COMPUTING

INTENT

At Stretham Primary, we want all children to be able to thrive as responsible, digital citizens. Technology is everywhere and will play a pivotal part in our children's lives. Therefore, we want to educate our pupils and model how to use technology positively and safely. We want our children to be excited, inspired and confident using a range of technology. Computing is coherently planned and sequenced as discrete lessons, using resources from the schemes iCompute and Teach Computing as well as accessing various internet safety resources online. Computing is additionally embedded across the whole curriculum to make learning creative and accessible. Key subject-specific vocabulary is built on and developed throughout the pupil's time in school. We strive to inspire all pupils to fulfil their potential, regardless of background, gender, ethnic origin or additional needs, cultivating a love of computing whilst developing their knowledge, understanding and skills.

Early Years

Area of Computing	Key Understanding and skills	Vocabulary	Implementation		Online Safety
Information Technology	Explain what a computer and peripherals are. Recognising that a range of technology is used in places such as homes and schools. Learning what a keyboard is and how to locate relevant keys. Learning what a sensor pad is and developing basic skills such as moving and clicking.	**Computer / computing** **Lap top** **Bee Bot** **Names of common age appropriate technology equipment**	Explore parts of old technology, junk modelling a computer Plugged and unplugged activities threaded through the EY curriculum linked to **iCompute.** Maths/Phonics/ stories using online websites.		Recognising that a range of technology is used in places such as homes and schools. Exploring what to do if they come across something that worries them or makes them feel uncomfortable when using the internet. Use Smartie the Penguin and Jessie and Friends- 'Watching Videos' to reinforce these messages.
Digital Literacy	Exploring tools in a simple paint program. Discuss the difference between digital and 'real' painting. Participate in group image searches, led by the teacher. Representing data through sorting and categorising objects in unplugged scenarios Representing data through pictograms	**Image** **keyboard** **Keys** **Upper/ lower case/letters** **Enter** **Camera** **Printer** **Technology**	Creating digital art Take a 'selfie' for reports Use Word to write a name label Write an email/letter to Santa Using a simple program to create a pictogram which has also been created using real objects.		**Key Vocabulary:** **Internet** **Safe** **Upset**
Computer Science	Following instructions as apart of practical activities and games and learning to debug when things go wrong . Learning to give simple instructions Learning that an algorithm is a set of instructions to carry out a task, in a specific order. Experimenting with programming instructions. Learning to debug instructions with help of an adult	**Forwards** **Backwards** **Left** **Right** **Go** **Clear** **Robot** **Sequence**	Explore Bee Bot with Bee Bot direction cards. Program Beebot to reach a particular destination. Debug when necessary. Identify when things have gone wrong and can they fix it?		

Year 1

Area of Computing		Key Understanding and skills	Vocabulary	Implementation	Online Safety
	Information Technology	Pupils recognise and can give examples of common uses of **information technology** they encounter in their daily routine beyond school.	**Technology** **Search** **Select** **Website** **Password** **Login**	Describe the main parts of a computer Develop mouse skills **NCCE Unit** – Technology around us	Pupils are becoming increasingly aware of **content**, **contact** and **conduct** benefits and risks, how to manage them safely and where to go for help and support when they have concerns or feel unsafe, worried or upset. They are beginning to develop a better understanding of their own and others' '**identity**' (including online), the importance of keeping personal information private and of seeking permission before sharing. They check with an adult before clicking on **pop ups**, **notifications** or **dialogue boxes**. They increasingly use a range of **digital devices** to communicate safely and respectfully online, making links to positive behaviour in the physical world. iSafe-Personal information and being safe online. Jessie and Friends- Sharing Photos online and Digiduck presentations will be explored. **Key Vocabulary:** **Personal information** **Private** **Online** **Password** **Trusted Adult**
	Digital Literacy	With adult guidance, pupils use a range of technology to enhance and present their learning. Within both specific computing lessons and cross curricular contexts, pupils are able to: *enquire with purpose, accessing **digital content** such as text, still and moving images, video and audio *collect **data** (e.g. numerical, research facts etc.) which they are able to retrieve, store and present as graphs, tables and charts *present and communicate their learning to others in a variety of ways using text, still images, video or audio	**Save/as** **Folder** **Windows** **program** **Font** **Size** **Delete** **Shift** **Share** **Camera roll** **Print**	Record sounds and play them back within Scratch/audacity **NCCE Unit** - Digital painting / keyboard skills **iWrite**- Creating, manipulating and storing digital text **iData**-Introduction to data representation **iModel**- Introduction to computer modelling	
	Computer Science	Pupils create, **debug** and implement instructions (simple **algorithms**) as **programs** on a range of digital devices. Pupils understand that **digital devices** follow precise and unambiguous instructions. Pupils understand that digital devices can **simulate** real situations.	**Program** **Programming** **Algorithm** **Instructions** **Turn** **Sprite** **Back drop** **Control** **Code** **Predict**	**iAlgorthim**- Unplugged activities for algorithms **NCCE Unit** – Moving a robot Learners will explore using individual commands, both with other learners and as part of a computer program. **Beebot emulator** **NCCE Unit** – animation. Introduces learners to on-screen programming through ScratchJn. Use programming blocks to use, modify, and create programs.	

Year 2

Area of Computing		Key Understanding and skills	Vocabulary	Implementation	Online Safety
Information Technology		Pupils recognise common uses of **information technology** beyond school, including those which they don't frequently encounter in their daily routine. Pupils understand that computers are not intelligent but can appear to be when following **algorithms**. They can share examples of this.	**Search Engine Name eg Bing/ Google/Safari** **Search** **Select**	**NCCE Unit** – Technology around us. How is IT beneficial to our lives?	Pupils are becoming increasingly aware of **content**, **contact** and **conduct** benefits and risks, how to manage them safely and where to go for help and support when they have concerns or feel unsafe, worried or upset. They are beginning to develop a better understanding of their own and others' '**identity'** (including online), the importance of keeping personal information private and of seeking permission before sharing. They check with an adult before clicking on **pop ups**, **notifications** or **dialogue boxes**. They increasingly use a range of **digital devices** to communicate safely and respectfully online, making links to positive behaviour in the physical world. **Project Evolve -** Jessie and Friends- Playing Games online and Animal Magic videos will be explored. **Key Vocabulary:** **Concern** **Respectful** **Acceptable** **Report** **Inappropriate**
Digital Literacy		With adult guidance, pupils use a range of technology to enhance and present their learning. Within both specific computing lessons and cross curricular contexts, pupils are able to: *enquire with purpose, accessing **digital content** such as text, still and moving images, video and audio *collect **data** (e.g. numerical, research facts etc.) which they are able to retrieve, store and present as graphs, tables and charts *present and communicate their learning to others in a variety of ways using text, still images, video and audio, including combining 2 or more of these mediums	**APP** **Image** **Repeat** **Animate** **Presentation** **Slide** **Cut** **copy** **paste** **crop** **Text** **Create** **Store** **retrieve**	**iAnimate**-Pivot Animator and Jellycam software explored to create a Stop Motion Animation linked to class topic Keyboard skills **NCCE Unit** – Making music Make patterns and use those patterns to make music with both percussion instruments and digital tools. **NCCE Unit** – Digital photography Recognise that different devices can be used to capture photographs and will gain experience capturing, editing, and improving photos **iSearch-** using the web to find things out	
Computer Science		Pupils understand that **algorithms** are implemented as **programs** on **digital devices.** Pupils create and **debug programs** to achieve specific goals and understand the importance of **sequence**. Pupils use the **principles of logical reasoning** to plan and predict the behaviour of simple **programs**. Pupils solve problems on and off screen.	**Coding/ Code** **Debug** **Sequence** **Repetition** **Instructions** **Design** **Microphone**	**NCCE Unit** – Robot algorithms. Use given commands in different orders to investigate how the order affects the outcome. Learn about design in programming. **iProgram Unit 2**- Programming with Scratch	

Year 3

Area of Computing	Key Understanding and skills	Vocabulary	Implementation	Online Safety
Information Technology	Pupils understand that **computers** (in various forms) generally accept **inputs** and produce **outputs** and can give examples of this. Pupils recognise - and can describe - some of the services offered by the **Internet**, especially those used for communication and collaboration.	Network Hub Web page browser Navigate Unique Software/ Hardware Digital Device	**NCCE Unit** – Connecting Computers develop understanding of digital devices, initial focus on inputs, processes, and outputs. Comparing digital and non-digital devices, introduce to computer networks that include infrastructure devices like routers and switches.	Pupils are able to identify a range of **content**, **contact** and **conduct** benefits and risks, describe how to manage them safely and respectfully and know where to go for help and support when they have concerns. They can explain what is meant by '**identity'**, how this might be represented differently in different situations and why others might mis-represent their identity. They develop their understanding of '**trust'** and the importance of being careful about what is shared online and of giving and gaining **consent**. Pupils can describe **positive and negative effects of online activity / behaviours** and begin to understand how to make safer and healthier decisions, including considering the appropriateness of games and online content for different ages. Pupils can describe positive ways for someone to interact with others online and understand how this will positively impact on how others perceive them. **iSafe**- staying safe online- Play, Like, Share- Think U know resource **Key Vocabulary:** **Trust** **Incident** **Respond** **Cyberbullying** **Agreement** **Copyright**
Digital Literacy	With increasing levels of autonomy, pupils are becoming confident and creative users of technology. Within both specific computing lessons and cross curricular contexts, pupils are able to: *follow and expand on agreed lines of enquiry, using key words and phrases to effectively access **digital content** such as text, still images, video and audio *identify, collect and manipulate different types of **data** (e.g. numerical, research facts etc.) which they present as **information**, showing a greater awareness of purpose and audience. *present and communicate their learning to others in a variety of ways using text, still images, video and audio. They combine **digital tools** to achieve **specific goals** and think carefully about the **impact on their audience.**	Data source Interpret present Sort Present Bar chart Pictogram Table Software information	**iPodcast**- Editing audio with Podcasting **NCCE Unit** – Desktop publishing Become familiar with the terms 'text' and 'images'. Use desktop publishing software and consider careful choices of font size, colour and type to edit and improve premade documents. (This unit suggests using Adobe Spark but can use Word/PowerPoint/Publisher. **NCCE Unit** – branching databases. Develops understanding of what a branching database is and how to create one. Understand what attributes are and how to use them to sort groups of objects by using yes/no questions. Create physical and on-screen branching databases.	
Computer Science	Pupils create **programs** to accomplish specific goals using an increasing range of **digital devices** and **applications**. They can **decompose** programs to test them and understand how making even small changes to an **algorithm** can have a significant impact on the outcome. They begin to design and create programs that use sequence.	Goal Pattern Input Output Design Devise Forever Select Duplicate Predict Logical Reasoning	**NCCE Unit** – sequencing music. Explores sequencing in programming through Scratch. Introduced to motion, sound, and event blocks which they will use to create their own programs, featuring sequences. Final project is to make a representation of a piano. **IProgram Unit 1**- Games and animation development using Scratch. **Crumble**- physical systems-program a Pumpkin to flicker/Christmas tree lights	

Year 4

Area of Computing	Key Understanding and skills	Vocabulary	Implementation	Online Safety
Information Technology	Pupils develop a basic understanding of how computers can be linked to form a **local network** such as those found in schools. Pupils recognise that there is a difference between the **Internet** and the **World Wide Web.** They can recognise and describe some of the services offered by the **Internet**, especially those used for communication and collaboration.	**URL** **Research** **Communicate** **IP Address** **Web Server** **Browser Author** **Domain** **Hyperlinks** **Refresh** **Wired/ Wireless**	**NCCE Unit** – The Internet learn the World Wide Web is part of the internet. Can appreciate how search results are selected	Pupils are able to identify a range of **content**, **contact** and **conduct** benefits and risks, describe how to manage them safely and respectfully and know where to go for help and support when they have concerns. They can explain what is meant by '**identity'**, how this might be represented differently in different situations and why others might mis-represent their identity. They develop their understanding of '**trust'** and the importance of being careful about what is shared online and of giving and gaining **consent**. Pupils can describe **positive and negative effects of online activity / behaviours** and begin to understand how to make safer and healthier decisions, including considering the appropriateness of games and online content for different ages. Pupils can describe positive ways for someone to interact with others online and understand how this will positively impact on how others perceive them. **Key Vocabulary:** **Reliable** **Accurate** **Caution** **Restructuring**
Digital Literacy	With increasing levels of autonomy, pupils are becoming confident and creative users of technology. Within both specific computing lessons and cross curricular contexts, pupils are able to: *follow and expand on agreed lines of enquiry, using key words and phrases to effectively access **digital content** such as text, still images, video and audio *identify, collect and manipulate different types of **data** (e.g. numerical, research facts etc.) which they present as **information**, showing a greater awareness of purpose and audience. *present and communicate their learning to others in a variety of ways using text, still images, video and audio. They combine **digital tools** to achieve **specific goals** and think carefully about the **impact on their audience.**	**Functions** **Cell** **Column** **Spreadsheet** **Storyboard** **Motion** **Enhance** **Evaluation**	**NCCE Unit** – photo editing Develop understanding of how digital images can be changed and edited, how they can then be resaved and reused. Consider the impact that editing images can have, and evaluate the effectiveness of their choices. **NCCE Unit** – data logging. Consider how and why data is collected. Consider the senses that humans use and how computers can use special input devices called sensors to monitor the environment.	
Computer Science	Pupils create and debug **programs** containing **simple repetition** (e.g. 'repeat x times' and 'repeat forever') as well as more **complex repetition** (e.g. 'nested loops') Pupils increasingly use their programming capability to control or simulate a range of different **outputs** in **physical systems.** Pupils begin to explore and notice the similarities and differences between **programming languages** and use this knowledge to help them create and **debug programs** efficiently.	**Error** **Accurate prediction** **Variable** **Decomposition** **Abstract** **Logic** **Reason** **Control Variable/s**	**iProgram Unit 1**- Making shapes and navigating mazes with TurtleArt /Robomind. **IProgram Unit 3**- Programming puzzles with Lightbot. **NCCE Unit** -Scratch. Look at the difference between count-controlled and infinite loops, use their knowledge to modify existing animations and games using repetition. Their final project - design and create a game which uses repetition. **Crumble**-Physical systems- program a traffic light sequence.	

Year 5

Area of Computing	Key Understanding and skills	Vocabulary	Implementation	Online Safety
Information Technology	Pupils know that there is a difference between the **Internet** and the **World Wide Web** and understand that the web is just one of the services offered by the Internet (as well as, e.g. **email** and **VoIP services** such as Skype). They appreciate how **search results** are ranked, including an understanding of the use of different **algorithms** to prioritise results. Pupils understand that the highest-ranking search results may not always be the most relevant. They appraise search results based on their **relevance** and **trustworthiness**, and can explain what is meant by '**fake news**'	Intranet LAN (local area network) WAN (wider area network) Server Relevance Fact/opinion Authenticity Reliability	**NCCE Unit** – Sharing information Develop understanding of computer systems and how information is transferred between systems and devices. **Evaluating digital content** **Fake News**	Pupils identify and manage the benefits and risks of a range of online activities in terms of **content**, **contact** and **conduct** to ensure they are **safe**, **respectful** and **responsible** online. They know how to report concerns, seek support for themselves and others and persist until they get the help they need. Pupils make responsible choices about their own online **identity** and consider the potential impact of this on their **digital footprint.** They understand that online **identities** can be **copied** or **modified** and some of the possible implications of this. They can describe times when they might responsibly share **personal information** (including payment details), the importance of seeking permission and the need for **strong passwords**. They can describe ways technology may impact their own and others' **physical and mental wellbeing** (positively and negatively), understand their responsibilities in regard to this and can suggest a range of positive strategies to limit the negative impact of technology and online behaviours. Understand the importance of using technology respectfully and responsibly Project Evolve - **Key Vocabulary:** **Malicious** **Remove** **Secure** **Online material** **Reference**
Digital Literacy	Pupils are confident, capable and creative users of technology. Within both specific computing lessons and cross curricular contexts, pupils are able to: *create and effectively follow lines of enquiry to support their learning, and are discerning in **evaluating digital content** they encounter *identify, collect and analyse different types of **data** (e.g. numerical, words, images, video etc.) which they manipulate and re-present as **information** for a variety of audiences and purposes. *select and make effective use of **digital tools** to create **digital artefacts** both under instruction and of their own choosing; *decide on the most appropriate way to present their learning - thinking about aesthetics, functionality and impact on the user, and responding appropriately	Function key names for Paint Package Screen effect Thumb nail Screen draft Editing Digitally Manipulating Impact audience	**NCCE Unit** – vector drawing Learn that vector images are made up of shapes. Learn how to use the different drawing tools and how images are created in layers. Explore ways which images can be grouped and duplicated to support them in creating more complex pieces of work. **NCCE Unit** – video editing Learn how to create short videos in groups.They will develop the skills of capturing, editing, and manipulating video **iWeb-** Remixing and creating web content using HTML **NCCE Unit** – flat file databases Looks at how a flat-file database can be used to organise data in records. Pupils use tools within a database to order and answer questions about data. They create graphs and charts from their data to help solve problems.	
Computer Science	Pupils create, **deconstruct** and refine **programs** to accomplish specific goals. They create programs with **loops** which terminate when **conditions** are met or continue whilst **conditions** are present (e.g. *'repeat until'* and *'repeat whist'*). Pupils understand and use simple **selection** (e.g. *if/then* and *if/then/else*) to create **interactive programs** based on **conditions** being met / not met.	Simulation External Device Physical System Input Output Design Brief Decomposition	**NCCE Unit** – Selection in quizzes. Develop their knowledge of selection by revisiting how conditions can be used in programs and then learning how the If... Then... Else structure can be used to select different outcomes depending on whether a condition is true or false. They represent this understanding in algorithms and then by constructing programs using the Scratch. **MBot**s- programmable robots-Use decomposition to break up and solve problems. **iCrypto-**Introduction to cryptography **NCCE Unit** – selection in physical computing. Use physical computing to explore the concept of selection in programming through the use of the Crumble. Crumble switch/motor unit – link to D&T	

Year 6				
Area of Computing	Key Understanding and skills	Vocabulary	Implementation	Online Safety
Information Technology	Pupils understand and can explain how **computer networks** work, including the **Internet.** They begin to understand how **data** travels across **networks** in **packets** and how these can be broken up and reconstructed. When accessing information online, pupils recognise that **opinions** may be presented as **facts.** They can describe why an opinion may easily become popular online but they understand that this doesn't necessarily make it true. They understand that some online content may be commercially sponsored such as **adverts in search results** or content presented by **social media influencers**.	Rank Misleading Plagiarises Restrictions Smart Research Checksum TCP/IP Packet	**iNetwork**- Networks, data and creating web content **NCCE Unit** – Communication Class will learn about the World Wide Web as a communication tool. learn how we find information on the World Wide Web, through learning how search engines work (including how they select and rank results) and what influences searching, and through comparing different search engines. They will then investigate different methods of communication, before focusing on internet-based communication. Finally, they will evaluate which methods of internet communication to use for particular purposes. **Barefoot** – Selecting search activity Ranking Search activity	Pupils identify and manage the benefits and risks of a range of online activities in terms of **content**, **contact** and **conduct** to ensure they are **safe**, **respectful** and **responsible** online. They know how to report concerns, seek support for themselves and others and persist until they get the help they need. Pupils make responsible choices about their own online **identity** and consider the potential impact of this on their **digital footprint.** They understand that online **identities** can be **copied** or **modified** and some of the possible implications of this. They can describe times when they might responsibly share **personal information** (including payment details), the importance of seeking permission and the need for **strong passwords**. They can describe ways technology may impact their own and others' **physical and mental wellbeing** (positively and negatively), understand their responsibilities in regard to this and can suggest a range of positive strategies to limit the negative impact of technology and online behaviours.
Digital Literacy	Pupils are confident, capable and creative users of technology. Within both specific computing lessons and cross curricular contexts, pupils are able to: *create and effectively follow lines of enquiry to support their learning, and are discerning in **evaluating digital content** they encounter *identify, collect and analyse different types of **data** (e.g. numerical, words, images, video etc.) which they manipulate and re-present as **information** for a variety of audiences and purposes. *select and make effective use of **digital tools** to create **digital artefacts** both under instruction and of their own choosing; *decide on the most appropriate way to present their learning - thinking about aesthetics, functionality and impact on the user, and responding appropriately.	Formulas Tab Format Edit Interpret Activate Active cell Merged cell Aesthetics Improve Capture	**iApp unit 2**- Using a simplified JavaScript language, design and develop mobile apps. **NCCE Unit** – 3d modelling. Develop their knowledge and understanding of using a computer to produce 3D models. Learners will initially familiarise themselves with working in a 3D space, including combining 3D objects to make a house and examining the differences between working digitally with 2D and 3D graphics. Learners will progress to making accurate 3D models of physical objects, such as a pencil holder, which include using 3D objects as placeholders. **iData**- Introduction to Excel spreadsheets	**E Safety** Identify a range of ways to report concerns about content and contact **Project Evolve** Key Vocabulary: Critical Validate Security Settings Analyse Scam Phishing
Computer Science	Pupils create, **deconstruct** and refine an increasingly complex range of **programs** to accomplish specific goals. Pupils create **programs** which store, change and report **variables** (e.g. scores in a game or time) and can include multiple **variables** in a single **program**. Pupils can explain why they have structured **algorithms** as they have and describe the effect this has on a **program**.	Two way selection Abstraction Boolean Condition	**NCCE Games unit.** Explores the concept of variables in programming through games in Scratch. **MBot**s- programmable robots-Use decomposition to break up and solve problems. **NCCE Unit** – Sensing. Use Crumbles and adapt this unit to make a buggy that detects distance to prevent it crashing into a wall.	