Lower Peover C of E Primary School

Progression in Computing under the 2014 National Curriculum

Key Stage 1

Pupils should be taught to:

- understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following a sequence of instructions
- write and test simple programs
- use logical reasoning to predict the behaviour of simple programs
- organise, store, manipulate and retrieve data in a range of digital formats
- communicate safely and respectfully online, keeping personal information private, and recognise common uses of information technology beyond school

E-Safety in Key Stage 1

Knowledge & understanding

- Understand the different methods of communication.
- Know you should only open email from a known source.
- Begin to evaluate websites and know that everything on the internet is not true.
- Know that it is not always possible to copy some text and pictures from the internet

Skills

- Follow the school's safer internet and being SMART online.
- Use the search engines agreed by the school
- Know how to act if they find something inappropriate online or something they are unsure of.
- Use the internet for learning and communicating with others.
- Send and receive email as a class.
- Use a password to access the secure network.

Key Stage 2

Pupils should be taught to:

- design and write 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; generate appropriate inputs and predicted outputs to test programs
- use logical reasoning to explain how a simple algorithm works 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
- describe how internet search engines find and store data; use search engines effectively; be discerning in evaluating digital content; respect individuals and intellectual property; use technology responsibly, securely and safely
- select, use and combine a variety of software (including internet services) on a range of digital devices to accomplish given goals, including collecting, analysing, evaluating and presenting data and information

E-Safety in Key Stage 2

Knowledge & understanding

- Discuss the positive and negative impacts of the use of ICT in their own lives and those of their peers and family
- Understand the potential risk of providing personal information online
- Recognise why people may publish content that is not accurate and understand the need to be critical evaluators of content
- Recognise the potential risks of using internet communication tools and understand how to minimise those risks.
- Understand that some material on the internet is copyrighted and may not be copied or downloaded.
- Understand that some messages or pop ups may be malicious and know how to deal with this.
- Understand that online environments have security settings, which can be altered, to protect the user.
- Understand the benefits of developing a 'nickname' for online use.

Skills

- Follow the school's safer internet rules
- Make safe choices about use of technology, including games, apps, and online messaging services.
- Use technology in ways which minimise risk, e.g., responsible use of online platforms and messaging services.
- Create strong passwords and manage them so that they remain strong.
- Independently, and with regard for e-safety, select and use appropriate communication tools to solve problems by collaborating and communicating with others.
- Competently use the internet as a search tool
- Reference information sources
- Use appropriate strategies for finding, critically evaluating, validating and verifying information.
- Be a respectful, good digital citizen.

	Key Stage 1		Lower Key Stage 2		Upper Key Stage 2	
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Computer Science	• Do they understand that an algorithm is a set of instructions used to solve a problem or achieve an objective? • Do they know that an algorithm written for a computer is called a program? • Can they 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, Colouring in a Bird activity? • Do they know that an unexpected outcome is due to the code they have created and can make logical attempts to fix the code? • Can they read code one line at a time and make good attempts to envision the bigger picture of the overall effect of the program when looking at a program? • Can they interpret where the turtle in 2Go challenges will end up at the end of the program?	• Can they explain that an algorithm is a set of instructions to complete a task? • Do they show an awareness of the need to be precise with their algorithms so that they can be successfully converted into code when designing simple programs? • Can they create a simple program that achieves a specific purpose and can identify and correct some errors? • Can they display a growing awareness of the need for logical, programmable steps in program designs? • Can they 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?	• Can they turn a simple real-life situation into an algorithm for a program by deconstructing it into manageable parts? • Can they show that they are thinking of the desired task and how this translates into code in their designs? • Can they identify an error within their program that prevents it following the desired algorithm and then fix it? • Can they demonstrate the ability to design and code a program that follows a simple Sequence? • Can they experiment with timers to achieve repetition effects in their programs?	• Do they consider, that when turning a real-life situation into an algorithm, their design shows that they are thinking of the required task and how to accomplish this in code, using coding structures for selection and repetition? • Can they make more intuitive attempts to debug their own programs? • Can they consider that their use of timers to achieve repetition effects are becoming more logical and are integrated into their program designs? • Do 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?	• Can they attempt to turn more complex real-life situations into algorithms for a program by deconstructing it into manageable parts? • Can they 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? • Can they 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? • Can they combine sequence, selection and repetition with other coding structures to achieve their algorithm design?	• Can they 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? • Can they 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? • Can they translate algorithms that include sequence, selection and repetition into code and in 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?

Computer Science (continued)			• Can they begin to understand the difference in the effect of using a timer command rather than a repeat command when creating repetition effects? • Do they understand how variables can be used to store information while a program is executing? • Can they show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures in their program designs, for example, 'if' statements, repetition and variables? • Can they make good attempts to 'step through' more complex code to identify errors in algorithms and can correct this. • Can they read programs with several steps and predict the outcome	• Do they understand that variables can be used to store information while a program is executing, and that they are able to use and manipulate the value of variables? • Can they show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures in their program designs, for example, 'if' statements, repetition and variables? • Can they trace code and use step-through methods to identify errors in code and make logical attempts to correct this? • Can they read programs with several steps and predict the outcome accurately? • Can they recognise the main component parts of hardware which allow computers to join and form a network?	• Can they begin to think about their code structure in terms of the ability to debug and interpret the code later?	• Can they improve their 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 through coding displays? • Can they interpret a program in parts and can they make logical attempts to put the separate parts of a complex algorithm together to explain the program as a whole? • Do they understand and can they explain, in some depth, the difference between the Internet and the World Wide Web? • Do they know what a WAN and LAN are and can they describe how they access the Internet in school? • Can they discuss and understand the role of internet security?

			accurately in programs?	• Do they understand the online safety implications associated with the ways the Internet can be used to provide different methods of communication is improving?		• Can they explain how a computer works? And how the internet works?

	Key Stage 1		Lower Key Stage 2		Upper Key Stage 2	
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Information Technology	• Can they sort and collate simple digital content, based on a set criterion? • Can they present found/collated data in a pictogram? • Can they create a simple digitally drawn picture? • Can they name, save, and retrieve their work? • Can they follow simple instructions to access online resources?	• Can they demonstrate an ability to organise data? • Can they retrieve specific data by conducting simple searches? • Are they confident when creating, naming, saving, and retrieving content? • Can they use a range of media in their digital content including photos and text? • As a class, can they discuss data collated in excel/google sheets, and can they explain how this can be used to create different charts?	• Can they carry out simple searches to retrieve digital content and do they understand that to do this, they are connecting to the Internet and using a search engine? • Can they collect, analyse, evaluate, and present data and information using a selection of software? • Can they consider what software is most appropriate for a given task? • Can they create purposeful content to attach to emails? • Can they begin to develop their touch-typing skills? • Can they use excel spreadsheets/google sheet to create simple charts and/or graphs? • Can create presentation, adding pictures, effects, transitions etc.? • Can write a purposeful blog?	• Do they understand the function and layout of a search engine, and can they appraise selected webpages for credibility and information at a basic level? • Can they consider the most appropriate way to present information and data, and how this may differ for different audiences? • Can they explore the use of stop motion and create a short story? • Can they make improvements based on feedback? • Can they make informed software choices when presenting information and data? • Can they share digital content within their class?	• Can they search, with greater complexity, for digital content when using a search engine? • Can they explain, in some detail, how credible a webpage is and the information it contains? • Can they use excel/google sheets to convert their collected data into graphs? • Can they create their own game, following a design brief based on information gathered about an end user? • Can they make appropriate improvements to digital solutions based on feedback received? • Can they confidently comment on the success of the solution, e.g. creating their own game to meet a design brief? • Can they collaboratively create content and solutions using digital features?	• Can they explain, in detail, how credible a webpage is and the information it contains? • Can they compare a range of digital content sources and are they able to rate them in terms of content quality and accuracy? • Can they plan and budget for an event, using spreadsheets and simple formulae? • Can they make clear connections to the audience/client when designing and creating digital content and events? • Can they research and gather costings for specific items? • Can they set a budget and work around this? • Can they confidently use excel/google sheets to create graphs to show specific data?

					• Can they create an information text, using word or google docs, considering the format of the page, pictures being used (with referencing), including bullet points, and subheadings, etc.	

	Key Stage 1		Lower Key Stage 2		Upper Key Stage 2	
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Digital Literacy	• Do they understand what is meant by technology and can they identify a variety of examples both in and out of school? • Can they log on to a computer or laptop correctly? • Are they beginning to use iPads, and navigate to the correct apps? • Do they understand the importance of keeping information, such as their usernames and passwords, private and actively demonstrate this in lessons? • Can they begin to discuss general e safety at school and at home, and identify potential steps to take if they are unsure of something? • Can they begin to explain how we should behave online?	• Are they becoming more confident in logging onto to a computer or laptop? • Are they becoming more confident with iPad use and navigating around more than one app? • Can they effectively retrieve relevant, purposeful digital content using a search engine? • Do they know the implications of inappropriate online searches? • Do they understand how easily things can be shared electronically and online? • Are they developing an understanding of using email? • Do they know you should only open email from a known source? • Do they know ways of reporting inappropriate behaviours and content online to a trusted adult?	• Can they demonstrate the importance of having a secure password and not sharing this with anyone else? • Can they explain the negative implications of failure to keep passwords safe and secure? • Do they understand the importance of staying safe and the importance of their conduct when using communication tools? • Do they know more than one way to report unacceptable content and contact? • Can they list a range of ways that the Internet can be used to provide different methods of communication? • Can they talk about the pros and cons of online communication? • Can they send an email and wait. For a	• Can they explore key concepts relating to online safety? • Can they discuss cyberbullying, and how this can happen and how to report it? • Can continue to develop their knowledge of age restrictions on games, online platforms etc? • Can they create an informative document or presentation, that provides appropriate detail to adults and children about cyberbullying and age restrictions? • Can they help others to understand the importance of online safety? • Do they know a range of ways of reporting inappropriate content and contact? • Can discuss the impact of screen time, and gather the pros and cons?	• Do they have a secure knowledge of common online safety rules and can they apply this by demonstrating the safe and respectful use of a few different technologies and online services? • Can they create an information document for younger children, using the knowledge they have about being safe online and being SMART? • Can they discuss the impact of image editing – filters and photoshop – and the impact this can have on people? • Can they revisit the restrictions in place on games, online platforms, and apps etc. and talk about why there are in place? • Can they discuss online messaging, and messaging via phones and online platforms – snapchat, WhatsApp etc. Can they identify the pros and cons?	• Can they demonstrate the safe and respectful use of a range of different technologies and online services? • Can they confidently hold conversations and debates around the topic of online safety? Providing mature and thoughtful viewpoints. • Can they begin to understand the risks involved when downloading games and apps – in the small print, or in-game purchases? • Can they discuss the implication of 'open' messaging services within games with everyone in the world, e.g., Roblox? • Can they discuss the risks of sharing pictures online? House numbers, school uniforms etc.? • Do they understand that information online can travel far and fast?

		• Are they able to explain how we should behave online? • Can they explain to other children the importance of being SMART online?	response, open, and respond again? • Can they explain what we should do if we get an email from someone we don't know? • Can explore PEGI ratings and understand why some games and online gaming platforms have age restrictions? • Can they confidently explain to other children the importance of being SMART online? • Can they explain why it is important to credit sources when using them in their own work?	• Can they provide appropriate recommendations for ways to reduce the amount of screen time children have?	• Do they understand that because they own devices, they will have a digital footprint, and this can be stored and seen? • Can they discuss appropriate behaviours regarding online trends and prank culture? Are these appropriate at school? At home? Anywhere? • Do they have a clear understanding of ways to report inappropriate content online?	• Can they further develop their understanding of online messaging services and apps, and how this is no different than saying it in person? However, it is worse in some cases as their conversations are 'printed' online. Revisit content from previous years, as appropriate.