Computing Progression – Moorlands Primary School

The computing curriculum is split into three areas:

- **Coding**
- **Digital information**
- **Online safety**

By the end of EYFS pupils should:	By the end of Year 1 pupils should:	By the end of Year 2 pupils should:	By the end of Year 3 pupils should:	By the end of Year 4 pupils should:	By the end of Year 5 pupils should:	By the end of Year 6 pupils should:
	Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions		**Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.**			
Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.	**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 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 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.**	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 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 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.**

	Create and debug simple programs.		**Use sequence, selection and repetition in programs; work with variables and various forms of input and output.**			
	Children can work out what is wrong with a simple algorithm when the steps are out of order and can write their own simple algorithm. **Children know that an unexpected outcome** is due to the code they have created and can make logical attempts to fix the code.	**Children can create a simple program that achieves a specific purpose.** They can also identify and correct some errors whether this is on software or using BeeBots. **Children's program designs display a growing awareness of the need for logical, programmable steps.**	**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 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 to make an object face to direction swiped.**	Children can translate algorithms that include **sequence, selection and repetition into code. They are combining sequence, selection and repetition with other coding structures to achieve their algorithm design.**	Children translate algorithms that include **sequence, selection and repetition into code**. 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.**
	Use logical reasoning to predict the behaviour of simple programs.		**Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.**			

	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 for example, interpret where the BeeBot will end up.	**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 e.g. In Scratch Junior, If 'Go' is pressed, an action will happen.**	Children's designs for their programs show that they are thinking of the structure of a program in logical, achievable steps. **For example, 'if' statements, repetition and variables.** They can correct algorithms 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's designs for their programs show that they are thinking of the structure of a program in logical, achievable steps. **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. e.g. traffic light algorithm in 2Code.	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 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.**
			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.			
			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	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 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	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.**

			communicating in this way.		digital content, e.g. **2Blog, 2Email, Display Boards.**	
	Use technology purposefully to create, organise, store, manipulate and retrieve digital content.		**Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.**			
	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 understand the function, features and layout of a search engine. They can appraise selected webpages for credibility and information at a basic level. .	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 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.
			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.			
			Children can collect, analyse, evaluate and present data and information using a selection of	Children are able to make improvements to digital solutions based on feedback. Children make	Children are able to make appropriate improvements to digital solutions based on feedback received and can	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

			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.	informed software choices when presenting information and data. They create linked content using a range of software such as 2Connect and 2Publish+.	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.	able to use criteria to evaluate the quality of digital solutions and are able to identify improvements, making some refinements.
	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. **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.**			

ONLINE SAFETY:

All objectives and guidance on short term planning for E-safety can be found at https://projectevolve.co.uk/toolkit/

Autumn 1 – Privacy & Security and Health, Well-being and Lifestyle

Spring 1 – Online Bullying and Relationships (in addition to Safer Internet Day)

Summer 1 – Self-image and online reputation

‘Managing Information online’ and ‘Ownership’ to be taught through other curriculum opportunities in context of searching online.						
Privacy and Security To identify simple examples of personal information. To describe people who can be trusted with this information.	**Privacy and Security** Recognise more detailed examples of personal information. Describe how passwords can protect the information. Explain why I should ask a trusted adult before sharing information.	**Privacy and Security** Describe online information that can be seen by other. Explain the purpose of and use passwords. Explain household devices that connect to the internet. Describe some rules to keep a password safe.	**Privacy and Security** Give reasons why information shouldn’t be shared. Explain why passwords are important. Describe how connected devices share information. Describe strategies for keeping passwords private.	**Privacy and Security** Explain what a strong password is. Know that others may pretend to be me online and explain why they may do this. Know the internet can be monitored. Describe strategies for keeping my personal information private.	**Privacy and Security** Create and use strong passwords. Understand free apps use private information and understand some apps make additional payments.	**Privacy and Security** Use and understand management of passwords explaining what to do if lost/stolen. Explain app permissions and how privacy can be increased. Know some ways people target online to gain money or information illegally.
Health, Well-being and Lifestyle Identify rules to keep us safe in and beyond the home.	**Health, Well-being and Lifestyle** Identify rules to keep us safe in and beyond the home giving examples of these.	**Health, Well-being and Lifestyle** Explain why spending too much time online can negatively impact me.	**Health, Well-being and Lifestyle** Explain why spending too much time online can negatively impact me giving examples.	**Health, Well-being and Lifestyle** I know technology can be a distraction and strategies to limit time using technology.	**Health, Well-being and Lifestyle** To understand how technology can affect sleep and strategies to help this.	**Health, Well-being and Lifestyle** To describe common systems to regulate age-related content. Assess and monitor impact of technology on my health regulating this.
Online Bullying To describe ways people can be unkind online and how this makes others feel.	**Online Bullying** To describe ways people can be unkind online and how this makes others feel giving examples.	**Online Bullying** To describe ways people can be unkind online and how this makes others feel. Know how to talk to someone about help for online bullying.	**Online Bullying** Describe what and how online bullying takes place. Know rules about how to behave online.	**Online Bullying** Give examples of how online bullying takes place. Understand how it makes others feel and the impact on their reputation.	**Online Bullying** Give examples of how online bullying takes place. Know where to seek help, report the bullying and block abusive users.	**Online Bullying** To explain a range of ways to report online bullying both at home and in school.
Online relationships I can recognise the internet can be used to communicate.	**Online relationships** I can recognise the internet can be used to communicate and why it’s important to be kind online.	**Online relationships** To give examples of how the internet can be used to communicate people e.g. email.	**Online relationships** To give examples of online communication and know the risks of these. Explain the differences for risk and trust between an	**Online relationships** Describe how to stay safe in a range of online social environments giving examples how to be respectful online.	**Online relationships** Describe how to communicate positively online and understand that some may want to do harm online.	**Online relationships** Understand well-being responsibilities to myself and others in my social group. Know how impulsive communications can cause harm online. Demonstrate how to support others and report problems online.

			online and real life relationship.			
Self-image To know that I can say 'No' in real life and online.	**Self-image** To know that I can say 'No' in real life and online giving examples of people to seek help from.	**Self-image** People's identity may be different online to in real life. Give examples of issues online that cause negative feelings. Describe ways people may make themselves look online.	**Self-image** Explain what is meant by 'identity' and ways that a person can be presented online e.g. using an avatar.	**Self-image** Explain online identity is different to real life and describe how online decisions can change the way people perceive me.	**Self-image** Understand how identity can be copied, modified or altered and demonstrate responsible choices.	**Self-image** Describe different feelings from the online world and how to support these. Identify how the media shapes ideas about gender and know how to seek help.
Online reputation To identify ways information is put online.	**Online reputation** Understand information can be copied and know when to ask an adult.	**Online reputation** Know information can last online for a long time and know when to ask an adult.	**Online reputation** Know to take care about the information I share online seeking support when unsure.	**Online reputation** Describe how others can find information online and explain how information can be created, copied or shared.	**Online reputation** Find and describe information about people online understanding that judgements can be made.	**Online reputation** Explain and develop ways to build a positive reputation online.
Managing information online Explain how the internet can help find information out.	**Managing information online** Use a simple search seeking help if unsure.	**Managing information online** Use search engines and navigate a simple web page. Explain voice activation e.g. Siri, Alexa, Google Now. Understand some information may not be true.	**Managing information online** Use key phrases in search engines explaining auto complete. Explain how the internet can be used to buy and sell things.	**Managing information online** To distinguish between a fact, opinion and belief. Describe methods used to encourage people to buy things online. Know that someone online might be a computer programme.	**Managing information online** Search and evaluate information online explaining what is meant by a 'hoax'. Know and explain the difference between mis-information and dis-information.	**Managing information online** Use search engines and understand how they rank sites. Analyse the validity of information understanding the 'manipulation', 'persuasion and 'influence' online. Identify, flag and report inappropriate content.
Ownership Name and know my work belongs to me.	**Ownership** Know how to save work that belongs to me.	**Ownership** Recognise content that belongs to others online.	**Ownership** Explain that copying others' work online without permission can cause problems.	**Ownership** Consider whether I have the right to use online content.	**Ownership** Assess and justify when it is acceptable to use work of others giving examples of when it is permitted to be reused.	**Ownership** Search online for content that can be used online. Demonstrate how to reference and acknowledge sources used online.
How do you think a farmer might use technology to look	What is coding? What is an instruction? What is debugging?	What is an algorithm and why is it useful in coding?	How can variables be used in coding?	What are the stages of design, code, test and debug?	How can I sort data in databases to make it effective for understanding?	How can input be used in coding? How can advanced calculation in spreadsheets support real life use?

after the animals on the farm? How do you think the nurses and other staff would use technology at the hospital? Etc. What is personal information? When can I say 'No'? How do people communicate on the Internet?	In what ways can we sort? What is a spreadsheet? What is a password?	How can a database help organise information? How can I search the Internet? What is an email? Why is spending too much time online bad for me?	How can data be presented in suitable graphs? How can databases and branching databased help organise information? What is online identity? What information is safe to send by email?	How can variables and if/else statements be useful? How can continuous data be presented in a spreadsheet? What is the difference between a fact, opinion and belief? What is a search engine? How can I keep personal information private?	How can product be calculated using a spreadsheet? How can spreadsheets support budgeting? How do I seek help, report online bullying and block abusive users?	Why do I build a positive online reputation? How can I self-regulate my well-being? What is the difference between the Internet and WWW? What is a blog?
	Instruction Algorithm Computer Program Debug Direction Arrow Backwards Forwards Right turn Left turn Action Design Mode Input	As Year 1 in addition to: Command Code block Code design Design mode Repeat Timer	As Year 2 in addition to: Action Event If Input Output Computer simulation Variable	As Year 3 in addition to: Control If/Else LOGO BK FD RT LT REPEAT SETPC SETPS PU PD	As Year 4 in addition to: Simulation Code design Design Mode Sequence Timer Variable	As Year 5 in addition to: As previous years in more complex coding situations
	Sort Criteria Pictogram Data Collate Cell Rows Spreadsheet Column	Copy Paste Columns Rows Equals tool Database	Advance mode spreadsheet <>= Communication Email Compose Send CC Attachment	Formula Wizard Formula Charts	Average Advance Mode Binary Tree Sort Group Arrange Statistics	Blog Blog page Collaborative

	Count tool		Branching database Data			
Personal information Trust Online Communicate	Log in/Log out Username Password Avatar Log out Tools Save Password Online safety E-safety search	Voice Webpage Identity Email Self-image bullying	Private Real life relationship Online Key phrases Search engine Auto complete Permission ownership	Imposter Strong password Online reputation Perception Fact Opinion Belief	Technology Well-being Hoax Mis-information Dis-information	Illegal Manipulation Persuasion Influence Validity Media Gender Social groups Impulsive Self-regulating

New learning