Computing

WRENINGHAM VC PRIMARY - CURRICULUM KNOWLEDGE AND KEY SKILLS PROGRESSION

Computing

Intent

Our intent is to provide a computing curriculum which ensures our pupils become digitally literate and digitally resilient: being confident, competent and critical in using digital technology, the internet and social media in a positive, effective, responsible and safe manner. We aim to develop technology users who can analyse problems in computational terms, able to code computer programs in order to solve such problems. They should be equipped with a good understanding of how to apply the fundamental principles and concepts of computer science, including modelling, logic, algorithms and data representation. Technology is ever evolving and we aim to develop pupils who can assimilate new technologies intuitively, creatively and skilfully, whilst being equipped with the knowledge to keep themselves 'safe' as active participants in a digital world.

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

Implementation:

- To ensure high standards of teaching and learning in computing, we implement a curriculum that is progressive throughout the whole school. Our implementation of the computing curriculum is in line with 2014 Primary National Curriculum requirements for KS1 and KS2 and the Foundation Stage Curriculum in England. This provides a broad framework and outlines the knowledge and skills taught in each key stage.
- We use and follow the Purple Mash scheme of work from Year 1-6, ensuring consistency and progression throughout the school. The Purple Mash scheme of work enables clear coverage of the computing curriculum whilst also providing support and CPD for less confident teachers to deliver lessons. The Purple Mash Lessons are broken down into weekly units.
- Units are practical and engaging and allow computing lessons to be hands on.
- We have adopted and tailored the Purple Mash Computing scheme to meet the above intent and National Curriculum requirements and the needs of Wreningham children, using three broad teaching areas to frame the requirements, although there will be cross-over within these areas:

  Computer Science - Information Technology - Digital Literacy
- Units cover a broad range of computing components such as coding, spreadsheets, Internet and Email, Databases, Communication networks, touch typing, animation and online safety.

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- Teachers ensure that ICT and computing capability is also achieved through core and foundation subjects and where appropriate and necessary ICT and computing should be incorporated into work for all subjects where possible.
- Through the Purple Mash platform, teachers can deliver thematic, cross curricular lessons that also follow children's interests and provide flexibility.
- Computing teaching is practical and engaging, with children having access to the technology they require.
- Teachers and pupils are aware of the importance of health and safety and pupils are always supervised when using technology and accessing the internet.
- Our pupils are fully encouraged to engage with ICT and technology outside of school through use of Microsoft Teams for online home teaching and access to homework, and online spelling platform, 'Ed Shed-Spelling Shed' for spelling activities on a weekly basis –along with access to Purple Mash from home.
- Each teacher and pupil has their own unique Purple Mash and 'Ed Shed' login and password.
- Computing work can be stored and saved using pupil login details and homework ('2do's' and 'assignments') can also be set for pupils to access and complete tasks at home that link with their current class learning.
- Wreningham uses 'Tapestry' to record the learning journey and evidence of early learning goals for Reception and Year 1 pupils.
- Online safety and safeguarding are taught and revisited throughout the year. Online safety issues both inside and outside of the classroom are taught and discussed. All pupils study a structured, planned online safety unit through their computing lessons. (See progression in online safety displayed in 'Summary and Progression – Digital Literacy' within this document)
- National Safer Internet Day is highlighted in assembly and classes in February.
- Opportunities are sought to invite relevant visitors into school to enhance the quality and visibility of online safety – e.g. 2022 Visit by cyber security advisors from Norfolk Police for KS2.
- Additional online safety teaching is planned and taught during the year in a structured manner through RSHE teaching (See RSHE map).
- Parents are offered opportunities to enhance their understanding of online safety both in and outside of school – e.g. Oct 2022 – Parent Workshop in school.
- Online safety is revisited at the beginning of every term to ensure the knowledge and skills are current.

Impact

- Children are able to build upon previously learnt skills and embed current skills.
- Children have a good understanding of the concepts of computer coding, and could apply these concepts when using unfamiliar coding languages in the future.

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- Children become increasingly proficient in the use of technology and have good, transferable knowledge.
- Children have the knowledge and skills to make use of a wide range of technology for communication, presentation, organisation, calculation, design and creativity.
- Children have a clear understanding of online safety, the knowledge to make good choices.
- Children know who to go to when unsure, or in need of help or support, and the means to keep themselves safe online both in and out of school.
- Children understand the importance of being responsible and respectful in the online world.
- Through use of Purple Mash, Microsoft Teams and exposure to a range of software and technology (e.g. Excel, Microsoft Word, laptops, tablets, desktops), children develop a broad base of knowledge and intuitive technological and digital skills which can be utilised when using other similar platforms.
- Children are enthused and engaged in this subject and actively look to use digital technology outside of the taught lessons.

	National Curriculum Statutory requirements	Topics
Key Stage 1 - Year 1/2	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. We have adopted and tailored the Purple Mash Computing scheme to meet the above requirements and the needs of Wreningham children, using the three broad teaching areas to frame the requirements, although there will be cross-over within these areas: **Computer Science** - **Information Technology** - **Digital Literacy**	**Year 1:** **Online Safety** **Grouping and Sorting** **Pictograms** **Exploring Animated Storybooks** **Coding** **Exploring Technology Outside School** **Year 2:** **Online Safety** **Coding** **Introduction to Spreadsheets** **Effective Searching** **Creating Pictures**

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	National Curriculum Statutory requirements	Topics
Key stage 2 – Year 3/4 & Year 5/6	Key stage 2 Pupils should be taught to: • design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • use sequence, selection, and repetition in programs; work with variables and various forms of input and output • use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs • understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration • use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. We have adopted and tailored the Purple Mash Computing scheme to meet the above requirements and the needs of Wreningham children, using the three broad teaching areas to frame the requirements, although there will be cross-over within these areas: **Computer Science** - **Information Technology** - **Digital Literacy**	**Year 3:** **Coding** **Online Safety** **Grouping and Sorting** **Spreadsheets** **Touch-Typing** **Branching Databases** **Graphing and Presenting Information** **Year 4:** **Coding** **Online Safety** **Spreadsheets** **Databases** **Game Creator** **3D Modelling** **Word Processing** **Year 5:** **Coding** **Online Safety** **Animation** **Effective Searching** **Hardware Investigators** **Word Processing** **Year 6:** **Coding** **Online Safety** **Spreadsheets**

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		Text Adventures **Networks** **Quizing** **Spreadsheets with Excel**

*The number of weeks in brackets may be amended and tailored as per the teacher judgement.
The following units are detailed in the Purple Mash relevant unit within the relevant yearly scheme of work,

Curriculum Map by Year						
Year 1	1.1 Online Safety and Exploring Purple Mash (4)	1.2 Grouping and Sorting (2) 1.3 Pictograms Using 2Count (3)	1.6 Animated Story Books Using 2Create a Story (5)	1.7 Coding Using 2Count (6)	1.7 Coding (Continued)	1.9 Technology Outside School (2)
Year 2	2.2 Online Safety (3)	2.5 Effective Searching (4)	2.3 Spreadsheets Using 2Calculate (4)	2.1 Coding Using 2Code (6)	2.3 Spreadsheets	2.6 Creating Pictures Using 2Paint a Picture (5)
Year 3	3.1 Coding Using 2Code (6)	3.2 Online Safety (3)	3.3 Spreadsheets Crash Course Using 2Calculate (4)	3.4 Touch Typing Using 2Type (4)	3.5 Email (Including Email Safety) Using 2Email (6)	3.6 Branching Databases Using 2Question 3.9 Presenting Using Powerpoint
Year 4	4.1 Coding Using 2Code (6)	4.2 Online Safety (4)	4.3 Spreadsheets Using 2Calculate (6)	4.6 Animation Using 2Animate (3)	4.7 Effective Searching 4.8 Hardware Investigators (2)	4.9 Making Music Using Busy Beats (4)
Year 5/6	5.1 Coding Using 2Code (6) 5.2 Online Safety (3)	5.3 Spreadsheets Using 2Calculate (6)	5.3 Databases Using 2Investigate (4)	5.5 Game Creator Using 2DIY 3D (5)	5.5 3D Modelling Using 2Design and Make (4)	5.8 Word Processing Using MS Word (8)

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	6.1 Coding Using 2Code (6) 6.2 Online Safety (2)	6.3 Spreadsheets Using 2Calculate (5)	6.5 Text Adventures (5)	6.6 Networks (3)	6.7 Quizzing Using 2Quiz (6)	6.9 Spreadsheets Using MS Excel (8)

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Summary and Progression						Computer Science
EYFS	Y1	Y2	Y3	Y4	Y5	Y6
• EYFS pupils follow mini MASH computing which links the appropriate resources on Purple Mash to the areas of learning and development from the Statutory Framework for the Early Years Foundation Stage (2012). Communication and Language Personal, Social and Emotional Development Physical Development Literacy Mathematics Understanding the World Expressive Arts and Design.	• Children understand that an algorithm is a set of instructions used to solve a problem or achieve an objective. They know that an algorithm written for a computer is called a program. • Children can work out what is wrong with a simple algorithm when the steps are out of order, e.g. The Wrong Sandwich in Purple Mash and can write their own simple algorithm, e.g. Colouring in a Bird activity. Children know that an unexpected outcome is due to the code they have created and can make logical attempts to fix the code, e.g. Bubbles activity in 2Code. • When looking at a program, children can read code one line at a time and make good attempts to envision the bigger picture of the overall effect of the program. • Children can for example, interpret where the turtle in 2Go challenges will end up at the end of the program.	• Children can explain that an algorithm is a set of instructions to complete a task. • When designing simple programs, children show an awareness of the need to be precise with their algorithms so that they can be successfully converted into code. • Children can create a simple program that achieves a specific purpose. • They can also identify and correct some errors, e.g. Debug Challenges: Chimp. • Children's program designs display a growing awareness of the need for logical, programmable steps. • Children can identify the parts of a program that respond to specific events and initiate specific actions. For example, they can write a cause and effect sentence of what will happen in a program.	• Children can turn a simple real-life situation into an algorithm for a program by deconstructing it into manageable parts. Their design shows that they are thinking of the desired task and how this translates into code. • Children can identify an error within their program that prevents it following the desired algorithm and then fix it. • Children demonstrate the ability to design and code a program that follows a simple sequence. They experiment with timers to achieve repetition effects in their programs. • Children are beginning to understand the difference in the effect of using a timer command rather than a repeat command when creating repetition effects. • Children understand how variables can be used to store information while a program is executing. • Children's designs for their programs show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures. For example, 'if' statements, repetition and variables. They make good attempts to 'step through' more complex code in order to identify errors in algorithms and	• When turning a real life situation into an algorithm, the children's design shows that they are thinking of the required task and how to accomplish this in code using coding structures for selection and repetition. • Children make more intuitive attempts to debug their own programs. • Children's use of timers to achieve repetition effects are becoming more logical and are integrated into their program designs. They understand 'if statements' for selection and attempt to combine these with other coding structures including variables to achieve the effects that they design in their programs. As well as understanding how variables can be used to store information while a program is executing, they are able to use and manipulate the value of variables. • Children can make use of user inputs and outputs such as 'print to screen'. e.g. 2Code. • Children's designs for their programs show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures. For example, 'if' statements, repetition and variables. They can trace code and use step-through	• Children may attempt to turn more complex real-life situations into algorithms for a program by deconstructing it into manageable parts. • Children are able to test and debug their programs as they go and can use logical methods to identify the approximate cause of any bug but may need some support identifying the specific line of code • Children can translate algorithms that include sequence, selection and repetition into code with increasing ease andtheir own designs show that they are thinking of how to accomplish the set task in code utilising such structures. They are combining sequence, selection and repetition with other coding structures to achieve their algorithm design. • When children code, they are beginning to think about their code structure in terms of the ability to debug and interpret the code later, e.g. the use of tabs to organise code and the naming of variables. • Children understand the value of computer networks but are also aware of the main dangers. They recognise what personal information is and can	• Children are able to turn a more complex programming task into an algorithm by identifying the important aspects of the task (abstraction) and then decomposing them in a logical way using their knowledge of possible coding structures and applying skills from previous programs. • Children test and debug their program as they go and use logical methods to identify the cause of bugs, demonstrating a systematic approach to try to identify a particular line of code causing a problem. • Children translate algorithms that include sequence, selection and repetition into code and their own designs show that they are thinking of how to accomplish the set task in code utilising such structures, including nesting structures within each other. Coding displays an improving understanding of variables in coding, outputs such as sound and movement, inputs from the user of the program such as button clicks and the value of functions. • Children are able to interpret a program in parts and can make logical attempts to put the separate parts of a complex algorithm together to explain the

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			can correct this. E.g. traffic light algorithm in 2Code. In programs such as Logo, they can 'read' programs with several steps and predict the outcome accurately • Children can list a range of ways that the internet can be used to provide different methods of communication. They can use some of these methods of communication, e.g. being able to open, respond to and attach files to emails using 2Email. They can describe appropriate email conventions when communicating in this way.	methods to identify errors in code and make logical attempts to correct this. e.g. traffic light algorithm in 2Code. In programs such as Logo, they can 'read' programs with several steps and predict the outcome accurately. • Children recognise the main component parts of hardware which allow computers to join and form a network. Their ability to understand the online safety implications associated with the ways the internet can be used to provide different methods of communication is improving.	explain how this can be kept safe. • Children can select the most appropriate form of online communications contingent on audience and digital content, e.g. 2Blog, 2Email, Display Boards	program as a whole. • Children understand and can explain in some depth the difference between the internet and the World Wide Web. Children know what a WAN and LAN are and can describe how they access the internet in school. • Children are able to interpret a program in parts and can make logical attempts to put the separate parts of a complex algorithm together to explain the program as a whole. • Children understand and can explain in some depth the difference between the internet and the World Wide Web. Children know what a WAN and LAN are and can describe how they access the internet in school.
Summary and Progression						**Digital Literacy**
EYFS	Y1	Y2	Y3	Y4	Y5	Y6
• EYFS pupils follow mini MASH computing which links the appropriate resources on Purple Mash to the areas of learning and development from the Statutory Framework for the Early Years Foundation Stage (2012). Communication and Language Personal, Social and Emotional Development Physical Development Literacy Mathematics Understanding the World Expressive Arts and Design.	• Children understand what is meant by technology and can identify a variety of examples both in and out of school. They can make a distinction between objects that use modern technology and those that do not e.g. a microwave vs. a chair. • Children understand the importance of keeping information, such as their usernames and passwords, private and actively demonstrate this in lessons. • Children take ownership of their work and save this in their own private space such as their My Work folder on Purple Mash.	• Children can effectively retrieve relevant, purposeful digital content using a search engine. They can apply their learning of effective searching beyond the classroom. They can share this knowledge, e.g. 2Publish example template. • Children make links between technology they see around them, coding and multimedia work they do in school e.g. animations, interactive code and programs. • Children know the implications of inappropriate online searches.	• Children demonstrate the importance of having a secure password and not sharing this with anyone else. Furthermore, children can explain the negative implications of failure to keep passwords safe and secure. They understand the importance of staying safe and the importance of their conduct when using familiar communication tools such as 2Email in Purple Mash. They know more than one way to report unacceptable content and contact.	• Children can explore key concepts relating to online safety using concept mapping such as 2Connect. They can help others to understand the importance of online safety. • Children know a range of ways of reporting inappropriate content and contact.	• Children have a secure knowledge of common online safety rules and can apply this by demonstrating the safe and respectful use of a few different technologies and online services. • Children implicitly relate appropriate online behaviour to their right to personal privacy and mental wellbeing of themselves and others.	• Children demonstrate the safe and respectful use of a range of different technologies and online services. They identify more discreet inappropriate behaviours through developing critical thinking, e.g. 2Respond activities. They recognise the value in preserving their privacy when online for their own and other people's safety.

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		• Children begin to understand how things are shared electronically such as posting work to the Purple Mash display board. They develop an understanding of using email safely by using 2Respond activities on Purple Mash and know ways of reporting inappropriate behaviours and content to a trusted adult.				
Summary and Progression						**Information Technology**
EYFS	Y1	Y2	Y3	Y4	Y5	Y6
• EYFS pupils follow mini MASH computing which links the appropriate resources on Purple Mash to the areas of learning and development from the Statutory Framework for the Early Years Foundation Stage (2012). Communication and Language Personal, Social and Emotional Development Physical Development Literacy Mathematics Understanding the World Expressive Arts and Design.	• Children are able to sort, collate, edit and store simple digital content e.g. children can name, save and retrieve their work and follow simple instructions to access online resources, use Purple Mash 2Quiz example (sorting shapes), 2Code design mode (manipulating backgrounds) or using pictogram software such as 2Count.	• Children demonstrate an ability to organise data using, for example, a database such as 2Investigate and can retrieve specific data for conducting simple searches. • Children are able to edit more complex digital data such as music compositions within 2Sequence. • Children are confident when creating, naming, saving and retrieving content. • Children use a range of media in their digital content including photos, text and sound.	• Children can carry out simple searches to retrieve digital content. They understand that to do this, they are connecting to the internet and using a search engine such as Purple Mash search or internet-wide search engines. • Children can collect, analyse, evaluate and present data and information using a selection of software, e.g. using a branching database (2Question), using software such as 2Graph. • Children can consider what software is most appropriate for a given task. They can create purposeful content to attach to emails, e.g. 2Respond.	• Children understand the function, features and layout of a search engine. They can appraise selected webpages for credibility and information at a basic level. • Children are able to make improvements to digital solutions based on feedback. • Children make informed software choices when presenting information and data. They create linked content using a range of software such as 2Connect and 2Publish+. • Children share digital content within their community, i.e. using Virtual Display Boards.	• Children search with greater complexity for digital content when using a search engine. They are able to explain in some detail how credible a webpage is and the information it contains. • Children are able to make appropriate improvements to digital solutions based on feedback received and can confidently comment on the success of the solution. E.g. creating their own program to meet a design brief using 2Code. They objectively review solutions from others. • Children are able to collaboratively create content and solutions using digital features within software such as collaborative mode. They are able to use several ways of sharing digital content, i.e. 2Blog, Display Boards and 2Email.	• Children readily apply filters when searching for digital content. They are able to explain in detail how credible a webpage is and the information it contains. They compare a range of digital content sources and are able to rate them in terms of content quality and accuracy. • Children use critical thinking skills in everyday use of online communication. • Children make clear connections to the audience when designing and creating digital content. The children design and create their own blogs to become a content creator on the internet, e.g. 2Blog. They are able to use criteria to evaluate the quality of digital solutions and are able to identify improvements, making some refinements.