Computing at Wilton C of E Primary

Intent

Our Computing curriculum is designed to ensure that all children at Wilton School are able to access the latest technology with confidence. Children will be taught to use technology appropriately to enhance their learning in other subjects as well as taught specific skills. Throughout the school children are taught the basics of coding and our encouraged to apply this other areas of the curriculum. Children at Wilton school will become confident in programming objects and on screen simulations as well as presenting information in coherent and user friendly ways. All children at Wilton be taught that sometimes it is better to not use a computer to complete a task.

Implementation

Computing is taught throughout the school in a variety of engaging methods. Children are taught to use laptops and tablet computers appropriately using Apps which enhance learning. The learning is blocked throughout the year to teach the core aspects of coding and supported as a vessel to produce and solidify learning in other lessons.

Impact

We know that children have been successful with their Computing learning as they are able to use their own knowledge to find and present the answers to their own questions. During the year we also hold ‘pop quizzes’ which cover curriculum content to ensure that the knowledge has become embedded in the children’s long term memory. Feedback is provided to pupils on a regular basis which allows children to move their learning forward.

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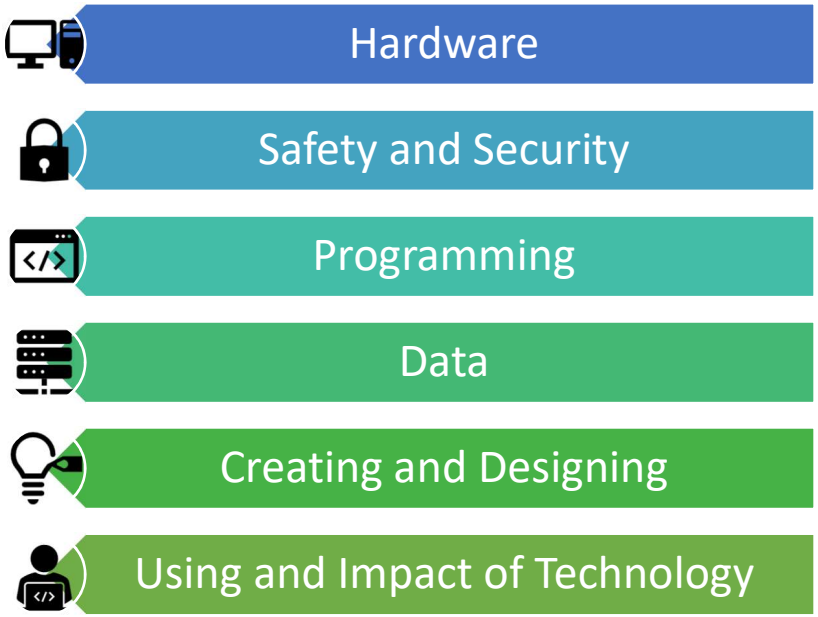
Computing Key Concepts



We have identified 6 second order concepts in computing, based upon the taxonomy strands from the National Centre for Computing Education. These key concepts run throughout every year group and build upon knowledge and skills. Below are further details about the concepts which have suggested links to the progression documentation and identified some key vocabulary that builds year on year. These are not exhaustive and further teaching points will be identified within planning.

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Year	Curriculum Drivers	Curriculum Content	
		Skills	Knowledge
EYFS	Communication To use technology to communicate with others.	• Children recognise that a range of technology is used in places such as homes and school. • Children select and use technology for particular purposes. • Have confidence in their own abilities. • Children play co-operatively, taking turns with others. • Children read and understand simple sentences. • They give their attention to what others say and respond appropriately, while engaged in another view. • Children handle equipment and tools effectively. • Offer explanations for why things might happen, making use of recently introduced vocabulary from stories, non-fiction, rhymes and poems when appropriate;	

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Year 1	Communication To listen to other opinions, share own opinions and explain in their own words and using the words of others Community To value and respect members of our community. Aspiration To begin to understand that there are many jobs that involve computing skills.	A. Follow a sequence of steps to solve a problem and create instructions that others can follow (for floor robots or onscreen sprites). B. Show awareness that work they create and save on a computer or tablet can be shown to others using another device. C. Observe and explore outcomes when buttons are pressed in sequences on a robot and identify and debug a simple algorithm. D. Select appropriate software to complete given tasks using text, images, audio and video clips. E. Search for or retrieve digital content, including images and information, in digital folders and, with supervision, online. F. Use a range of computing hardware for different purposes. G. Begin to use a range of software for different purposes. H. Collect Data for a range of purposes I. Explain simply that digital technology can be used to connect with others locally and globally. J. Recognise that some websites ask for private information and discuss how to handle these requests. K. Recognise that work they have created belongs to them.	A. An algorithm is a sequence of steps, instructions or rules that is used to perform a specific task. Algorithms can be followed by people or digital equipment. For algorithms to achieve the end goal, instructions have to be accurate and followed sequentially. B. When work is saved electronically, it can be stored on a hard drive, a shared drive called a server or online so that it can be opened on the same device or another device at a later time. C. An algorithm is a sequence of steps, instructions or rules that is used to perform a specific task. Algorithms can be followed by people or digital equipment. For algorithms to achieve the end goal, instructions have to be accurate and followed sequentially. Mistakes are called bugs and finding and fixing them is called debugging. D. Software is the programs that are used by a computer, such as word processing software, presentation software or image editing software. It can be used to create and combine digital content for different audiences and purposes. E. To search for digital content, the user needs to know the file name, file type and folder name or keywords and search terms to find the correct information. F. Hardware is the parts of a computer that you can touch, such as a mouse, tablet or floor robot. G. Software is the programs that are used by a computer, such as word processing software, presentation software or image editing software. H. Data can be collected manually or using digital technology, such as data loggers. It can be represented in different electronic forms, including charts and tables. I. Digital technology is used in all parts of everyday life, such as on a tablet to play a game or using a microwave to heat food. Some of this digital technology can be used to connect with others locally, such as sharing digital work in the classroom, or globally, such as using Skype on a computer to speak to a friend overseas. J. Private information includes name, address, date of birth or school and this information should not be shared online. Any concerns or worries should be reported to a trusted adult.

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		L. Understand that there are online tools that can help people to create and communicate. M. Recognise the ways digital technology can be used in the classroom, home and community.	K. When work is saved electronically, it needs to have a name that identifies it and is easily remembered. L. Software available online, such as email, social media platforms or blogs, can be made by individuals to communicate their ideas. M. Technology is used in many ways to do different jobs, such as using an interactive whiteboard in the classroom, using a tablet to do online shopping at home or using scanners in a shop in the community.

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Year 2	Communication To listen to other opinions, share own opinions and explain in their own words and using the words of others Aspiration To begin to understand that there are many jobs that involve computing skills.	A. Create a simple solution that tests an idea, predict the outcome and test that the intended solution works. B. Recognise that computers can be linked to share resources. C. Plan and enter a sequence of instructions using a robot, specifying distance and angle of turn. D. Create and edit multimedia components for a range of tasks. E. Recognise and demonstrate that some information can be found online and some offline. F. Use computing hardware in different ways to collect data. G. Use different types of software and identify their purpose. H. Use data handling skills to represent data digitally. I. Use digital technology appropriately to communicate and connect with others locally and globally. J. Stay safe online by choosing websites that are appropriate to visit (based on the confidence you have in the author(s) of the website). K. Recognise that information put online leaves a digital footprint. L. Recognise some uses of the internet, in simple terms. M. Recognise why digital technology is used in the classroom, home and community.	A. Computers' behaviour can be predicted and the outcome tested by following the steps of an algorithm and recognising that the computer will follow instructions precisely. B. Computers and devices can be linked in different ways, such as through a network, the internet and Bluetooth. This allows the sharing of resources. C. Robots can be programmed to follow a series of instructions, using an algorithm. D. Multimedia components, such as text, images, audio and video clips, can be created, edited and combined to create content for a range of tasks. E. A device is online if it is connected to the internet or a network and can communicate with other devices. A device is offline if it is not connected to the internet or network and cannot connect to other devices. F. Hardware, such as cameras, scanners and data loggers, can be used to collect data. G. Each type of software, such as word processing, presentation and image editing, can be used for different purposes, including writing reports and creating slide shows or posters. H. Software is available that can be used to represent collected data digitally, such as in a pictogram or bar chart. I. Digital technology, such as email, social media platforms or blogs, can be used by individuals to communicate and connect with others but should be used appropriately, including using language that is not hurtful or disrespectful to others, having adult supervision or following the school's acceptable use policy. J. Some websites are not age-appropriate and so it is important to tell a trusted adult about any concerns or worries. K. A digital footprint is the information that exists on the internet, following a user's online activity. L. The internet is used to connect computers or devices around the world. M. Digital technology is used in everyday life and can be used to support learning and connect with others.

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Year 3	Communication To listen to other opinions, share own opinions and explain in their own words and using the words of others	A. Identify and use repetitions or loops in a program sequence, predicting outcomes and noticing and correcting any mistakes. B. Recognise that saved work can be retrieved from another device on the same network. C. Plan and enter a sequence of instructions using a robot or other device to achieve specific outcomes. D. Combine a range of text, images, animation and audio and video clips for given purposes. E. Explain that the World Wide Web contains lots of web pages about different subjects that can be searched. F. Use familiar computer hardware to successfully complete a task. G. Use a range of different software to successfully complete a project. H. Explain the advantages and disadvantages of communicating electronically and strategies for preventing issues. I. Describe simple rules for sharing images and data safely. J. Compose clear and appropriate messages in online communities. K. Use appropriate tools (software, websites and apps) to collaborate and communicate safely online.	A. Repetitions or loops can be used in programming where a computer will continue to run part of a program a number of times or until a condition is met, using the term 'repeat... until'. The given feedback can be used to identify and correct any mistakes in the program. B. When work is saved, it is stored on a storage device, such as the computer's hard drive, a USB flash drive, a shared server or online. This work can then be retrieved from another device (except if it is saved on the computer's hard drive). C. Sequencing instructions is the step-by-step process that robots or other devices follow to achieve specific outcomes. This can be a single algorithm or series of algorithms called a program. D. Text, images, animation, audio and video clips can be combined using tools within a piece of software or by using a range of software. For example, an image could be inserted into a word processing document or a video could be inserted into a presentation. E. The World Wide Web is a collection of web pages that are run via the internet. The information requested can be displayed as text, images or videos. F. Several pieces of hardware can be used together to complete one task, such as using a camera to take a photograph, uploading it to a computer and then printing it using a printer. G. Several pieces of software can be used together to complete one task, such as adding a video to a word processed document. H. Advantages of communicating electronically are that it is available at any time, instant and global. Disadvantages include easier misunderstandings, lack of privacy (once something is published online, it cannot be removed) and a threat to personal safety (access to personal information). Concerns should be reported to a trusted adult. I. Images and data should not be shared online without the permission of the owner. Personal information, such as full name, age, school and address, should not be shared online. J. Online communication should be done respectfully and responsibly, considering the impact on others.

		L. Use digital technology in different ways in the classroom, home and community.	K. Different software, websites and apps can be used to collaborate and communicate online. Each one has different terms and conditions that need to be adhered to stay safe, such as age restrictions. L. Digital technology can be used for a range of purposes in different settings, such as using a tablet in the classroom to access educational material, in the home to access entertainment and in the community to share local news.

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Year 4	Communication To listen to other opinions, share own opinions and explain in their own words and using the words of others	A. Describe and demonstrate a simple program that contains a looping element and how part of a program may need repetition. B. Recognise that the school network links computers to allow the sharing of resources. C. Use sensors to 'trigger' an action, such as sound or movement. D. Manipulate a range of text, images, sound or video clips and animation for given purposes. E. Explain that when searching online, some web pages may contain adverts or pop-ups that encourage people to click on them. F. Use new and unfamiliar computing hardware. G. Apply computing skills to use new computing software. H. Log light level, temperature or sound level using a program or app, over a period of time. I. Explain actions to report and prevent cyberbullying. J. Identify the positive and negative influences of technology on health and the environment and how to protect themselves.	A. A loop is a sequence of instructions that repeats continually until a certain condition is met. A program that contains a looping element is useful for a wide range of scenarios, such as controlling traffic lights. B. A school network has computers that are connected together so they can share hardware, software and data. C. Computers interact with the world using input and output devices. An input device may include sensors that can detect changes, such as in temperature, light level, sound level or movement. The input then sends the information to a computer, which tells the output device to trigger an action, such as making a sound or creating a movement. D. Manipulating a range of text, images, sound or video clips and animation may include changing their style, size, colour, effect, shape, location or format. E. Pop-ups or adverts are a form of online advertising that companies use to encourage users to buy something or go to another website. Some pop-ups can be malicious and lead to a virus, whereas some are helpful and give information. Pop-ups can be blocked by computer software. Concerns should be reported to a trusted adult before clicking on anything. F. Interacting regularly with hardware enables users to recognise common features and become confident in working with new or unfamiliar hardware. G. New computing software commonly has features that should be familiar to users, such as icons or terminology. H. An input device receives information about the outside world, such as light level, temperature or sound level, and sends it to a computer. This information can be tracked over time using a program or app. I. Cyberbullying is bullying using technology, such as social media or gaming networks. A trusted adult or child safety organisation should be contacted if there are any concerns or worries. A trusted adult can provide help and support or contact the police if needed. J. Technology can have positive influences on health, such as enabling people to hear using a hearing aid or helping doctors to diagnose or treat illnesses using special machines. Negative influences on health include problems like eye strain and poor

		K. Identify appropriate behaviour when contributing to collaborative online projects for learning. L. Exchange online communications with other learners, adding and responding to comments, such as in a blog. M. Use digital technology in different ways in the classroom, home and community to achieve a set goal.	posture. Technology can have positive influences on the environment, such as using systems to monitor and control energy usage. Negative influences on the environment include contributing to pollution by travelling and using a lot of power. K. Appropriate behaviour when contributing to collaborative online projects includes consideration towards others, awareness of copyright and keeping personal data safe. L. There are various forms of online communication, such as email, blogging, vlogging and video chatting. Online communication should be used responsibly, remembering that online actions affect other people and there are rules that need to be followed. M. Digital technology can be used in different ways and settings to achieve a set goal, such as using data collection in the community and home to answer a classroom-based question.

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Year 5	Communication To listen to other opinions, share own opinions and explain in their own words and using the words of others Adventure To experience the real world and appreciate that where we are now risks have had to be taken.	A. Design simple sequences of instructions (algorithms), including IF, THEN and ELSE commands, to decide if something is true or false. B. Compare the way in which work can be shared on a school network with the way work is shared at home or in the wider world. C. Use a range of sensors to control a physical system. D. Create, select and combine a range of texts, images, sound clips and videos for given purposes. E. Discern where web content might originate from and recognise that this gives clues to its authenticity, reliability and security. F. Apply computing skills using unfamiliar hardware to solve a problem successfully. G. Apply computing skills to create content using unfamiliar programs or apps. H. Use sensing tools or apps for an investigation and interpret the findings. I. Demonstrate appropriate online behaviour and apply a range of strategies to protect themselves and others from potential online dangers, inappropriate behaviour and bullying.	A. Sequences of instructions (algorithms) that contain IF, THEN and ELSE statements are called selections. The computer will complete operations based on whether the conditions of these selections are met or not. B. Computer networks are made up of computers that are connected by cables, fibres or wireless links. Each network can only be accessed by computers within their network, such as in school or at home. The internet network can be accessed by anyone. C. Sensors can be combined to control a physical system, such as using motion, light and sound sensors to control a road network of traffic lights and level crossings. D. Creating, selecting and combining a range of texts, images, sound clips and videos for given purposes could include creating a web page, slide show presentation, short film or an animation. E. Some websites have more reliable content than others and content should be verified with another independent source. F. Using prior knowledge and experience of computing skills can be applied to unfamiliar hardware to solve a problem successfully. G. Using prior knowledge and experience of computing skills can be applied to create content using unfamiliar programs or apps. H. Sensing tools or apps have features that can be used for an investigation and the findings can be interpreted. For example, a sound sensor or app can be used to investigate the pitch of instruments. I. Working online requires a level of responsibility and strategies to keep safe, including protecting private information and accounts. This enables people to protect themselves and others from potential online dangers, inappropriate behaviour and bullying. Any concerns should be reported to a trusted adult, the police or child protection organisations. J. Digital content can affect others and be available to anyone. Digital content is traceable, which means it can be tracked to the person who created it. To keep safe, it is important to discuss technology use with a trusted adult.

		J. Discuss the impact that digital content can have and why it is important to discuss their use of technology with an adult. K. Cite all sources when researching and explain why sources should be provided. L. Create an online collaborative project for a specific purpose, sharing documents and appropriately setting permissions for other group members. M. Select, use and combine appropriate technology to create a solution that will have an impact on others.	K. Citing sources is giving credit to the person or website that created the information. Using someone else's work without citing it is called plagiarism and is a form of cheating. L. Online collaborative projects can be shared with different permission settings, such as who can view, edit or comment on the documents. Privacy settings can be restricted to those who are invited, those who have access to the link or can be made open to the public. M. A range of technologies can be selected, used and combined, such as using different hardware and software to create a solution that will have an impact on others.

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Year 6	Communication To listen to other opinions, share own opinions and explain in their own words and using the words of others Adventure To experience the real world and appreciate that where we are now risks have had to be taken.	A. Demonstrate how programs run in an exact order by following a sequence of instructions, and test and debug programs. B. Name some of the positives and negatives of communicating with others online. C. Write a program to control a physical system, which may include output devices, such as motors, lights and buzzers. D. Select, use and combine a variety of software, including internet services, to meet a goal. E. Critically evaluate search engine results and identify factors that may affect ranking, such as how long the site has existed, the number of links to the site and whether the organisation has paid to have their site promoted. F. Identify how using different hardware can increase creativity and productivity. G. Identify how a new piece of software or an app can increase creativity. H. Plan data handling investigations and use the outcomes from data collection to show the findings. I. Recognise that sending intimate images and content and using offensive language online is a risk and	A. Decomposition is breaking down a problem down into smaller parts to make it easier to process and following a sequence of instructions. Decomposition is useful for checking programs and debugging because it saves time. B. The positives of communicating online include the speed, low cost and ability to communicate globally. The negatives of communicating online include the threat to privacy, influencing of others, access to technology and anonymity. C. Input and output devices can be combined with programming software to control a physical system, such as using sensors to create a sensory station that incorporates motors, lights and buzzers. D. A variety of software, such as word processing software, image editing software or internet services, can be selected, used and combined to meet a goal. E. Search engines take many factors into account, such as the quality of the site, number of updates or number of matches to keywords. However, search engines do not consider whether the content is true, age-appropriate or relevant, and so users need to be aware of these things when searching. F. Some hardware is more effective than others in particular contexts, such as using virtual reality or a touchscreen rather than a mouse to meet a specific need. Choosing the right hardware can increase creativity and productivity. G. Some software or apps are designed to help increase creativity by saving time or making tasks easier, such as being able to combine text, images, audio or video content into one place. H. Data handling includes databases, graphs, charts and tables. These can be used to present the findings of investigations. I. People online are not always who they say they are and may use intimate images or content inappropriately. Once something is online, it is not under the user's control and can be made public. Using offensive language can affect others negatively and is a form of bullying called 'trolling'. J. The benefits of devices broadcasting the user's location and passing on personal information include improved customer service, allowing organisations to analyse data and improving the quality of applications. Risks include identity theft, cyberstalking, victimisation and threat to privacy.

		has a permanent online trail (digital footprint). J. Identify the benefits and risks of devices broadcasting the user's location and of giving personal information to different organisations. K. Recognise that digital content can be edited online. L. Exchange online communications, making use of a growing range of available features and being aware of security settings. M. Combine a range of technology to achieve a particular outcome.	K. Digital content may have been edited online by anyone, and so it is important to verify content against other independent or reputable sources. L. There are a wide variety of online communication platforms, such as social media, blogs, vlogs, email or messaging, which have different available features, including the option to comment. It is important to be aware of security settings, such as age restrictions or property rights. M. A range of technologies can be combined to achieve a particular outcome. For example, sensors (input), a computing device (hardware) and lights (hardware) can be used together to create a set of traffic lights.