Hilderthorpe Primary School
Caring and learning together for success.
Computing Progression of skills

Computing Progression of skills EYFS

EYFS	Knowledge	Skills	Outcomes
Programming	**ELG 02** Understanding: children follow instructions involving several ideas or actions. They answer 'how' and 'why' questions about their experiences and in response to stories or events.	I can give instructions to my friend and follow their instructions to move around. I can describe what happens when I press buttons on a robot. I can press the buttons in the correct order to make my robot do what I want.	The children will be able to use pre-coding penguins to talk about sequencing a simple set of directions. They will use Bee-bots and other programmable toys to accomplish a simple sequence of movement.
Information Technology	**ELG 15 Technology:** children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.	I can tell you about technology that is used at home and in school. I can operate simple equipment. I can use a safe part of the Internet to play and learn. I can operate a laptop with increasing mouse control.	The children will be able to talk about technology they use everyday to accomplish simple tasks. They will be able to operate a simple drawing program and create their own pictures or text on screen.
	ELG 17 Being imaginative: children use what they have learnt about media and materials in original ways, thinking about uses and purposes. They represent their own ideas, thoughts and feelings through design and technology, art, music, dance, role-play and stories. *NB: Aspects of almost all of the other ELGs could be enhanced or evidenced though the use of technology e.g. ELGs 01, 02, 09 and 10 would all benefit from the use of eBooks and recording devices*	I can use a digital device to create my own pictures. I can use a digital device to record my own voice. I can use a digital device to take a photograph of something have done.	The children will be able to use a tablet to take a photograph or recorder such as a 'talking postcard' to record their ideas.

Digital Literacy e-safety	ELG 06 Self-confidence and self-awareness: children are confident to try new activities, and say why they like some activities more than others. They are confident to speak in a familiar group, will talk about their ideas, and will choose the resources they need for their chosen activities. They say when they do or don't need help. ELG 07 Managing feelings and behaviour: children talk about how they and others show feelings, talk about their own and others' behaviour, and its consequences, and know that some behaviour is unacceptable. They work as part of a group or class, and understand and follow the rules. They adjust their behaviour to different situations, and take changes of routine in their stride.	I can talk about what they are doing on a computer. I can say if something they find on the internet makes them feel bad. I can speak to an adult about what they have seen.	Digital Literacy e-safety

Computing Progression of skills KS1			
Year 1	**Knowledge**	**Skills**	**Outcome**
Programming **Computer Science**	Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.	I know that an algorithm is a set of instructions used to solve a problem or achieve an objective. I can describe what actions I will need to do to make something happen. I know that an algorithm written for a computer is called a program.	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.
	Create and debug simple programs	I can begin to use software/apps to create movement and patterns on a screen. I can use the word debug when I correct mistakes when I 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 x the code, e.g. Bubbles activity in 2Code.
	Use logical reasoning to predict the behaviour of simple programs	I can begin to predict what will happen for a short sequence of instructions.	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.
Information Technology	Use technology purposefully to create, organise, store, manipulate and retrieve digital content.	I can be creative with different technology tools. I can use technology to create and present my ideas. I can use the keyboard or a word bank on my device to enter text. I can save information in a special place and retrieve it again.	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.
Digital Literacy	Recognise common uses of information technology beyond school.	I can recognise ways that technology is used in my home and community. I can recognise the ways we use technology in our classroom.	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.
e-safety	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.	I can tell an adult when I see something unexpected or worrying online. I can talk about why it's important to be kind and polite. I can recognise an age appropriate website. I can agree and follow sensible e-Safety rules.	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.

Year 2	Knowledge	Skills	Outcome
Programming : Computer Science	Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.	I can tell you the order I need to do things to make something happen and talk about this as an algorithm. I can program a robot or software to do a particular task.	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.
	Create and debug simple programs	I can watch a program execute and spot where it goes wrong so that I can debug.	Children can create a simple program that achieves a special 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.
	Use logical reasoning to predict the behaviour of simple programs	I can tell you the order I need to do things to make something happen and talk about this as an algorithm. I can look at my friend's program and tell you what will happen.	Children can identify the parts of a program that respond to special events and initiate special actions. For example, they can write a cause and effect sentence of what will happen in a program.
Information Technology	Use technology purposefully to create, organise, store, manipulate and retrieve digital content.	I can use technology to organise and present my ideas in different ways. I can use the keyboard on my device to add, delete and space text for others to read. I can tell you about an online tool that will help me to share my ideas with other people. I can save and open files on the device I use. I can make and save a chart or graph using the data I collect. I can talk about the data that is shown in my chart or graph. I can tell you what kind of information I could use to help me investigate a question.	Children demonstrate an ability to organise data using, for example, a database such as 2Invesitigate and can retrieve special data for conducting simple searches. Children are able to edit more complex digital data such as music compositions within 2Sequence. Children are con dent when creating, naming, saving and retrieving content. Children use a range of media in their digital content including photos, text and sound.
Digital Literacy	Recognise common uses of information technology beyond school.	I am starting to understand that other people have created the information I use. I can identify benefits of using technology including finding information, creating and communicating.	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.
e-safety	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.	I can describe the things that happen online that I must tell an adult about. I can talk about why I should go online for a short amount of time. I can talk about why it is important to be kind and polite online and in real life. I know that not everyone is who they say they are on the Internet.	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.

Key Stage 2			
Year 3	**Knowledge**	**Skills**	**Outcome**
Programming	Design, write and debug programs that accomplish special goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	I can break an open-ended problem up into smaller parts.	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 x it.
	Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	I keep testing my program and can recognise when I need to debug it. I can use repeat commands.	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.
	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	I can use repeat commands. I can detect a problem in an algorithm, which could result in unsuccessful programming.	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 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.
	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.	I can tell you ways to communicate with others online. I can communicate with someone by sending an email.	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 sing 2Email. They can describe appropriate email conventions when communicating in this way.
Information Technology	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	I can use search tools to find and use an appropriate website. I can describe the World Wide Web as the part of the Internet that contains websites.	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.
	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,	I can create different effects with different technology tools. I can combine a mixture of text, graphics and sound to share my ideas and learning. I can use appropriate keyboard commands to amend text on my device, including making use of a	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.

	analysing, evaluating and presenting data and information.	spellchecker. I can evaluate my work and improve its effectiveness.	
Digital Literacy e-safety	Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact.	I can talk about what makes a secure password and why they are important. I can protect my personal information when I do different things online. I can use the safety features of websites as well as reporting concerns to an adult. I can recognise websites and games appropriate for my age. I can make good choices about how long I spend online. I ask an adult before downloading files and games from the Internet. I can post positive comments online.	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.
Year 4	**Knowledge**	**Skills**	**Outcome**
Programming	Design, write and debug programs that accomplish special goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	I can use an efficient procedure to simplify a program. I know that I need to keep testing my program while I am putting it together. I recognise that using algorithms will also help solve problems in other learning such as Maths, Science and Design and Technology.	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.
	Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	I can refine a procedure using repeat commands to improve a program. I can use a variable to increase programming possibilities. I can change an input to a program to achieve a different output. I can use 'if' and 'then' commands to select an action.	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.
	Use logical reasoning to explain how some simple algorithms work and to	I can use logical thinking to solve an open-ended problem by breaking it up into smaller parts.	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

	detect and correct errors in algorithms and programs.	I can recognise an error in a program and debug it.	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. e.g. traf c light algorithm in 2Code. In programs such as Logo, they can 'read' programs with several steps and predict the outcome accurately.
	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.	I can recognise how computers are linked together by servers to form a network. I can recognise how information is sent over the World Wide Web.	Children recognise the main component parts of hardware that 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.
Information Technology	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	I think about the reliability of information I read on the World Wide Web	Children understand the function, features and layout of a search engine. They can appraise selected webpages for credibility and information at a basic level.
	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 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.
Digital Literacy e-safety	Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact.	I choose a secure password when I am using a website. I can talk about the ways I can protect myself and my friends from harm online. I use the safety features of websites as well as reporting concerns to an adult. I know that anything I post online can be seen by others. I choose websites and games that are appropriate for my age. I can help my friends make good choices about the time they spend online. I can talk about why I need to ask a trusted adult before downloading files and games from the Internet. I comment positively and respectfully online.	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.

Year 5	Knowledge	Skills	Outcome
Programming	Design, write and debug programs that accomplish special goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	I can decompose a real life problem into smaller parts to design an algorithm for a specific outcome and use this to write a program. I can use logical reasoning to detect and debug mistakes in a program. I use logical thinking, imagination and creativity to extend a program.	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 special line of code.
	Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	I can refine a procedure using repeat commands to improve a program. I can use a variable to increase programming possibilities.	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.
	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	I can use logical reasoning to detect and debug mistakes in a program. I use logical thinking, imagination and creativity to extend a program.	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.
	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.	I can describe different parts of the Internet. I can use and select appropriate different online communication tools for different purposes.	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.
Information Technology	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	I can use a search engine to find appropriate information and check its reliability. I can recognise and evaluate different types of information I find on the World Wide Web.	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.	I can use text, photo, sound and video editing tools to refine my work. I can use the skills I have already developed to create content using unfamiliar technology. I can select, use and combine the appropriate technology tools to create effects that will have an impact on others. I can select an appropriate online or offline tool to create and share ideas.	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

		I can review and improve my own work and support others to improve their work.	
Digital Literacy e-safety	Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact.	I protect my password and other personal information. I can explain why I need to protect myself and my friends and the best ways to do this, including reporting concerns to an adult. I know that anything I post online can be seen, used and may affect others. I can talk about the dangers of spending too long online or playing a game. I can explain the importance of communicating kindly and respectfully. I can discuss the importance of choosing an age-appropriate website or game. I can explain why I need to protect my computer or device from harm. I know which resources on the Internet I can download and use.	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.
Year 6	**Knowledge**	**Skills**	**Outcome**
Programming	Design, write and debug programs that accomplish special goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	I can deconstruct a problem into smaller steps, recognising similarities to solutions used before. I can explain and program each of the steps in my algorithm. I can evaluate the effectiveness and efficiency of my algorithm while I continually test the programming of that algorithm.	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.

	Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	I can deconstruct a problem into smaller steps, recognising similarities to solutions used before. I can recognise when I need to use a variable to achieve a required output. I can use a variable and operators to stop a program. I can use different inputs (including sensors) to control a device or onscreen action and predict what will happen.	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.
	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	I can use logical reasoning to detect and correct errors in a algorithms and programs.	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.	I can tell you the Internet services I need to use for different purposes. I can describe how information is transported on the Internet.	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.
Information Technology	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	I can talk about the way search results are selected and ranked. I can check the reliability of a website.	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.
	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.	I can talk about audience, atmosphere and structure when planning a particular outcome. I can confidently identify the potential of unfamiliar technology to increase my creativity. I can combine a range of media, recognising the contribution of each to achieve a particular outcome. I can tell you why I select a particular online tool for a specific purpose. I can be digitally discerning when evaluating the	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.

		effectiveness of my own work and the work of others.	
Digital Literacy e-safety	Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact.	I protect my password and other personal information. I can explain the consequences of sharing too much about myself online. I support my friends to protect themselves and make good choices online, including reporting concerns to an adult. I can explain the consequences of spending too much time online or on a game. I can explain the consequences to myself and others of not communicating kindly and respectfully. I protect my computer or device from harm on the Internet.	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.