Level Expected at the End of EYFS

We have selected the most relevant statements from Development Matters age ranges for Three and Four-Year-Olds and Reception as well as highlighting the statements within the ELGs which feed into the programme of study for computing.

Computing			
Three and Four-Year-Olds	Personal, Social and Emotional Development		• Remember rules without needing an adult to remind them.
	Physical Development		• Match their developing physical skills to tasks and activities in the setting.
	Understanding the World		• Explore how things work.
Reception	Personal, Social and Emotional Development		• Show resilience and perseverance in the face of a challenge. • Know and talk about the different factors that support their overall health and wellbeing: -sensible amounts of 'screen time'.
	Physical Development		• Develop their small motor skills so that they can use a range of tools competently, safely and confidently.
	Expressive Arts and Design		• Explore, use and refine a variety of artistic effects to express their ideas and feelings.
ELG	Personal, Social and Emotional Development	Managing Self	• Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. • Explain the reasons for rules, know right from wrong and try to behave accordingly.
	Expressive Arts and Design	Creating with Materials	• Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

Key Stage 1 National Curriculum Expectations	Key Stage 2 National Curriculum Expectations
Pupils should be taught to: • 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; • 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.	Pupils should be taught to: • 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; • 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, 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.

Intent

Our program has been designed to provide a well-structured and comprehensive series of lessons to ensure that students are equipped with the necessary skills and knowledge to meet the objectives of the national curriculum. The content of our program covers a wide range of topics in computing and seeks to create a deep understanding of the subject matter and how it relates to the daily lives of students. The program offers numerous opportunities for students to consolidate their learning, challenge themselves, and experience variety. This approach allows students to apply the fundamental principles and concepts of computer science, develop their analytical and problem-solving skills, and gain hands-on experience in using information technology. Ultimately, our program aims to create responsible, competent, confident, and creative users of information technology.

Implementation

Our digital world is constantly evolving, and it's essential that children learn the skills to navigate it safely and with purpose. That's why our lesson plans and resources are designed to inspire pupils to develop a love for technology and its place in their future. Each lesson contains revision, analysis, and problem-solving to build on prior knowledge while introducing new skills and challenges.
In Key Stage 1, our focus is on developing the use of algorithms, programming, and how technology can be used safely and purposefully. As pupils progress to Key Stage 2, lessons still focus on algorithms, programming, and coding but in a more complex way and for different purposes. Children also develop their knowledge of computer networks, internet services, and the safe and purposeful use of the internet and technology. Data Handling is featured more heavily in Upper Key Stage 2.
Resources are designed to support cross-curricular links, enabling children to make connections between different areas of learning. We offer adult guides and end-of-unit assessments, enabling staff to feel confident in the progression of skills and knowledge and that outcomes have been met. An example of keywords has been included, showing the progression of specific language involved in children's learning so that teachers can also assess understanding and progress through vocabulary.
There is specific sequence of lessons for each class, offering structure and narrative. However, these are not to be used exclusively but will support teachers' planning. Our aim is to give teachers the confidence they need to teach technology effectively and to inspire children to become confident, safe, and responsible users of technology.

Impact

The school aims to promote enjoyable learning of computing across all grades. The teachers are expected to maintain high standards, and the quality of evidence produced by students will be presented in various forms. Children will be taught to use digital and technological vocabulary accurately, while also developing their technical skills. They will gain confidence in working with a range of hardware and software, and will be able to produce high-quality and meaningful products. The students will be encouraged to view the digital world as an extension of their own world, beyond school, and will be taught to make informed choices. They will be trained to be respectful and confident digital citizens, which will enable them to lead happy and healthy digital lives in the future.

	KS1	LKS2	UKS2
Multimedia Text and Images	Children begin to understand the particular purposes technology can be used for and that by adding text and images you can communicate with technology. Children develop their skills in typing, selecting tools and organising information. **KS1 Computing National Curriculum** Children use technology purposefully to create, organise, store, manipulate and retrieve digital content. Children can: a add text strings, text boxes and show and hide objects and images, manipulating the features; b use various tools, such as brushes, pens, eraser, stamps and shapes, and set the size, colour and shape; c use applications and devices in order to communicate ideas, work, messages and demonstrate control; d save, retrieve and organise work; e use key vocabulary to demonstrate knowledge and understanding in this strand: paint, colour, brush, tools, settings, undo, redo, text, image, size, poster, launch, application, software, window, minimise, restore, size, move, screen, close, click, drag, log on, log off, keyboards, keys, mouse, click, button, double click, drag, present.	Children in lower key stage two (LKS2) will further develop their formatting skills by using keyboard commands and organizing their work effectively. In addition to this, they will have more opportunities to express themselves through digital technology, art, PowerPoint, and poster-making. It is important for children to continue demonstrating control when operating tools, just as they did in key stage one (KS1). **KS2 Computing National Curriculum** Children 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. They select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. Children can: a create different effects with different technological tools, demonstrating control; b use appropriate keyboard commands to amend text on a device; c use applications and devices in order to communicate ideas, work, and messages; d save, retrieve and evaluate work, making amendments; e insert a picture/text/graph/hyperlink from the internet or a personal file; f use key vocabulary to demonstrate knowledge and understanding in this strand: draw, object, shape, line, line colour, fill colour, group, ungroup, font, size, text box, format, image, wrap text, plan, link, image, object, link, hyperlink, minimise, restore, size, move, screen, split, create, organise, file, folder, close, exit, search, print, password, screenshot, snipping tool, shift, undo, redo, menu, dictionary, highlight, cursor, toolbar, spellcheck.	As children engage with new software, they learn valuable skills such as creating 3D models, orbiting, zooming, and editing. Their proficiency in formatting text, inserting links, and images increases, allowing them to create visually appealing content. This process cultivates confidence and encourages creativity, contributing to their overall personal development.. **KS2 Computing National Curriculum** Children select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. Children can: a use the skills already developed to create content using unfamiliar technology; b select, use and combine the appropriate technology tools to create effect; c review and improve their own work and support others to improve their work; d save, retrieve and evaluate their work, making amendments; e insert a picture/text/graph/hyperlink from the internet or personal file; f use key vocabulary to demonstrate knowledge and understanding in this strand: window, layout, text, font, colour, format, heading, hyperlink, 2D shape, 3D shape, orbit, pan, zoom, eraser, dimension, measurement, guide.

Multimedia Sound and Motion	Technology can play a crucial role in fostering creativity among children, especially when it comes to recording and editing sound. By utilizing tools for sound recording and editing, children can develop their creative skills and enhance their ability to control the tools, while also gaining valuable experience in the realm of digital media. This can be a fun and engaging way for children to explore their creativity and learn new skills that can benefit them in many different areas of life. **KS1 Computing National Curriculum** Children use technology purposefully to create, organise, store, manipulate and retrieve digital content. Children can: **a** use software to record sounds; **b** change sounds recorded; **c** save, retrieve and organise work; **d** use key vocabulary to demonstrate knowledge and understanding in this strand: commands, add sound.	Children develop their editing skills further by cropping, organising and arranging film clips. They are able to share work and offer feedback and ideas for improvement with animation and film, giving their opinion on which software to use. In LKS2, children also look at the history of animation and reflect upon the changes over time. **KS2 Computing National Curriculum** Children select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. Children can: **a** use software to record, create and edit sounds and capture still images; **b** change recorded sounds, volume, duration and pauses; **c** use software to capture video for a purpose; **d** crop and arrange clips to create a short film; **e** plan an animation and move items within each animation for playback; **f** use key vocabulary to demonstrate knowledge and understanding in this strand: audio, sound, video, movie, embed, link, file format, animate, animation, still image, thaumatrope, zoetrope, zoopraxiscope, stereoscope, flip book, frame, onion skinning, loop, frame rate, record, stop, play, stop motion, stop frame.	As children grow, they tend to develop an interest in multimedia broadcasting, which allows them to acquire new skills such as creating jingles, podcasts, and narrations. With time, they become more proficient in post-production tasks like editing, trimming, and refining their work, based on the plans they have made. This not only boosts their confidence but also enables them to hone their skills and express themselves creatively .**KS2 Computing National Curriculum** Children select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. Children can: **a** collect audio from a variety of resources including own recordings and internet clips; **b** use a digital device to record sounds and present audio; **c** trim, arrange and edit audio levels to improve quality; **d** publish their animation and use a movie editing package to edit/refine and add titles; **e** use key vocabulary to demonstrate knowledge and understanding in this strand: audio, record, edit, play stop, skip, waveform, input, output, record, edit, play podcast, digital content, downloadable, backing track, voiceover, mute, gain, production, post-production, documentary, project, evaluation, screening, ceremony, upload.

Handling Data		As children start to grow, they become more confident in expressing information through tables, and they become more adept at sorting and organising data in a way that others can easily comprehend. **KS2 Computing National Curriculum** Children select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. Children can: a talk about the different ways data can be organised; b sort and organize information to use in other ways; c search a ready-made database to answer questions; d use key vocabulary to demonstrate knowledge and understanding in this strand: Google Docs, insert, table.	In the Upper Key Stage 2 (UKS2) curriculum of Data Handling, students are taught to choose appropriate methods to represent data effectively. They also learn to work with software tools like spreadsheets to manipulate and analyze data. Furthermore, the curriculum emphasizes the importance of ensuring the accuracy of data and comparing it for specific purposes. By the end of the curriculum, students are equipped with the necessary skills to handle data in a variety of contexts. **KS2 Computing National Curriculum** Children select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. Children can: a know how to interpret data, including spotting inaccurate data and comparing data; b use keyboard shortcuts and functions to input data on spreadsheets and create formulas for spreadsheets; c add data to an existing database; d use key vocabulary to demonstrate knowledge and understanding in this strand: Google Docs, insert, table, spreadsheet, cell, row, column, formula/formulas, calculate, format, edit, insert, ascending, descending; e construct data on an appropriate application

Technology in Our Lives	Children start to understand how they can use technology outside of the classroom. They realize the advantages of technology in their lives and how it can help them learn about online safety. **KS1 Computing National Curriculum** Children recognise common uses of technology beyond school. They use technology safely and respectfully, keeping personal information private; they identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies. Children can: **a** recognise ways that technology is used in the home and community, e.g. taking photos, blogs, shopping; **b** use links to websites to find information; **c** recognise age-appropriate websites; **d** use safe search filters; **e** use key vocabulary to demonstrate knowledge and understanding in this strand: filter, Google, search engine, image, keyboard, email, internet, subject, address, communicate, sender, safe, secure.	As children explore the use of technology beyond the classroom, they gain a deeper understanding of its benefits. They develop the ability to recognize how technology can enhance their lives, while also learning about the importance of online safety. **KS2 Computing National Curriculum** Children 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. They use search technologies effectively, appreciate how results are selected and ranked, and are discerning in evaluating digital content. Children can: **a** explain ways to communicate with others online; **b** describe the world wide web as the part of the internet that contains websites; **c** add websites to a favourites list; **d** use search tools to find and use an appropriate website and content; **e** use strategies to improve results when searching online; **f** use key vocabulary to demonstrate knowledge and understanding in this strand: filter, Google, search engine, image, keyboard, email, subject, address, communicate, sender, safe, secure, internet, world wide web, social media.	As children learn to use technology beyond the classroom, they begin to appreciate its positive impact on their lives. They also become more aware of the importance of online safety and how to stay safe while using technology. **KS2 Computing National Curriculum** Children 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. They use search technologies effectively, appreciate how results are selected and ranked, and are discerning in evaluating digital content. Children can: **a** search for information using appropriate websites and advanced search functions within Google; **b** use strategies to check the reliability of information (cross-check with another source such as books); **c** talk about the way search results are selected and ranked; **d** check the reliability of a website, including the photos on site; **e** tell you about copyright and acknowledge the sources of information; **f** use key vocabulary to demonstrate knowledge and understanding in this strand: world wide web, search, search engine, advanced search, results, Google, browser, terms of use, bias, authority, citation, plagiarism, source, website, secure, https, site, domain, website, browser, address bar.

Coding and Programming	As children develop their programming skills, they start to realize the impact they can have on technology. They begin to understand that algorithms are a set of instructions that help in solving problems, while codes are a set of instructions that machines can execute. This helps them to explore the concept of debugging, where they learn to predict when codes may not work and how to fix them. By learning these concepts, children gain a better understanding of how technology works and how they can use it to bring their ideas to life. **KS1 Computing National Curriculum** Children understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions. They create, debug and use logical reasoning to predict the behaviour of simple programs. Children can: **a** give commands one at a time to control direction and movement, including straight, forwards, backwards, turn; **b** control the nature of events: repeat, loops, single events and add and delete features; **c** give a set of instructions to follow and predict what will happen; **d** improve/change their sequence of commands by debugging; **e** use key vocabulary to demonstrate knowledge and understanding in this strand: algorithm, instruction, order, debug, program, turn, left, right, clockwise, anticlockwise, blocks, sequence, project, repeat, repeat forever, invisible, grow, shrink.	As children learn programming, they develop problem-solving skills and gain proficiency in programming commands to achieve desired outcomes. They gradually progress to writing programs, analyzing algorithms, and identifying and correcting errors in their code. These skills help them to become more confident and competent programmers.**KS2 Computing National Curriculum** Children design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; they solve problems by decomposing them into smaller parts. They use sequence, selection, and repetition in programs and work with variables and various forms of input and output. They use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. Children can: **a** use logical thinking to solve an open-ended problem by breaking it up into smaller parts; **b** write a program, putting commands into a sequence to achieve a specific outcome; **c** give a set of instructions to follow and predict what will happen; **d** keep testing a program and recognise when it needs to be debugged; **e** use variables to create an effect, e.g. repetition, if, when, loop; **f** use key vocabulary to demonstrate knowledge and understanding in this strand: decompose, decomposing, logical sequence, flowchart, sprite, block, command, algorithm, answer, correct, errors, program, algorithm, instructions, commands, forward (fd), left (lt), right (rt), move, turn, clear screen (cs), variable.	As children progress in their programming journey, they can enhance their skills by leveraging new techniques and tools such as flowcharts. By breaking down complex problems into smaller, more manageable pieces, they can create algorithms to solve them effectively. Through this process, children can develop a deep understanding of how algorithms work and confidently explain the outcomes they produce with precision and accuracy. **KS2 Computing National Curriculum** Children design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; they solve problems by decomposing them into smaller parts. They use sequence, selection, and repetition in programs and work with variables and various forms of input and output. They use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. Children can: **a** use external triggers and infinite loops to demonstrate control; **b** follow a sequence of instructions, e.g. in a flowchart and modify a flowchart using symbols; **c** use conditional statements and edit variables; **d** decompose a problem into smaller parts to design an algorithm for a specific outcome and use this to write a program; **e** keep testing a program and recognise when it needs to be debugged; **f** use key vocabulary to demonstrate knowledge and understanding in this strand: flowchart, algorithm, control, output, symbol, start, stop, delay, process, decision, loop, backdrop, script, block, repeat, commentary, sequence, consequence, debug, program, Kodu, world, object, tool palette, program environment, smooth, flatten, raise.

Online Safety	As children start using the internet, it becomes crucial for them to learn about online safety measures. They need to understand the importance of keeping themselves safe and how to do so. This involves comparing and contrasting appropriate and inappropriate online activities, and making informed decisions about their online behavior. It is a crucial step towards becoming responsible digital citizens and protecting themselves from potential online risks. **KS1 Computing National Curriculum** Children can use technology safely and respectfully, keeping personal information private; they identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies. Children can: a identify what things count as personal information; b identify what is appropriate and inappropriate behaviour on the internet; c agree and follow sensible online safety rules, e.g. taking pictures, sharing information, storing passwords; d seek help from an adult when they see something that is unexpected or worrying; e demonstrate how to safely open and close applications and log on and log off from websites; f use key vocabulary to demonstrate knowledge and understanding in this strand: safe, meet, accept, reliable, tell, online, trusted, adult, information, safety, personal, key, question, tell, safe, share, stranger, danger, internet.	As children spend more time on the internet, they gradually become more aware of their digital footprint. Through reflection on their online experiences, they develop a better understanding of age-appropriate websites and advertisements, as well as the ways in which companies use ads to target them. Additionally, children are introduced to the concept of plagiarism and citation, learning to properly attribute sources and avoid copying others' work without permission. Overall, these experiences help children become more responsible digital citizens. **KS2 Computing National Curriculum** Children use technology safely, respectfully and responsibly. They recognise acceptable/unacceptable behaviour and identify a range of ways to report concerns about content and contact. Children can: a reflect on their own digital footprint and behaviour online; b identify what is appropriate and inappropriate behaviour on the internet, recognising the term cyberbullying; c agree and follow sensible online safety rules, e.g. taking pictures, sharing information, storing passwords; d seek help from an adult when they see something that is unexpected or worrying; e demonstrate understanding of age-appropriate websites and adverts; f use key vocabulary to demonstrate knowledge and understanding in this strand: safe, meet, accept, reliable, tell, online, trusted, adult, information, safety, personal, internet, world wide web, communicate, message, social media, email, password, cyberbullying/bullying, plagiarism, profiles, account, private, public.	It is considered beneficial for children to develop an understanding of potential online risks and to be able to share their knowledge of the risks and consequences with others. This helps them to become more discerning about the information they encounter online, and to think more critically about what they see. Additionally, it is important for children to learn about the concept of fake news and false photographs, so that they can identify and avoid being misled by inaccurate information. **KS2 Computing National Curriculum** Children use technology safely, respectfully and responsibly. They recognise acceptable/unacceptable behaviour and identify a range of ways to report concerns about content and contact. Children can: a protect their password and other personal information; b be a good online citizen and friend; c judge what sort of privacy settings might be relevant to reducing different risks; d seek help from an adult when they see something that is unexpected or worrying; e discuss scenarios involving online risk; f use key vocabulary to demonstrate knowledge and understanding in this strand: spam, link, privacy, virus, scam, phishing, inbox, junk, sender, subject, secure, safe, account, online, private, social media, adverts, cyberbullying, reporting, anonymous, victim, fraud/fraudulent, policy, private/personal.