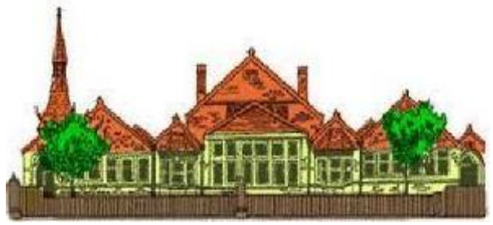
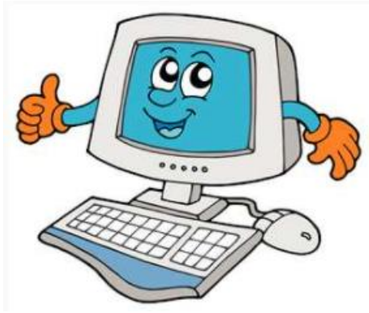


Lees Primary School - Computing Progression

Putting children first



Intent

Computing at Lees is fundamental for ensuring the safety and success of all within a global society that is now reliant upon the internet. Primarily, we will ensure that all children understand that the internet can pose a huge risk but that when used sensibly is a valuable asset to everyday life. Children will understand that not everything we see or read is true, and that not everyone is who they claim to be. They will know that just like rules in 'real life', we must stick to rules online in order to stay safe. Our children will become confident in navigating the digital world safely: knowing what to do if they are worried, uncomfortable or find something inappropriate.

We will ensure that all pupils are able to use computational thinking and creativity in order to both understand and change the world. Throughout the wider curriculum will advocate and explicitly make children aware of where they are using their computational thinking skills. Whether this be when tackling reasoning and problem solving questions logically in maths, designing a solving real world issues in DT or writing clear and precise instructions in English. Children will know that computing is a skill for life that will help them to be successful in the future.

As well, children will become skilled computer scientists as they progress through school. They will gain a solid understanding of what technology and digital technology are and how digital systems work. We will develop their ability to programme independently for specific purposes. Our children will become confident in expressing and developing their ideas with the help of communication technology, both on and offline. This will ready them for future success both in the work place and as global digital citizens.

Implementation

Computing skills will be taught explicitly in lessons but then will be practised and reinforced throughout the wider curriculum. E-safety will be taught alongside our RSE curriculum to ensure that children know the age appropriate information about the dangers of the digital world and the negative impact it can have on mental health and wellbeing. Children will see how computing affects upon every aspect of our day-to-day life and see how quickly technology is advancing and developing.

Our children will be taught programming and coding from EYFS so that by the time they reach KS2 they will have had repeated practical experience of writing computer programs in order to solve problems. This will enable them to work accurately and efficiently in order to be successful computer programmers of the future.

Our children will understand the significance of IT in an ever-changing world. Through using a range of devices and programs our children will become competent, confident and creative users of communication technology in order to allow them to share their knowledge and express themselves. They will know what types of devices we use daily are linked to the internet and how these help us live. Our children will be able to talk about how technology is rapidly advancing and see the changes in their own lifetime.

Impact

All children at Lees will leave feeling confident within a digital world. They will know how to use a variety of computer systems and programmes safely. They will be able to use their computational thinking skills to tackle any problem logically and methodically. This will empower them to excel in their future careers.

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
E-safety	Children encouraged to talk about good & bad choices in real life e.g. taking turns, saying kind things, helping others, telling an adult if something upsets you. Children encouraged to talk about their own and others' behaviour, its consequences, and know that some behaviour is unacceptable.	Children encouraged to talk about good & bad choices in real life e.g. taking turns, saying kind things, helping others, telling an adult if something upsets you. Children encouraged to talk about their own and others' behaviour, its consequences, and know that some behaviour is unacceptable. Talk together about good and bad	Children to begin to understand the rules and principles for keeping safe online. Children to know to tell a trusted adult if they find something that worries and upsets them. Children begin to understand they need to follow certain rules to remain safe when visiting places online.	Children to understand the rules and principles for keeping safe online. Children to know to tell a trusted adult if they find something that worries and upsets them so that issues can be reported correctly. Stay safe online by choosing websites that are good for them to visit and	Children to understand the rules and principles for keeping safe online. Explore what cyber-bullying means & what to do when they encounter it. Children know how to choose secure passwords for age-appropriate websites. Discuss what actions could be	Reinforce the rules and principles for keeping safe online. Know how to recognise risks, harmful content and contact, and how to report. What is an online relationship? Children to understand that people sometimes behave differently online, including by pretending to be someone they are not.	Reinforce the rules and principles for keeping safe online. Know how to recognise risks, harmful content and contact, and how to report. Discuss their own personal use of the Internet and choices they make. Discuss how to protect devices from virus threats. Discuss the importance of keeping an adult	Reinforce the rules and principles for keeping safe online. Know how to recognise risks, harmful content and contact, and how to report. How can I be a cautious online consumer? How to be a discerning customer of information online including understanding that information,

		choices when using websites – being kind, telling a grown up if something upsets us.	Learn that many websites ask for information that is private & discuss how to responsibly handle such requests	not inappropriate sites. Know that if they put information online it leaves a digital footprint or "trail" and they need to manage it so it is not hurtful. Understand appropriate boundaries in friendships when online (a digital context). How to respond safely and appropriately to adults they encounter whom they do not know online. Rules for being safe, keeping passwords protected.	taken if they are uncomfortable or upset online e.g. Report Abuse button. Talk about what games they enjoying playing and what good choices are when playing games e.g. content, screen time. Realise that not all websites are equally good sources of information. How we use the internet? For most it is an integral part of life with many benefits. How to recognise risks and harmful content.	Children to understand that the same principles apply to online relationships as to face-to-face relationships, including the importance of respect for others online including when we are anonymous. How to consider the effect of their online actions on others and know how to recognise and display respectful behaviour online and the importance of keeping personal information private. Children become confident in differentiating between the terms 'risk,' 'danger' and 'hazard.'	informed about what you are doing online, and how to report concerns. Explore using the safe and responsible use of online communication tools e.g. blogs, messaging. Children to understand the concept of privacy and implications for children and adults (that it might not always be right to keep secrets if it relates to safety). Children to understand how to critically consider their online friendships and sources of information including awareness of the risks associated with people they have never met. The negative effects of online abuse, trolling, bullying and harassment can take place and how this can have a negative impact on mental health. Bullying (including cyber bullying) has	including that from search engines, is ranked, selected and targeted. Children to be confident in recognising when and how to ask for help for resisting pressure when something is dangerous, unhealthy, makes them feel uncomfortable, anxious or that they believe to be wrong. Children to understand how information and data is shared and used online, that information is targeted. Children to be aware that information is shared with companies online. Be aware of what the law states regarding sharing personal information, pictures, videos and other material with technology. Such as sharing pictures, understanding that many websites are businesses and how

							a negative and often lasting impact on mental wellbeing. Children to understand the importance and benefits of rationing our time online. The risks of excessive time on electronic devices and the impact of positive and negative content online on their own and others' mental and physical wellbeing.	sites use information provided by users in ways they might not expect. Children will be confident in their understanding of the importance of protecting personal information.
	Nursery	**Reception**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Uses of technology: Computer systems		Children to recognise purposes for using technology in school. Children to understand that things they create belong to them and can be shared with others using technology (eg. Posts on the school website and Facebook page). Children to recognise that they can use the Internet to play and learn.	Children to recognise that technology all around us. Recognise uses of technology in school and in their homes. Understand that there are online tools that can help them create and communicate. Develop an interest in ICT by using age appropriate websites or programs.	Children to understand that information technology is all around us (school, home and community). Begin to understand what the Internet is and the purposes that it is used for. Children to understand the different types of content on websites and that some things may not be true or accurate.	Children to talk about the impact of information technology in day-to-day life (school, home and community). Begin to understand what a computer network is. That connecting computers have benefits eg accessing the same work from different places. Be able to save work on the school network and then access it on different devices.	What is the Internet? Children to be able to use simple search tools and find appropriate websites. Frame questions & identify key words to search for information on the Internet. Talk about the owner of information online. Talk about the school network & the different resources they can access, including the Internet.	Identify different parts of computing devices. Identify different parts of the Internet. Be able to choose appropriate tools for communication and collaboration and use them responsibly. Children able to use effective strategies to search with appropriate search engines.	Describe different services provided by the Internet. Know how information moves around the Internet. Describe different parts of a computing device and how it connects to the Internet. Identify appropriate forms of online communication for different audiences. Use search engines as part of an

		Develop an interest in ICT by using age appropriate websites or programs.			Talk about the parts of a computer. The difference between hardware and software.	Consider reliability of information & ways it may influence you. Check who the owner is before copying photos, clipart or text.		effective research strategy. Describe how search results are selected & ranked.
	Nursery	**Reception**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Practical experience of writing programs. (Algorithms/ Programming /Coding)	Be able to follow a simple set of instructions. Children to set each other (give and follow) simple physical instructions in games. Eg. Getting a toy through a course.	Be able to follow a simple set of instructions. Children to set each other (give and follow) simple physical instructions in games. Explore options and make choices with toys, software and websites. Press buttons on a floor robot and talk about the movements.	Physically follow & give each other instructions to move around. (Amount of steps, forward, backwards, start, stop, left, right). Begin to sequence instructions and talk about what would happen if the instructions were in a different order. Explore outcomes when buttons are pressed in sequences on a robot. Begin to use software to create movement & patterns on a screen. Begin to identify that a set of instructions is called an algorithm. That algorithms are	Physically follow and give each other forward, backward & turn (right-angle) instructions. Articulate an algorithm to achieve a simple purpose. Plan and enter a sequence of instructions to achieve an algorithm, with a robot specifying distance & turn and drawing a trail. Explore outcomes when giving instructions. Where mistakes could be made? What impact would this have? Predict what will happen in an algorithm and then test and find out the results.	Children to plan and enter a sequence of instructions on a robot specifying distance & turn to achieve specific outcomes. Debug the sequence where necessary. Test and improve programmed sequences. Begin to move blocks to creating algorithms to achieve outcomes on the computer (Scratch). Explore and evaluate outcomes when giving sequences of instructions on Scratch. Use repeat to achieve solutions to tasks.	Create & edit procedures using blocks (Scratch). Use sensors to 'trigger' an action, using the 'If…then' blocks. Solve open-ended problems with a floor robot, Logo & other software using efficient procedures to create shapes & letters. Create an algorithm & a program that will use a simple selection command for a game. Begin to correct errors (debug) as they program devices & actions on screen, & identify bugs in programs written by others.	Explore procedures using repeat to achieve solutions to problems. Be confident to talk about procedures as parts of a program. Refine procedures to improve efficiency. Use a variable to replace number of sides in a regular shape. Explore instructions to control software or hardware with an input & using if… then… commands. Identify difficulties & articulate a solution for errors in a program. Group commands as a procedure to achieve a specific outcome within a	Record in some detail the steps (the algorithm) that are required to achieve an outcome & refer to this when programming. Predict the outputs for the steps in an algorithm. Increase confidence in the process to plan, program, test and review a program. Create variables to provide a score/trigger an action in a game. Link errors in a program to problems in the original algorithm.

			designed to achieve a specific purpose. Program a floor robot to achieve an algorithm. Use the word debug to correct any mistakes when programming a floor robot. Begin to predict what will happen for a short sequence of instructions in a program.	Children to talk about similarities & differences between floor robots and on screen algorithms.	Create an algorithm to tell a joke or a simple story. Sequence pre-written lines of programming into order (Scratch).		program. Write down the steps required (an algorithm) to achieve the outcome that is wanted and refer to this when programming.	
	Nursery	**Reception**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Multimedia Text and images	Use fingers on the interactive whiteboard to rearrange objects and pictures on a screen or to play games.	Use fingers on the interactive whiteboard to rearrange objects and pictures on a screen or to play games. Use a mouse to rearrange objects and pictures on a screen. Use a camera or sound recorder to collect photos or sound (iPad). Use paint programs to create pictures.	Become more accurate with using a mouse/mousepad (on a computer/laptop). Use a video or stills camera to record an activity (iPad or digital camera). Digital painting: Choose different colours, pen thicknesses and other tools when creating pictures. Save work independently. Digital writing: Use index fingers (left and right hand) on a	Digital writing and digital painting: Create own documents, adding text and images. Use various tools eg. pens, brushes stamps, colours erasers. Save and retrieve work independently. When typing be able to use keyboard to enter text (index fingers left & right hand) Know when and how to use the RETURN/ ENTER key. Use SHIFT & CAPS LOCK to enter capital letters. Use	Digital art: Use a range of effects in art programs including brush sizes, repeats, and reflections. Insert text boxes. Save, retrieve and organise work independently. Use individual fingers to input text & use SHIFT key to type characters. Use a computer system to make music.	Be confident in creating and modifying text and presentation documents to achieve a specific purpose. Use art programs & online tools to modify photos for a specific purpose using a range of effects. Create different effects with different technological tools. Insert hyperlinks. Use a keyboard effectively,	Select appropriate ICT or online tool to create and share ideas. Explore the effects of multimedia (photos, video, and sound) in a presentation or video and show how they can be modified. Begin to be able to edit video. Develop skills using transitions and hyperlinks to enhance the stricture of presentations.	Identify the purpose for selecting an appropriate online tool. Discuss audience, atmosphere and structure of a presentation or video. Collect information and media from a range of sources (considering copyright issues) into a presentation for a specific audience. Use sound, images, text, transitions, hyperlinks

			keyboard to build words and sentences. Use index fingers (left and right hand) on a keyboard. Know when & how to use the SPACE BAR (thumbs) to make spaces between words. Begin to recognise where most used letters are on a keyboard.	DELETE & BACKSPACE buttons to correct text. Begin to recognise where all letters are on a keyboard.		including the use of keyboard shortcuts. Use font sizes & effects such as bullet points appropriately. Know how to use a spell check. Look at their own, and a friend's work and provide feedback that is constructive and specific.	Know how to use text and video editing tools in programs to refine their work. Increase speed of typing, trying to use multiple fingers and both hands at the same time. Be confident with knowing where letters are on a keyboard, without having to search.	effectively in presentations. Store presentations and videos online so they can be accessed by themselves and shared with others. Evaluate the effectiveness of their own work. Increase speed of typing, trying to use multiple fingers and both hands at the same time. Be confident with knowing where letters are on a keyboard, without having to search. Begin to explore web page creation.
	Nursery	**Reception**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Data Handling					Use a data logger to record and compare individual readings. Children begin to explore expressing information in tables, sorting and organising information	Select appropriate use of a data logger for an investigation and interpret the findings. Identify inaccurate data. Children begin to explore expressing information in tables, sorting and organising	Analyse information and question data.	Use the whole data process – generate, process, interpret, store, and present information – realising the need for accuracy and checking plausibility. Plan investigations using the outcomes from a data logger to show findings.

					for others to be able to understand.	information for others to be able to understand.		
Key vocabulary			Colour Resize Move Keyboard Mouse Click Double click Delete Space Enter Record Debug	Minimise Restore Close Drag Log on Log off Drag Present Sequence Algorithm	Undo Redo Highlight Cursor Spellcheck Toolbar Loop Table Logical Repetition	Link Hyperlink Wrap text Screen shot Snipping tool Social media Appropriate Address bar reporting	Windows Reliability Ranked Browser Plagiarism Secure Conditions Secure Spam Privacy	Cyberbullying Victim Anonymous Private Personal

Year	AT1	AT2	SP1	SP2	SM1	SM2
EYFS	Computational thinking	Programming Following instructions	E-safety (same as PSHE)	Creating Media Recognising letters on a keyboard	Computational thinking	E-safety & recap skills
Year 1	Computer Systems Tech around us	Programming Moving a robot	E-safety (same as PSHE)	Creating Media Digital writing/painting	Data & Information Grouping data	E-safety & recap skills
Year 2	Computer Systems IT around us	Programming Robot algorithms	E-safety (same as PSHE)	Creating Media Digital photos	Data & Information Pictograms	E-safety & recap skills
Year 3	Computer Systems Connecting computers	Programming Events and actions	E-safety (same as PSHE)	Creating Media Desktop publishing	Data & Information Branching databases	E-safety & recap skills
Year 4	Computer Systems The internet	Programming Repetition	E-safety (same as PSHE)	Creating Media Photo editing	Data & Information Data logging	E-safety & recap skills
Year 5	Computer Systems Sharing info	Programming Selection	E-safety (same as PSHE)	Creating Media Video editing	Data & Information Flat file databases	E-safety & recap skills
Year 6	Computer Systems Communication	Variables	E-safety (same as PSHE)	Creating Media Web pages	Data & Information Spreadsheets	E-safety & recap skills