Progression of Skills and Knowledge: Computing

1. The overarching principle of our curriculum is e-safety. It is a concept taught across every year group, at least once.

2. These are the 3 primary skills of our curriculum. Each of the units of our curriculum is designated as either a **digital literacy, information technology or computer science** unit.

3. Finally, each of our units focuses on a specific skill, but they can be further broken down into the specific outcome of what will be produced.

Online Safety

National Curriculum Skills

Digital Literacy	Information Technology	Computer Science

Stokesay's Computing Curriculum

Key Stage 1 and 2

Computing systems and networks	**Programming**	**Creating Media**	**Data Handling**
• Search engines • Computing history • LAN vs WAN networking	• Debugging • Creating algorithms • Recognising and changing variables	• Presentations • Blogging • Branching stories • Videoing	• Quizzes • Branching databases • Multiple choice

Digital Literacy

Year 1/2	Year 3/4	Year 5/6
-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 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 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 know the implications of inappropriate online searches. 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.	-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.

Information Technology

Year 1/2	Year 3/4	Year 5/6
-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.

Computer Science

Year 1/2	Year 3/4	Year 5/6
-Children understand that an algorithm is a set of instructions used to solve a problem or achieve an objective. They know that a computer program turns an algorithm into code that the computer can understand -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'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, repetition and use of timers. They make good attempts to 'step through' more complex code in order to identify errors in algorithms and can correct this. e.g. 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. - 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 methods to identify errors in code and make logical attempts to correct this. 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	-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 and their 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 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. - 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 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

Online Safety

Year 1/2	Year 3/4	Year 5/6
• Pupils can find their saved work in the Online Work area of Purple Mash. • Pupils can find messages that their teacher has left for them on Purple Mash. • Pupils can search Purple Mash to find resources. • Pupils will be able to use the different types of topic templates in the Topics section confidently. • Pupils will be confident with the functionality of the icons in the topic templates. • Pupils will know how to use the different icons and writing cues to add pictures and text to their work. • Pupils have explored the Tools section on Purple Mash and become familiar with some of the key icons: Save, Print, Open and New. • Pupils have explored the Games section and looked at Table Toons (2x tables). • Pupils can log out of Purple Mash when they have finished using it and know why that is important. • Pupils can use the search facility to refine searches on Purple Mash by year group and subject. • Pupils can share the work they have created to a display board. • Pupils understand that the teacher approves work before it is displayed. • Pupils are beginning to understand how things can be shared electronically for others to see both on Purple Mash and the Internet. • Pupils know that Email is a form of digital communication. • Pupils understand how 2Repond can teach them how to use email. • Pupils can open and send an email to a 2Respond character. • Pupils have discussed their own experiences and understanding of what email is used for. • Pupils have discussed what makes us feel happy and what makes us feel sad. • Pupils can explain what a digital footprint is. • Pupils can give examples of things that they would not want to be in their digital footprint • I can identify the basic parts of a web search engine search page. • I have learnt to read a web search results page. • I can search for answers to a quiz on the Internet.	•Pupils understand what makes a good password for use on the Internet. Pupils are beginning to realise the outcomes of not keeping passwords safe. •Pupils can contribute to a concept map of all the different ways they know that the Internet can help us to communicate. •Pupils have contributed to a class blog with clear and appropriate messages. •Pupils understand that some information held on websites may not be accurate or true. •Pupils are beginning to understand how to search the Internet and how to think critically about the results that are returned. •Pupils have accessed and assessed a 'spoof' website. •Pupils have created their own 'spoof' webpage mock-up. •Pupils have shared their 'spoof' web page on a class display board. •Pupils can identify some physical and emotional effects of playing/watching inappropriate content/games. •Pupils relate cyberbullying to bullying in the realworld and have strategies for dealing with online bullying including screenshot and reporting. •Pupils have written rules about how to stay safe using email. •Pupils have contributed to classmates' rules. •Pupils understand the importance of draft. •Pupils have created a quiz about email safety which explores scenarios that they could come across in the future. • Pupils know that security symbols such as a padlock protect their identity online. • Pupils know the meaning of the term 'phishing' and are aware of the existence of scam websites. • Pupils can explain what a digital footprint is and how it relates to identity theft. • Pupils can give examples of things that they would not want to be in their digital footprint. • Pupils can identify possible risks of installing free and paid for software • Pupils know that malware is software that is specifically designed to disrupt, damage, or gain access to a computer. • Pupils know what a computer virus is. • Pupils can determine whether activities that they undertake online, infringe another's' copyright. They know the difference between researching and using information and copying it • Pupils know about citing sources that they have used. • Pupils can take more informed ownership of the way that they choose to use their free time. They recognise a need to find a balance between being active and digital activities. • Pupils can give reasons for limiting screen time. • Pupils can analyse the contents of a web page for clues about the credibility of the information.	• I think critically about the information that I share online both about myself and others. • I know who to tell if I am upset by something that happens online. • I can use the SMART rules as a source of guidance when online. • Pupils think critically about what they share online, even when asked by a usually reliable person to share something. • Pupils have clear ideas about good passwords • Pupils can see how they can use images and digital technology to create effects not possible without technology. • Pupils have experienced how image manipulation could be used to upset them or others even using simple, freely available tools and little specialist knowledge. • Pupils can cite all sources when researching and explain the importance of this. • Pupils select keywords and search techniques to find relevant information and increase reliability • Pupils show an understanding of the advantages and disadvantages of different forms of communication and when it is appropriate to use each. • Pupils have used the example game and further research to refresh their memories about risks online including sharing location, secure websites, spoof websites, phishing and other email scams. • Pupils have used the example game and further research to refresh their memories about the steps they can take to protect themselves including protecting their digital footprint, where to go for help, smart rules and security software. • Pupils understand how what they share impacts upon themselves and upon others in the long term. • Pupils know about the consequences of promoting inappropriate content online and how to put a stop to such behaviour when they experience it or witness it as a bystander • Pupils can take more informed ownership of the way that they choose to use their free time. They recognise a need to find a balance between being active and digital activities. • Pupils can give reasons for limiting screen time. • Pupils can talk about the positives and negative aspects of technology and balance these opposing views. • Pupils can post comments and blog posts to an existing class blog. • Pupils understand the approval process that their posts go through and demonstrate an awareness of the issues surrounding inappropriate posts and cyberbullying. • Pupils can comment on and respond to other blogs. • Pupils can assess the effectiveness and impact of a blog. • Pupils understand that content included in their blog carefully considers the end user.