCIENCE

DIGITAL LITERACY

INFORMATION TECHNOLOGY

Year 4	Online Safety - 4 Hardware investigators - 2	Coding - 6		Spreadsheets - 6	Writing for different Audiences - 5	Effective searching - 3 Animation - 3	Logo - 4 Making Music - 4
Year 5	Online safety - 3 Concept maps - 4	Coding - 6		Word Processing - 8	Game creator - 5 3D Modelling - 4	Databases – 4 External Devices - 6	Spreadsheets - 6
Year 6	Online safety -2 Blogging - 4	Coding - 6		Text Adventures – 5 Networks - 3	Understanding Binary - 4	Quizzing - 6	Spreadsheets – 6.9 – 8, 6.3 - 5

EYFS end points

Unit Theme	End Points
 Mouse and Trackpad skills	I can hold a computer mouse with my finger on the correct buttons.
	I can use a mouse to make the cursor move around the computer screen where I want it to go.
	I can click the correct mouse button to play games on the computer.
	I can use a mouse accurately to click and drag objects on the screen.
	I can use the mouse roller to scroll up and down a page.
	I can use a laptop touchpad

EYFS end points

Unit Theme	End Points
 Keyboard skills	I can find all the letters of the alphabet on a keyboard.
	I can put spaces between words in my typed work.
	I know how to correct typed work without re-doing the work entirely using the delete keys.
	I can type capital letters and lower case and know how to change between these
	I can type numbers using a keyboard.
	I know how to move to the next line down when typing.
	I can use the arrow keys to move around the screen
	I can use the different inputs of a computer keyboard.

EYFS end points

Unit Theme	End Points
 Drawing skills	I can select colours when painting on the computer.
	I can draw pictures on the computer to go with my work.
	I can use a computer to draw with different widths of pens.
	I can try the different tools that I can draw with on the computer.
	I can use the undo button correctly.
	I can use the erase button.
	I can use a touchscreen device purposefully.

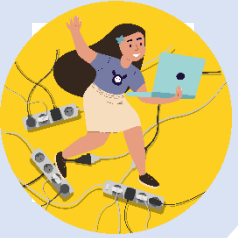
EYFS end points

Unit Theme	End Points
 Robots	I can talk about where I am moving a toy vehicle whilst I am moving it.
	I can describe the route taken by a toy vehicle.
	I can follow directions to make a route for a toy vehicle.
	I can plan a route for a toy vehicle.
	I can follow my own plan for where the toy vehicle should move.
	I can make a floor robot move.
	I can control the forwards, backwards and rotation of a floor robot one step at a time.
	I can program a 3-step route for a floor turtle.
	I can predict where a floor robot will end up when given the instructions for a 2 or 3 step route.
	I can plan a route for a floor robot and then carry out these instructions one step at a time.
	I can plan a route for a floor robot and then carry out these instructions more than one step at a time.

EYFS end points

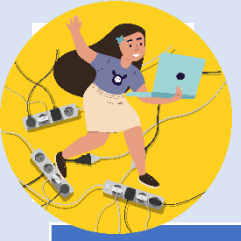
Unit Theme	End Points
 Sounds	I can make music using a computer.
	I can add sound effects to my work.
	I can use a device to record myself speaking and play back the sounds.

Unit Theme	End Points
 Photography	I can talk about what photos show.
	I can take photos using a digital device.
	I can use the webcam in Mini Mash.
	I can open photos in Purple Mash.
	I can open photos that I have taken, in Purple Mash.



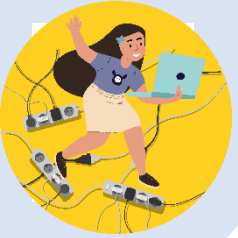
EYFS end points

Unit Theme	End Points
 Technology around us	I can talk about what technology is used at home.
	I can talk about what technology is used outdoors.
	I can talk about what technology is used in the world around me.



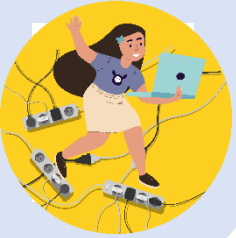
EYFS end points

Unit Theme	End Points
 Hardware	I can understand why having clean hands is important when using shared devices.
	I can understand why it is not sensible to eat and drink whilst using a technological device.
	I can understand why I need to take care with electronic devices and their plugs and wires.
	I can take appropriate actions when I need to carry a device to a different location.
	I can use devices with care.
	I can identify the technology used around me.
	I can identify the parts of a computer and what they are for.



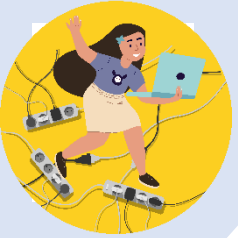
EYFS end points

Unit Theme	End Points
 Safety and Privacy	I can explain how my work on the computer belongs to me and other people's work belongs to them.
	I can explain what it means for something to be private.
	I can talk about how my body feels when I am not comfortable with something.
	I know who can help me when I am feeling worried.
	I can show that I understand how to be kind to others.
	I can choose activities in my free time that help me to be healthy.



EYFS end points

Unit Theme	End Points
 Quizzes	I can understand what a quiz is.
	I can complete a multiple-choice quiz.
	I can complete a sequencing quiz.
	I can type answers to quiz questions.
	I can complete a cloze quiz.
	I can complete a matching quiz.
	I can complete a sorting and sequencing quiz.
	I can complete quizzes on the computer.
	I can play games that ask me questions.



EYFS end points



Using Purple Mash with an Individual login

I can get to the Purple Mash page on my device at school and at home.
I can login to Purple Mash \ Mini Mash in school using the shortcut icon.
I can login to Purple Mash and Mini Mash using my username and password.
I can login to Purple Mash a Mini Mash using my username and password.
I can login to Purple Mash a Mini Mash using my username and password.
I can save work in my own tray\ folder when I am using Mini\Purple Mash.
I can open work that I have done earlier.
I can find and complete 2Dos that my teacher has set for me

Year 1 end points

Unit 1.1 – Online Safety • Knows how to log in safely.

- **Knows how to navigate to a document area where saved work by child can be found.**
- **Knows how to use search to locate applications or resources on a platform such as Purple Mash.**
- **Knows how to enhance work by adding multimodal items such as text and images.**
- **Knows how to open, save and print work.**
- **Knows the importance of logging out of an account.**

Unit 1.5 – Maze Explorers

- **Knows the functionality of the direction keys in 2GO.**
- **Knows how to create and debug a set of simple instructions (algorithm).**
- **Knows how to use the additional direction keys within 2Go as part of an algorithm.**
- **Knows how to change and extend the algorithm list in 2Go.**

Unit 1.2 – Grouping & Sorting

- **Knows how to sort items using a range of criteria.**
- **Knows how to use software for grouping items such as tools within Purple Mash.**
- **Knows that computers need steps of instructions in order in their programs.**

Unit 1.3 - Pictograms • Knows that data can be represented in a picture format e.g. pictogram.

- Knows how to contribute to a class pictogram.
- Knows how to use a software such as 2Count to record results of an experiment into a pictogram format.

Year 1 end points

Unit 1.6 – Animated Story Books • Knows what e-books are.

- **Knows of software such as 2Create a Story that allows users to create interactive stories.**
- **Knows how to add animation to an interactive story.**
- **Knows how to add sound, including voice recordings and music to a story they have created using software.**
- **Beginning to know how to work on more complex digital stories, including adding backgrounds, copying and pasted pages.**
- **Knows how to share digital stories with others such as using Digital Display Boards.**

Unit 1.7 – Coding

- **Knows what instructions are and can predict what might happen when they are followed.**
- **Knows how to plan and make a simple computer program e.g. fish moves right, crab moves up.**
- **Knows what objects, actions and backgrounds are within a coding environment.**
- **Knows what an event is and knows how to use an event to control an object.**
- **Beginning to know how code executes when a program is run.**

Unit 1.4 – Lego Builders

- **Knows how to compare the effects of adhering strictly to instructions when completing tasks without complete instructions.**
- **Knows how to follow and create simple instructions on the computer.**
- **Knows that the order of instructions affects the end result for a given instructional task.**

Unit 1.9 – Tech Outside School

- Knows that technology is a use of knowledge to invent new devices or tools.
- Knows that throughout history, technology has made people's lives easier.
- Knows that technology is used within school and outside of school.
- Knows where examples of technology can be found both in and out of school.

Year 2 end points

Unit 2.1 – Coding

- Knows what an algorithm is and can explain that it is a set of instructions and that algorithms follow a sequence.
- Knows how to create a computer program using an algorithm.
- Knows how to create a computer program from a given design.
- Knows that collision detection is an event type in coding.
- Knows how to design an algorithm that follows a timed sequence.
- Knows that different objects within the coding environment have different properties.
- Knows that there are different events in coding and knows what some of these events are.
- Knows the function of buttons in the coding environment.
- Knows how to interpret and debug simple programs.

Unit 2.2 – Online Safety

- Knows how searches can be refined when searching digitally and therefore attempts refining when searching.
- Knows that digitally created work can be shared with others e.g. Purple Mash Display Boards.
- Has knowledge and understanding about sharing more globally on the Internet.
- Knows that email is a type of communication tool.
- Knows how to open and send simple online communications in the form of email e.g. 2Email (virtual email client).
- Knows that there is an appropriate way to communicate with others in an online situation.
- Knows that information put online leaves a digital footprint.
- Knows some steps that can be taken to keep personal data and hardware secure.

Year 2 end points

Unit 2.3 – Spreadsheets

- Knows what a spreadsheet looks like and how to describe rows and columns.
- Can add images to a spreadsheet and assign them values.
- Knows what totalling tools are and how to use them.
- Knows how to use a spreadsheet to perform calculations for purpose. For example, adding and totalling money.
- Knows how to use some tools within a spreadsheet to support calculations. For example, using the equals tool in 2Calculate to check calculations.
- Knows how to create a simple graph within a spreadsheet from data.

Unit 2.4 – Questioning

- Knows that pictograms provide limited information.
- Knows that there are other data handling tools that can give more information than pictograms.
- Knows how to use yes/no questions to separate information.
- Knows how to construct a binary tree to identify items.
- Knows how to use a binary tree database (such as 2Question), to answer questions.
- Knows how to use a database to answer more complex search questions.
- Knows how to use a search feature at a basic level when trying to locate data within a database such as 2Investigate.

Unit 2.5 – Effective Searching

- Knows the meaning of key Internet and searching terms.
- Knows the basic parts of a web search engine page.
- Knows how to navigate a web search results page.
- Knows how to search the Internet to some degree for answers to a quiz.
- Knows the premise of what effective Internet searching is.

Unit 2.6 – Creating Pictures

- Knows the purpose and benefits of painting software tools such as 2Paint a Picture.
- Knows how to recreate Impressionism, surrealism and Pointillism using features within 2Paint a Picture.
- Knows how to reproduce the style of William Morris by using repeating patterns, manipulating patterns and adding multiple effects in painting software such as 2Paint a picture.

Unit 2.7 – Making Music

- Knows how to make forms of music (digitally) using ageappropriate software such as 2Sequence.
- Knows how to edit and combine sounds using 2Sequence.
- Knows how to refine composed music.
- Knows how to upload/import and record sounds beyond the software environment.

Unit 2.8 – Presenting Ideas

- Know that digital content can be presented in many different forms e.g. stories.
- Know how to use presentational or interactive software such as a quiz, making improvements to it based on people feedback.
- Know that data can be structured in tables to make it useful for an audience.
- Know how to add images such as clipart and photos to presentational software.
- Know how to collect, organise and present data and information in digital format.

Year 3 end points

Unit 3.1 – Coding

- Knows what a flowchart is and how flowcharts are used in computer programming.
- Knows how to use a flowchart to create a computer program.
- Knows that there are different types of timers used in coding environments such as 2Code.
- Knows which timer should be used for a given purpose.
- Know what a repeat command is and how to use the repeat command.
- Know how to create a range of programs using coding knowledge.
- Know how to run, test and debug their own programs.
- Know what nesting is and that this should be considered when debugging.
- Know how to change attributes/properties of any objects in a program they have made.

Unit 3.2 – Online Safety

- Knows what makes a safe password and how to keep it safe.
- Knows the main outcomes of not keeping passwords safe.
- Knows all the common ways the Internet enables people to effectively communicate.
- Know that a blog can be used to help communicate with a wider audience.
- Know how to contribute to a blog with clear and appropriate messages.
- Know that some information held on websites may not be accurate or true.
- Beginning to know how to search the Internet and how to think critically about the results returned.
- Know why there are age restrictions on digital media and devices.
- Know where to turn to for help if they see inappropriate content or have inappropriate contact from others.

Year 3 end points

Unit 3.3 – Spreadsheets • Know how to create tables of data within a spreadsheet.

- Can correctly use cell addresses to describe locations on a spreadsheet.
- Can follow the steps for using the formula wizard to insert formulae.
- Know how to use a spreadsheet program to automatically create charts and graphs from data.
- Know how to use various tools within a spreadsheet to support solutions to calculations. For example, the timer, random number generator and spin tool.

Unit 3.4 – Touch Typing • Know typing terminology including names of fingers.

- Know the home, top and bottom row sections on a keyboard.
- Knows the keys typed with left hand.
- Knows the keys typed with right hand.
- Knows the correct way to sit at a keyboard.

Unit 3.5 – Email

- Know the different methods of communication and know the strengths and weaknesses of his form.
- Know how to open and responding to email.
- Know how to use an address book to write an email.
- Know how to use an email environment safely including the importance of the draft feature.
- Know how to add attachments to an email.
- Know what CC means and how to use it.

Unit 3.6 – Branching Databases • Know how to sort objects using just YES/NO.

- Know how YES/NO questions are structured and answered.
- Know how to complete a branching database.
- Know how to edit and adapt a branching database.
- Know how to create a branching database including debugging it.

Unit 3.7 – Simulations

- Know that a computer simulation can represent real and imaginary situations.
- Know advantages and problems of using simulations.
- Know how to use a simple simulation to try out different options and test predictions.
- Begin to know how to evaluate simulations by comparing them with real simulations and considering their usefulness.

Unit 3.8 – Graphing

- Know how to set up a graph with a given number of fields using graphing software (2Graph).
- Know how to enter data for a graph.
- Know how to select the most appropriate chart type for their data and explain reasoning.
- Know how to sort data in graphing software to enable easier analysis.

Unit 3.9 – Presenting

- Know what a presentation is and how it can be used.
- Know how to add pages/slides, text and shapes to pages, and also format them.
- Know how to add media such as images, audio and videos.
- Know how to use effects and features such as animations and slide transitions.
- Know how timings can help when presenting and know how to include them in presentations.
- Know how to effectively present to an audience using presentation software.

Unit 3.10 – micro:bit

- Know that a micro:bit is a small computer that needs instructions (code) in order to make it work.
- Know that is has an LED display output that can be used to represent pictures, numbers and words.
- Know how to use the simulator to test code.
- Know how to transfer code from the coding environment onto a micro:bit.
- Know how to code the micro:bit using Free Code for LED outputs and sound outputs.
- Know how to code the micro:bit using Free Code so it can receive inputs from its buttons and accelerometer.
- Know how to code the micro:bit to create events such as playing a tune when an input is detected.

Year 4 end points

Unit 4.1 – Coding

- Begin to know what selection is in computer programming.
- Know how an IF statement works.
- Know how to interpret an IF statement and therefore know how to create a program that includes an IF statement.
- Know how to use co-ordinates in computer programming.
- Know what the 'repeat until' command is.
- Know how an IF/ELSE statement works.
- Know what a variable is in programming.
- Know how to use variables within their programs.
- To know how to create a playable game using a block coding environment.

Unit 4.2 – Online Safety

- Know that information put online leaves a digital footprint or trail and can expand on prior years' scope of this fact.
- Know some of the ways children can protect themselves from online identity theft.
- Know that information put online by users could be used for identity theft.
- Know the main risks and benefits of installing software and applications.
- Know that copying work of others and presenting it as their own is plagiarism.
- Knows the consequences of plagiarism.
- Knows appropriate behaviour when participating or contributing to collaborative online projects for learning. • Know some of the main positive and negative influences technology has on health and the environment.
- Knows the importance of balancing screen time with nonscreen time.

Year 4 end points

Unit 4.4 – Writing for Different Audiences • Know how font size and style can affect the impact of a text.

- **Know how to use a simulated scenario to produce a news report and campaign using technology.**

Unit 4.5 – Logo • Know the structure of the coding language of Logo.

- **Know how to input simple instructions in Logo language environment.**
- **Know how to create letter shapes using Logo.**
- **Know what the repeat function in Logo is and its usefulness. Use it to create shapes such as squares.**
- **Know what procedures are and use this knowledge to build procedures in Logo.**

Unit 4.6 – Animation

- **Know how animations are created by hand.**
- **Know how animations are created using computers.**
- **Know what onion skinning is when referring to animation.**
- **Know that animations can be enhanced using features in software such as background and sounds.**
- **Know what 'stop motion' animation is.**

Unit 4.7 – Effective Searching

- Know how to find information from a search results page.
- Know how to search effectively to find out information.
- Know how to identify if an information source is true and reliable.

Year 4 end points

Unit 4.8 – Hardware Investigators • Know there are key parts that make up a computer.

- **Know what each of the key parts is called and the function of them.**

Unit 4.9 – Making Music • Know the main elements of music.

- **Know what rhythm and tempo is and able to use this knowledge to experiment with it.**
- **Know that computers can be used to create music compositions.**
- **Know how to apply knowledge of music to create own composition using software.**

Unit 4.10 – Artificial Intelligence

- **Know the basic concept of what artificial intelligence is.**
- **Know the key impact of artificial intelligence on daily life.**
- **Know real-life examples of the current use of artificial intelligence.**
- **Know how to think critically about artificial intelligence including its use in the future.**
- **Know how to utilise artificial intelligence to create media such as images and music.**

Unit 4.11 – Physical Devices: micro:bit

- Know how sensor inputs from the accelerometer can be used to detect movement.
- Know that variables are containers for storing data that can be accessed and updated.
- Know that inputs, outputs and computer code can work together to make control systems.
- Know that logic can be used to make different outputs occur according to inputs by using IF/ELSE statements in code.
- Know how to use infinite loops in control systems to monitor real-word environment changes.

Year 5 end points

Unit 5.1 – Coding

- Begin to know how to simplify code in order to make own programming more efficient.
- Know how to create a simple simulation using 2Code. For example, a traffic light sequence.
- Know what decomposition and abstraction are in computer science.
- Know the need to start coding at a basic level of abstraction to remove superfluous details from own programs.
- Know how to use decomposition to make a plan of a real-life situation.
- Know what a function is in coding and know how to use a function in own program to make it more efficient.
- Know what different variable types are.
- Know what strings are and how to use them.
- Know how to set and change variable values in code.
- Know some of the common ways that text variables can be used in programming.
- Know and use concatenation in own programs.

Unit 5.2 – Online Safety

- Know in more detail from prior learning of the impact that sharing digital content can have.
- Know how to think critically about information they share online.
- Know responsibilities they have for themselves and others regarding online behaviour.
- Know and have developed knowledge from prior years about maintaining secure passwords.
- Know about image manipulation using software and the advantages or disadvantages of this when shared online.
- Know what is meant by appropriate and inappropriate text, photographs and videos.
- Know about the impact of sharing media such as photographs and videos online.
- Know about the importance of citing content online from others and know how to do this.
- Know how to select keywords and search techniques to find relevant information to increase reliability.

Year 5 end points

Unit 5.3 – Spreadsheets

- **Know how to use formulae within a spreadsheet to convert measurements of length and distance.**
- **Know how to use more advanced formulae effectively. For example, to use formulae to calculate area and perimeter of shapes.**
- **Know how spreadsheet can be used to model real life situations in order to analyze data, solve problems or test a hypothesis.**

Unit 5.4 – Databases • Know how to search for information within a database.

- **Know the different ways to search for information in a database.**
- **Know how to add information into a shared database.**
- **Know how to create own database.**
- **Know how to create new records.**
- **Know what fields are and know how to correctly add information.**
- **Know how to phrase questions so they can be correctly answered using a search of database.**

Unit 5.5 – Game Creator

- **Know what some of the main elements are that make a successful game.**
- **Know how to plan a playable game.**
- **Know how to incorporate media such as sound and images.**
- **Know how to manipulate media including adding animation.**
- **Know how to successfully evaluate games.**

Unit 5.6 – Modelling

- Know what modelling software is and the skills of computer aided design.
- Know the effect of moving points when designing.
- Know how to design a 3D model to fit certain criteria.
- Know how to refine and print a model.

Year 5 end points

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- **Know how to use formulae within a spreadsheet to convert measurements of length and distance.**
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Year 5 end points

Unit 5.7 – Concept Maps

- Know the need for visual representations when generating and discussing complex ideas.
- Know the uses of a 'concept map'.
- Know what is meant by 'concept map', 'stage', 'nodes' and 'connections.'
- Know how to create a concept map using software such as 2Connect.
- Know that concept maps can be used to retell stories and information.
- Know how to present a concept map to an audience.

Unit 5.8 – Word Processing

- Know what a word processing tool is for.
- Know how to create a word processing document.
- Know how to alter the look of text and navigate around a document.
- Know how to alter page layout including heading and columns.
- Know how to add and edit images.
- Know how to add features to enhance look and usability within a document. For example: textboxes, hyperlinks, contents pages.
- Know how to use tables to present information.

Unit 5.9 – External Devices

- Know what a host means in the context of 2Code Purple Chip and relate this to everyday technology e.g. console and wireless controller.
- Know what is meant by external device in relation to a host device.
- Know what is meant by an application (App).
- Know that a program can be created that will interact with an external device based on inputs and outputs available on the device and what has been coded on the host device. E.g. sound detection on the device sends input to the program triggering code to output alert noise to the device (Simple intruder alarm).
- Know how interaction between an external device and host can be related to real world scenarios, recognising its usefulness.
- Know the extent of functionality with Purple Chip including the code blocks available.
- Know how to utilise the functionality of Purple Chip when designing own program.

Unit 5.10 – Physical Devices: micro:bit

- Know how sensor inputs from the accelerometer can be used to detect movement gestures.
- Use variables to store data from the sensors.
- Use variable to control selection within the program.
- Know how to simulate a control system using the micro:bit temperature sensor
- Know how to connect physical equipment within circuits incorporating the micro:bit and write code to respond to external inputs from these.

Year 6 end points

Unit 6.1 – Coding

- Know how to implement a game which includes timers and a score.
- Know what the launch command is.
- Build on knowledge of functions.
- Know how to use multiple functions in own program.
- Know how to arrange code in multiple tabs.
- Know how to develop creativity when coding to generate novel effects.
- Know the different options of generating user input in 2Code.
- Know how to attribute variables to user input.
- Know the need to code for all possibilities when using user inputs.
- Know how 2Code can be used to make a text-based adventure game.
- Know with improving understanding of how they can alter existing programs to reflect their own ideas.
- Building on existing knowledge of debugging, children know how to debug more effectively.

Unit 6.2 – Online Safety

- Know the benefits and risks of mobile devices broadcasting the location of the user/device, e.g., apps accessing location.
- Know what secure sites are.
- Know that secure sites will have industry standard seals of approval.
- Build on knowledge of Digital Footprints. For example, know how and why people use their information.
- Build on knowledge of appropriate online behaviours and how this can protect themselves and others from possible online dangers. For example, the dangers of promoting inappropriate content online.
- Have greater knowledge of how to make more informed choices of how free time is used.
- Know the effects on individual health when having too much screen time.

Year 6 end points

Unit 6.4 – Blogging

- Know the purpose of writing a blog.
- Know the features of successful blog writing.
- Know how to plan a blog.
- Know how to write a blog.
- Know how to write a blog post.
- Know that the way information is presented within a blog has an impact upon the audience.
- Know how to contribute to others' blogs.
- Know the importance of having an approval process when creating blog content or modifying it.
- Know from Online Safety knowledge that content within blogs applies. For example, children know the issues surrounding inappropriate posts and cyberbullying.

Unit 6.5 – Text Adventures • Know what a text based adventure

is.

- Know how to convert a simple story with 2 or 3 levels of decision making into a logical design.
- Know how to use the functionality of 2Create a Story Adventure mode to create, test and debug using plans.
- Know the difference between a map-based game and a sequential story-based game.
- Know how to use written plans to code a map-based adventure using 2Code.
- Know how to recall existing knowledge to support coding a map-based adventure game. For example, using functions, two-way selection (IF/ELSE statements) and repetition.

Unit 6.6 – Networks

- Know the difference between the World Wide Web and the Internet.
- Know what a WAN and LAN is and the key differences between them.
- Know how a school network accesses the Internet.
- Know the history of the Internet.
- Know some of the major changes in technology which have taken place in their lifetime.

Unit 6.7 – Quizzing

- Know how to use create activities for younger children using software such as 2DIY.
- Know about different question types within quizzing software tools such as 2Quiz.
- Know how to give and respond to feedback based on quizzes made.
- Know how to create their own grammar games.
- Know how to use multiple pieces of software to enhance a quiz. For example, creating a quiz that requires children to look up information on a database.

Year 6 end points

Unit 6.8 – Binary

- Know that all data in a computer is saved in the computer memory in a binary format.
- Know that binary uses only the integers 0 and 1.
- Know that we can relate 0 as an 'off' switch and 1 to an 'on' switch.
- Know how to count up from 0 in binary using visual aids if required.
- Know that bits are related to computer storage.
- Know how to convert numbers to binary using the division by two method.
- Know how to use a converter tool to check binary conversions.

Unit 6.9 – Spreadsheets

- Know the uses of spreadsheets and familiar with the spreadsheet environment.
- Know how to navigate around a spreadsheet using cell references.
- Know key vocabulary: Cells, columns, rows, cell names, sheets, workbooks.
- Know how to use a spreadsheet to carry out basic calculations including addition, subtraction, multiplication and division formulae.
- Know how to use the series fill function.
- Know that using formulae allows the data to change and the calculations to update automatically.
- Know how to use a spreadsheet to solve a problem.
- Know how to use the SUM function.
- Know how to manipulate the way data is presented. For example, flash fill, convert text to tables, splitting cells, sorting data.
- Know what is meant by a delimiter.
- Know how to create formulae that deals with percentages, averages, max and min.
- Know what range notation is.
- Know that there are ways to present data graphically.

Know how to use charting features to create charts from data in cells.
Know how to use sparklines and data bars to illustrate data.
Know the advantages to using formulae when data is subject to change in a spreadsheet.
Know how to print spreadsheets.

Vocabulary across the Curriculum

Vocabulary is carefully structured to deepen children' understanding as progress through the curriculum.
In the early years, children are introduced to basic computing terms.
As they move up the year groups, more complex vocabulary is gradually introduced.
By upper Key Stage 2, children engage with specialised terminology.

The consistent reinforcement and expansion of vocabulary across the units ensure that children are not only able to describe the understanding, knowledge and skills they are learning but allows them to become an active member in society where technology is growing all around them.

Please visit the link to see our vocabulary progression through the PurpleMash scheme

Computing Vocabulary

Curriculum for All

The strength of computing is that it can provide equality of access to the curriculum for all learners, which either as an aid to communication or a means of controlling their environment, as well as an integrated aid to learning.

Computers are becoming an everyday fact of life in our schools. It is important, therefore, that all pupils irrespective of needs, skills and backgrounds, etc. feel comfortable with them.

Careful planning is necessary to ensure that all children have sufficient time to develop and implement their computer skills.

All teachers are role models for pupils. Teachers should be aware of their influence on pupils and develop their own confidence and competence in the use of the computer.

Curriculum in Early Years

In **EYFS**, the focus is on giving young pupils a **positive and safe experience** with technology while introducing them to key concepts such as basic problem-solving, creativity, collaboration, and digital literacy. This sets the foundation for more advanced learning in computing in later years. Through exploration, play, and guided activities, children develop confidence and competence in using technology, which will serve them well as they progress through their education.

Key Areas of the Early Years Computing Curriculum

1. **Understanding the World (Technology)**
2. **Problem Solving and Early Programming**
3. **Digital Literacy and Online Safety**
4. **Creativity Using Technology**
5. **Communication Using Technology**

How do we cater for SEND?

Computing is accessible to all learners with some adaptation being made for our children with additional needs. Some elements of the computing curriculum is highly personalized and flexible depending on the child's needs. Within our resourced provision, computing is woven into the topic based curriculum alongside other subjects. This is with careful planning, structure, and support helps pupils to build skills in problem-solving, creativity, communication, and digital literacy.
By using accessible technology, providing clear instructions, and maintaining a calm, structured environment, pupils can develop essential skills that will support their overall growth and learning.

Accessible Technology: Technology tools that are age-appropriate, user-friendly, and provide clear, intuitive interfaces. Tools that have visual prompts, simple icons, and voice feedback can be especially helpful.

Hands-On, Interactive Learning: Interactive, hands-on tools such as programmable toys (e.g., **Bee-Bots**, **Code-a-pillar**) or tablets with educational apps (e.g., **iPad apps** for learning letters, numbers, or shapes) can be great for helping children engage actively in computing tasks.

Simple Communication Tools: Introduce simple, assistive communication tools (e.g., **PECS (Picture Exchange Communication System)** apps or **Boardmaker**) to help students with limited verbal communication express themselves more easily using digital means.

Social Skills Training Through Technology: Use role-playing apps or interactive games to teach social skills in a low-pressure environment, allowing students to practice greetings, turn-taking, and other basic social interactions.

Sensory Sensitivity: Many children with autism have sensory sensitivities, so the choice of digital tools and the learning environment should take these into account. Ensure that the technology is easy to use, with adjustable volumes and brightness to avoid overwhelming the student.

Assistive Technologies

Augmentative and Alternative Communication (AAC): For students with limited verbal communication, AAC apps and devices can help facilitate their learning and expression. Examples include **Proloquo2Go** or **LAMP Words for Life**, which support students in communicating their thoughts.

Text-to-Speech and Speech-to-Text Tools: Use speech-to-text apps or tools like **Read&Write** or **Microsoft Immersive Reader** to assist students who struggle with writing or reading, allowing them to participate more effectively in computing tasks.

Parental and Professional Support

Collaboration with Parents and Caregivers: Engage parents and caregivers in the process, providing them with tools and resources to support their child's learning at home. Communication apps, shared resources, or specific learning apps can be beneficial at home as well.

Involvement of Specialists: Work with speech and language therapists, occupational therapists, and other professionals to incorporate assistive technologies or specialized strategies tailored to the child's needs.

Cross Curricular Links

Mathematics

Problem Solving and Algorithms: Computing teaches logical thinking and problem-solving, which are foundational skills in mathematics.

Data Handling: Pupils can use spreadsheets to input, sort, and analyse data, as well as create graphs and charts. This is directly related to understanding and interpreting data in math.

Geometry and Shapes: In coding, pupils can learn about shapes, coordinates, and angles by programming movements in games or animations. For instance, they can code a character to move along a grid or design shapes in a graphical environment, helping to reinforce geometric concepts.

Science

Scientific Simulations and Modelling: Pupils can use computing tools to simulate scientific processes, like ecosystems, the water cycle, or basic chemical reactions. Platforms allow pupils to create digital representations of scientific concepts and explore how changes affect outcomes.

Data Collection and Analysis: Computing supports data collection in scientific investigations. Pupils can use tools to record data (e.g., using spreadsheets or sensor-based technologies) and then analyse this data to draw conclusions.

Modelling in Physics: Pupils can use coding and simulations to explore concepts in physics, such as forces, motion, and light. For example, they could simulate the movement of objects or the effects of forces on different materials.

English and Literacy

Storytelling and Creative Writing: Pupils can use digital tools to create and present stories, such as through interactive books, animations, or digital art.

Research and Information Retrieval: Computing helps pupils to develop research skills by searching for information online, evaluating sources, and compiling research for projects or presentations. This links to literacy as they analyse and collect information from multiple sources.

E-books and Digital Publishing: Pupils can write, edit, and publish their own digital books or blogs, applying language and writing skills to digital platforms. This allows them to explore aspects of English in a new, creative way, such as writing dialogue for digital characters or creating multimedia stories.

Cross Curricular Links

Geography

Mapping and Geography Tools: Pupils can use mapping software, such as **Google Earth** or other GIS tools, to explore geographical features, climates, and environments. In computing, they can also learn how to create their own maps or digital representations of locations.

Data Visualization in Geography: Using spreadsheets or graphing tools, pupils can collect and analyse data related to geography, such as weather patterns, population statistics, or environmental changes, and create visualizations like graphs and charts.

Global Awareness: Through the internet and digital communication tools, pupils can connect with peers around the world, learn about different cultures, and engage in global discussions related to geography and environmental issues.

Art and Design

Digital Art Creation: Pupils can create digital art, learning how to use various brushes, textures, and techniques to express their creativity.

Graphic Design: Pupils can design posters, logos, or advertisements using design software, helping them understand design principles such as layout, colour theory, and typography.

Animation and Storyboarding: Computing tools allow pupils to create animations or digital films, integrating visual arts with technology. Students can animate their drawings or create digital collages to express their artistic ideas.

History

Research and Presentation: Computing helps pupils conduct historical research by accessing digital archives, databases, and online resources. They can then use tools like **PowerPoint**, **Prezi**, or **Google Slides** to present their findings creatively.

Exploring the Past Through Digital Media: Pupils can access historical documents, images, and videos online to explore historical events. They can also create animations or videos to depict historical scenarios, linking their digital work with historical inquiry.

Cross Curricular Links

Music

Digital Music Composition: Pupils can use software to compose music, experimenting with different sounds and instruments. This allows them to understand concepts such as rhythm, melody, and harmony using digital tools.

Sound Effects and Audio Editing: Pupils can explore audio editing and sound design by creating sound effects for digital stories or animations. This blends computing with artistic and technical skills.

PSHE (Personal, Social, and Health Education)

Online Safety and Digital Citizenship: Integrating online safety lessons into PSHE can help students understand the ethical and responsible use of technology, reinforcing digital well-being and respectful online behavior.

Emotional Well-Being: Students can use digital tools to reflect on their emotions or create digital diaries, promoting self-awareness and personal growth. They can also create resources like posters or videos about mental health awareness.

Collaboration and Teamwork: Through group projects and collaborative digital tools, students can develop social and emotional skills, working together to solve problems, share ideas, and make decisions.

Physical Education

Using Technology to Track Progress

Creating Digital Fitness Games

Analysing Data in Sports

Design and Technology

Product Design and Prototyping: Pupils can use technology to simulate how products would function in the real world.

Robotics and Engineering: Through platforms pupils can design and build simple robots or automated systems, applying their knowledge of computing and engineering principles.

Computational Thinking in Problem-Solving: Pupils can use logical thinking and programming to solve design challenges, integrating skills from both computing and design and technology.

Personal Development

Personal development within the computing curriculum for our pupils focuses on nurturing a range of skills and attitudes that contribute to growth as a learner, a digital citizen, and a problem solver. Below are ways in which personal development is developed through our computing curriculum:

Building Confidence with Technology:

Skill Mastery: Starting with foundational computing skills such as using hardware (e.g., keyboard and mouse) and understanding basic software tools. As pupils progress, they learn coding, problem-solving, and computational thinking. We encourage pupils to experiment with new technologies helps build confidence.

Error Resilience: We teach that making mistakes is a normal part of learning. In computing, especially in coding and problem-solving, perseverance is key. Reinforcing a growth mindset encourages students to see challenges as opportunities to learn.

Fostering Critical Thinking and Problem-Solving:

Computational Thinking: Helping pupils to break down problems into manageable steps, recognize patterns, and develop algorithms. Activities like coding or creating simple computer programs are great for developing logical thinking.

Creativity in Problem Solving: We encourage to approach computing tasks creatively. For instance, when designing a website or app, they can think about the user experience, design, and functionality in imaginative ways.

Personal Development

Collaboration and Teamwork:

Collaborative Projects: Group projects where students must collaborate to create digital content, develop a game, or solve problems together. This encourages teamwork, communication, and shared decision-making, which are all vital life skills.

Peer Mentoring: Older students can support younger students in coding or creating projects. This boosts leadership skills for the older students and provides mentorship and guidance for the younger ones.

Encouraging a Growth Mindset:

- **Resilience and Persistence:** Computing often involves problem-solving and debugging, which can be challenging. Encourage students to view these difficulties as learning opportunities, fostering a sense of perseverance and resilience.
- **Celebrating Progress:** Celebrating pupil achievements, no matter how small, in their computing journey. This could include showcasing their work, encouraging peer feedback, or reflecting on what they've learned.

Self-Directed Learning:

- **Learning at Your Own Pace:** We use platforms that allow students to progress through activities at their own pace. This helps develop independence, self-discipline, and time management skills.
- **Project-Based Learning:** We encourage pupils to take the lead in projects where they can choose their areas of interest, such as building a website or developing a digital game. This encourages ownership of their learning and fosters self-motivation.

Personal Development

. Ethical Use of Technology:

Promoting Digital Citizenship: We encourage pupils to reflect on the ethical use of technology and the impact of their actions online. Discussions about responsible social media use, respecting others' intellectual property, and the environmental impact of technology can help develop a sense of responsibility.

Sustainability in Tech: Concepts related to the sustainability of technology are discussed ad evaluated. The importance of recycling electronics and reducing e-waste is recognised so this helps them understand their role in the broader digital ecosystem.

Reflection and Self-Assessment:

Encouraging Reflection: After completing a computing task, pupils reflect on what they learned, what challenges they faced, and how they overcame them. This reflection supports personal growth and helps them identify areas for improvement.

Goal Setting: We guide pupils in setting personal goals related to computing, such as learning a new programming language or mastering a new tool. Regularly reviewing and achieving these goals contributes to a sense of accomplishment.

Personal development in the computing curriculum goes beyond just technical skills. It includes fostering a growth mindset, emotional resilience, collaboration, critical thinking, and ethical digital behaviour. By nurturing these aspects, pupils not only to succeed in computing but also to thrive as confident, responsible individuals in a technology-driven world.

Assessment

Through the computing curriculum, formative assessment is a key tool used to ensure all pupils make continuous progress. Live marking during lessons allows teachers to provide immediate feedback and identify gaps in knowledge or skills as they arise and physically model what is needed. When these gaps are spotted, they are addressed straight away, either through individual support or as part of a whole-class session, ensuring that misconceptions are promptly corrected. For pupils who show signs of struggling with a task, ongoing adaptations are made, such as offering additional guidance, breaking tasks into smaller steps, or providing alternative resources to aid understanding. For those excelling and working beyond expected levels, teachers provide more challenging tasks that stretch their learning further. This responsive approach ensures that all pupils are supported and challenged appropriately, helping them to fully engage with the subject and achieve their potential.

The **Purple Mash** computing curriculum is a well-rounded program designed for primary school pupils, which offers a wide variety of topics and skills, including coding, digital literacy, online safety, and creative computing.
At the end of each unit, it’s important to summarize key learning points to assess the students' understanding and their progress.

Enrichment

We try to provide computing enrichment for the pupils in different ways at Worth Valley Primary School.

Last year we carried out the very successful Coding Club (please see below!).

We continuously share a wealth of information to parents through our Facebook groups and the school website.

Parents can access a variety of information which develops knowledge and understanding at home.
This is through:

- Teachers ensure their class website page is updated on a regular basis so that parents and pupils can explore the learning carried out half termly.
- Different types of computing resources are used to evidence learning which can be seen on the school website, e.g. use of photographs, links to different things.
- Pupil username and password details are provided to parents for programmes such as; TTRS, Numbots, etc. so that learning can be carried out at home.

We provide this so that not only do pupils and parents feel involved but in the event that pupils have to carry out home learning, the information is easily accessible.

Pupil Voice

Using IPADS in school is cool!

I enjoy learning how to code programs

I enjoy learning how to code programs

I like testing myself on TTRS

I like using symbols on the app to help me when I use the words from my mouth'

WORTH VALLEY PRIMARY SCHOOL
Achieve Believe Create Dreams

LEADING LEARNERS
Guiding children to promising futures

NUMBOTS

TIMES TABLES ROCK STARS

Boardmaker®

purple mash

1-minute MATHS