Holme Community School – Long Term Curriculum Planning

Subject	Computing	Cycle	A

What themes/ golden threads weave through the curriculum?	• **Computing Systems and Networks** • **Programming** • **Creating Media** • **Data Handling** • **Online Safety** • **Skills Showcase**
Why were these themes chosen?	The key five threads ensure a broad and balanced coverage of the national curriculum requirements across Digital Literacy, Information Technology and Computer Science. In addition, our 'Skills showcase' units provide pupils with the opportunity to learn and apply transferable skills.
What are the overall aims of this curriculum?	Our high-quality computing education equips our pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

Year Group		**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
EYFS	**Topic Heading**	**Using a computer (Computing Systems & Networks)**	**All about instructions (Programming)**	**Exploring Hardware (Computing Systems & Networks)**	**Introduction to data (Data Handling)**	**Programming Bee-Bots (Programming)**	
	What are the building blocks for this subject to ensure children are KS1 ready?	**Physical Development** Develop their small motor skills so that they can use a range of tools competently, safely and confidently. **Literacy** Spell words by identifying the sounds and then writing the sounds with letter/s.	**Communication and Language** Understand how to listen carefully and why listening is important. Describe events in some detail. Use talk to help work our problems and	**Communication and Language** Learn new vocabulary. Use new vocabulary throughout the day. Ask questions to find out more and to check they understand what has been said to them.	**Communication and Language** Articulate their thoughts and ideas in well-formed sentences. Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen.	**Personal, Social and Emotional Development** **ELG**: Managing Self> Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. **Mathematics** Count objects, actions and sounds. Link the number symbol (numeral) with its cardinal number value. Count beyond 10.	

		Re-read what they have written to check that it makes sense. **Mathematics** Link the number symbol (numeral) with its cardinal number value	organise thinking and activities, and to explain how things work and why they might happen. **Personal, Social and Emotional Development** **ELG**: Self-Regulation> Give focused attention to what the teacher says, responding appropriately even when engaged in activity, and show an ability to follow instructions involving several ideas or actions. **ELG**: Managing Self> Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. **ELG**: Building Relationships> Work and play cooperatively and take turns with	Articulate their thoughts and ideas in well-formed sentences. Use talk to help work out problems and organise thinking and activities and to explain how things work and why they might happen. **Personal, Social and Emotional Development** See themselves as a valuable individual. Physical Development Develop their small motor skills so that they can use a range of tools competently, safely and confidently. Confidently and safely use a range of large and small apparatus indoors and outside, alone and in a group. **Literacy** Spell words by identifying the sounds and then writing the sounds with letter/s. Write short sentences with known letter-sound correspondences using a capital and full stop.	**ELG**: Listening, Attention and Understanding> Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions. **ELG**: Listening, Attention and Understanding> Make comments about what they have heard and ask questions to clarify their understanding. **ELG**: Speaking> Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. **Mathematics** **ELG**: Numerical Patterns> Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity. Count objects, actions and sounds. Subitise.	

			others. **Physical Development** Know and talk about the different factors that support their overall health and wellbeing. Further develop the skills they need to manage the school day successfully	**Understanding the World** Describe what they see, hear and feel whilst outside	Count beyond 10. Compare numbers. Understand the 'one more than/ one less than' relationship between consecutive numbers. Continue, copy and create repeating patterns. Compare length, weight and capacity	
Year 1/2	**Topic Heading**	**Digital Imagery**	**Online Safety**	**Stop Motion**		**Scratch Jr**
	Link to themes/key concepts	**Creating Media** To know that holding the camera or device still and considering angles and light are important to take good pictures. To know that you can edit, crop and filter photographs. To know how to search safely for images online.	**Online Safety** To know that the internet is many devices connected to one another. To know what to do if you feel unsafe or worried online – tell a trusted adult. To know that people you do not know on the internet (online) are strangers and are not always who they say they are.	**Creating Media** To know that an animation is made up of a sequence of photographs. To know that small changes in my frames will create a smoother looking animation. To know what software creates simple animations and some of its features e.g. onion skinning.		**Programming** Secondary – Information Technology To know that coding is writing in a special language so that the computer understands what to do. To know that the character in ScratchJr is controlled by the programming blocks. To know that you can write a program to create a musical instrument or tell a joke.

			To know that to stay safe online it is important to keep personal information safe. To know that 'sharing' online means giving something specific to someone else via the internet and 'posting' online means placing information on the internet.		
	National Curriculum Objectives to be covered	Use logical reasoning to predict the behaviour of simple programs. Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Recognise common uses of information technology beyond school. Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	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.	Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Recognise common uses of information technology beyond school.	Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. Create and debug simple programs. Use logical reasoning to predict the behaviour of simple programs. Use technology purposefully to create, organise, store, manipulate and retrieve digital content.

	Key Subject Specific Vocabulary to be taught	crop drag and drop edit filter image import internet keyword resize search engine	appropriate going online in-person interactions online safety personal information posting online report sharing online stranger trusted adult	animation background decompose flipbook frames moving images object onion skinning plan still images	animation blocks button CGI fluid icon loop 'on tap' repeat sequence
	Core Activities	Create a sequence of pictures. To take clear photos. To edit photos. To search for and import images To create a photo collage	Discuss what the internet is and how to use it safely. Discuss people's feelings and emotions can be affected by online content. Discuss how to treat others, both online and in person. Discuss the importance of being careful when posting and sharing online. Discuss ways to balance time spent online and offline.	Learn what animation is Plan a stop motion animation Create a stop motion animation	Explore Scratch Jr Create an animation Use characters as buttons Follow an algorithm Plan and use code to create an algorithm

	Assessment	Create a photo collage Digital imagery Quiz	Online Safety Quiz	Create a stop motion animation Stop Motion Animation Quiz		Create an algorithm in Scratch Jr Programming Scratch Jr Quiz
Year 3/4	**Topic Heading**	**Collaborative learning – Google**	**Networks and the Internet**	**HTML**	**Website Design**	**LegoWeDo**
	Link to themes/ key concepts	**Computing systems and networks** To know that software can be used collaboratively online to work as a team. To know what type of comments and suggestions on a collaborative document can be helpful. To know that you can use images, text, transitions and animation in presentation slides.	**Computing systems and networks** To know that a network is a group of interconnected devices. To know the components that make up a network (Wireless access point/WAP, Network switch, Router, Server and devices). To know that a server is central to a network and responds to requests made. To know that the internet connects all the networks around the world. To know that a router connects us to the internet.	**Skills showcase** To know and identify examples of HTML tags. To understand what changing the HTML and CSS does to alter the appearance of an object on the web. To know that copyright means that those images are protected and to understand that we should do a "creative commons" image search if we wish to use images from the internet. To know what "fake news" is and ways to spot websites that carry this type of misinformation. To know what the "inspect" elements tool is and ways of using it to explore and alter text and images.	**Creating media** To know that a website is a collection of pages that are all connected. To know that websites usually have a homepage and subpages as well as clickable links to new pages, called hyperlinks. To know that websites should be informative and interactive.	**Programming** To know and use a specific design process. To know how to define a clear design need. To know how to iterate and improve design solutions. To know how to problem-solve and communication effectively.

			To know what a packet is and why it is important for website data transfer.			
	National Curriculum Objectives to be covered	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. 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.	Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs,	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. 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	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. 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.

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	Key Subject Specific Vocabulary to be taught	collaboration comment format multiple choice numerical data pie chart resolved share spreadsheets survey	network network switch packet data router server the cloud WiFi wired wireless wireless access point	Component CSS End tag Hex code HTML Remixing Script Start tag Tags URL	Audience Checklist Embed Features Homepage Hyperlinks Published Subpage Tab Theme	Axle Gears Hub/Controller Measurement Motion Motor Pulley Prototype Sensor STEM
	Core Activities	create a presentation create and share a Google Form use a shared spreadsheet	Take part in network safari Learn the network rap Role-play how a website works Create a network diagram Play the packet puzzle game	Change HTML code for a specific purpose. Change the HTML and CSS to alter the appearance of an object on the web. Explore complex components of a web page. Alter key elements on a web page including text and images.	Explore the features of Google Sites Plan content for a collaborative webpage Create a webpage of a collaborative class website Plan, create and evaluate a website	Design a simple machine that can move things. Create and personalise a mascot. Create a mechanical friend. Design a sound machine and explore programming variables. Design and program a robot that performs a cultural dance, tells a story through dance, or dances in pairs or groups.

	Assessment Activity	Create a questionnaire in Google Forms and share with class Collaborative Learning Quiz	Create a network diagram Networks and the Internet quiz	Alter key elements on a web page including text and images. HTML Quiz	Plan, create and evaluate a website Websites Quiz	Design, build and program a dancing robot.	
Year 5/6	**Topic Heading**	**Online Safety and using Search Engines**	**Stop Motion Animation**	**Big Data (QR Codes, Barcodes, RFID)**		**Ino Bots**	**Microbit:Rainbow Matrix LED**
	Link to themes/ key concepts	**Online Safety** To know a digital footprint means the information that exists on the internet as a result of a person's online activity. To know what steps are required to capture bullying content as evidence. To know it is important to manage personal passwords effectively. What it means to have a positive online reputation. To know some common online scams.	**Creating Media** To know that decomposition of an idea is important when creating stop-motion animations. To understand that stop motion animation is an animation filmed one frame at a time using models, and with tiny changes between each photograph. To know that editing is an important feature of making and improving a stop motion animation.	**Data Handling** To know that data contained within barcodes and QR codes can be used by computers. To know that infrared waves are a way of transmitting data. To know that Radio Frequency Identification (RFID) is a more private way of transmitting data. To know that data is often encrypted so that even if it is stolen it is not useful to the thief. To know that data can become corrupted within a network but this is less likely to happen if it is sent in 'packets'. To know that devices or that are not updated are most vulnerable to hackers. To know the difference between mobile data and WiFi.		**Programming** To know that a Ino-Bots is a programmable device. To know that Ino-Bots use Scratch. To know and recognise coding structures including variables. To know what techniques to use to create a program for a specific purpose (including decomposition).	**Programming** To know that a Micro:bit is a programmable device. To know that Micro:bit uses a block coding language similar to Scratch. To know and recognise coding structures including variables. To know what techniques to use to create a program for a specific purpose (including decomposition).
	National Curriculum	Understand computer networks including	Design, write and debug programs that accomplish	Understand computer networks including the internet; how they can provide multiple services,		Design, write and debug programs that accomplish	Design, write and debug programs that accomplish

	Objectives to be covered	the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	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.	such as the world wide web; and the opportunities they offer for communication and collaboration. Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration

						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.
	Key Subject Specific Vocabulary to be taught	anonymity antivirus biometrics consent digital footprint digital personality phishing reliable source secure two-factor authentication	Animator Flip book Fluid movement Frames Model Moving images Onion skinning Stop motion Thaumatrope Zoetrope	Barcode Binary Bluetooth Corrupted GPS Infrared QR code Radio waves RFID SIM	Block-based Programming Command Conditional Statements Event-driven Programming Ino Bots Loop Programming Environment Sequence Sensor Variables	Micro:bit Pedometer Polling Predict Reset Sabotage Scoreboard Screen Systematic Variables
	Core Activities	Discuss online issues that give us negative feelings and know how to get help. Discuss the impact and consequences of sharing online.	Create one of the following: - Flip Book - Thaumatrope - Zoetrope	QR code treasure hunt Design an infrared invention Create a data encoding spreadsheet Create a theme park RFID spreadsheet	Getting started with InO-Bot Create algorithm - InO-Bot to move around in a specific shape.	Tinker with a new piece of software. Program an animation. Program a polling program,

		Discuss how to create a positive online reputation. Discuss how to capture bullying content as evidence. Discuss how to manage personal passwords effectively. Discuss how to be aware of strategies that help protect people online.	plan a stop motion video, thinking about the characters used. Create a stop motion animation. Edit and assess my stop motion animation.	Complete TFL counts spreadsheet activity Play data transmission game Complete personal mobile data calculation Design a smart city Design a smart school	Create algorithm including simple loop to enable stepping through the sounds on a key press Create algorithm using conditional statements, input/output with sensors and loops - switch on headlights when dark Create algorithm with increasing complexity using conditional statements, input/output with sensors and loops – avoid obstacles Create algorithm with increasing complexity using conditional statements, input/output with sensors and loops – responding to sound	recognising coding structures. Create a program for a specific task – create a pedometer Create a program for a specific task – scoreboard

	Assessment	Create ePoster or webpage Online Safety and using Search Engines quiz	Plan, create and edit a stop motion animation Stop motion quiz	Design and present “a smart school” presentation Big Data quiz 1 & 2	Create search and rescue robot using InO-Bot	Create a program for a specific task